Technical Manual

State 12/2025 - Version 1.0

KNX Glass Touch Smart 6-inch / Plus 6-inch

BE-GTSx6Tx.01S

Further documents:

Data sheets:

https://www.mdt-group.com/for-professionals/downloads/datasheets.html

Assembly and operating instructions:

https://www.mdt-group.com/for-professionals/downloads/assembly-and-operation-instructions.html

Solution proposals for MDT products:

https://www.mdt-group.com/for-professionals/tips-tricks.html

1 Content

2 Overview

2.1 Overview devices

This manual applies to the following devices (article number each printed in **bold**).

- **BE-GTS06TW.01S** KNX Glass Touch Smart 6 inch, KNX Secure, White
- **BE-GTS06TS.01S** KNX Glass Touch Smart 6 inch, KNX Secure, Black
- **BE-GTSP6TW.01S** KNX Glass Touch Smart Plus 6 inch, KNX Secure, White
- **BE-GTSP6TS.01S** KNX Glass Touch Smart Plus 6 inch, KNX Secure, Black

2.2 Functions

High-resolution touch colour display for 64 functions

The brightness of the display adjusts automatically or via an external object (2 bytes, Lux) to its surroundings. The screen background, transparency and colours of the function tiles can be set individually for day and night. The position and size of the 64 function and status tiles can be adjusted for each page. Pages can be changed with a swipe gesture or as a jump function.

Standby and status elements

In standby mode, up to 12 status elements can be displayed simultaneously. These are any values from the KNX bus. In addition to the date and time, many other values such as temperatures, external humidity, power or 1 bit status can be displayed. Via 14 byte objects, multimedia information provided via the KNX bus, such as artist, title or text, can also be displayed.

KNX Data Secure

The device supports secure commissioning in KNX installations.

Binary inputs (only Glass Touch Smart Plus)

Window contacts or conventional light/blind switches can be connected to the 2 binary inputs, for example. Functions such as switching, short/long keypress, dimming, blinds and sending values are possible on single or grouped inputs.

External input for PT1000 sensor (only Glass Touch Smart Plus)

In addition to the internal temperature sensor, a PT1000 sensor can be connected to measure the room temperature. This can be used, for example, to measure the temperature in the floor or at the ceiling. This temperature value can be included in the internal measurement or used in the temperature controller.

2 Temperature Controllers

The comprehensive PI Temperature Controller only requires the actual temperature from the internal or an external temperature sensor to start regulation. The setpoints for "Comfort", "Standby" and "Night" can be configured individually, independently of the "Basic Comfort" setpoint. This ensures high compatibility with many visualisations. The external setpoint shift via objects can be carried out in the classic way via 1 bit (step), 1 byte (count pulses) and via 2 bytes (temperature difference and absolute values). Set setpoints and the operating mode can be saved and restored in the event of a bus voltage failure.

Code lock

Function pages can be protected from unauthorised access with a four-digit code. The Basic version allows one user, while the Plus version allows up to four users with different numerical codes.

Messages

Up to 20 prioritised (alarm) messages can be activated via bit and byte objects. The colour of the messages shown on the display can be set and the alarm can be signalled by the orientation light. An alarm can be reset using a button, automatically after a set time or when the alarm ends.

Circumferential orientation light (Ambient lighting)

For night-time orientation in the dark, as signalling for alarms or simply as decorative lighting for the push-button. The white LEDs (GTS basic version) or RGBW LEDs (GTS Plus) on the rear side offer a wide range of possible uses.

Logic functions

Up to 4 (Plus version: 8) logic functions can be used in the push-button. Either as universal logic for comparing object values (e.g. equal, not equal, greater, less), or as logic gates (AND, OR, XOR) for linking up to 8 inputs.

Time switch (only Glass Touch Smart Plus)

12 timers with 8 switching times each can be set. For example, for daily recurring processes such as raising and lowering the blinds/shutters or switching the outdoor lighting on and off. With the integrated astro switch function, this can be done not only according to the time, but also based on the calculated sunrise and sunset at the specified location. The set switching times can be changed on the device if required.

Slap function

The slap function can be used in a variety of ways, for example to perform central functions such as switching the main lighting or the central OFF command when leaving the building. A brief, broad touch of the push-button is sufficient for this. (Slap!) Almost any single button function can be set as a slap function.

Innovative group control

Standard functions can be extended with an extra-long keypress. For example, the blind function in a living room. With the normal short/long keypress, a single blind is operated. With the additional extra-long keypress, for example, all blinds in the living room (group) are operated centrally. The innovative group control can also be used for lighting. For example, a short keypress switches a single light on/off, a long keypress switches all lights in the room, and an extra-long keypress switches the entire floor.

Speaker (only Glass Touch Smart Plus)

With the audio control, various tones stored in the device can be played back via the speaker. These can be called up via an object from the KNX bus, serve as a button tone, or acoustically support alarm messages.

Updateable

If necessary, the device can be updated via the "MDT Firmware Update App".

Long frame support

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

2.3 Wiring diagram

The following image shows the exemplary connection examples:

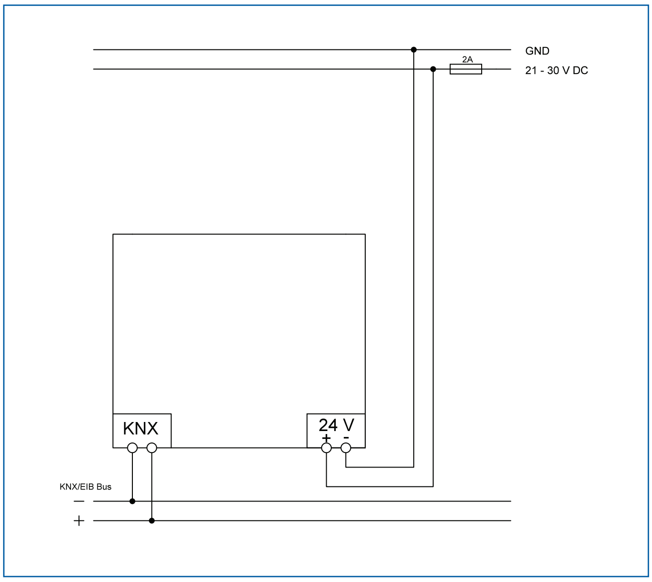


Figure 1: Wiring diagram – BE-GTS06Tx.01S

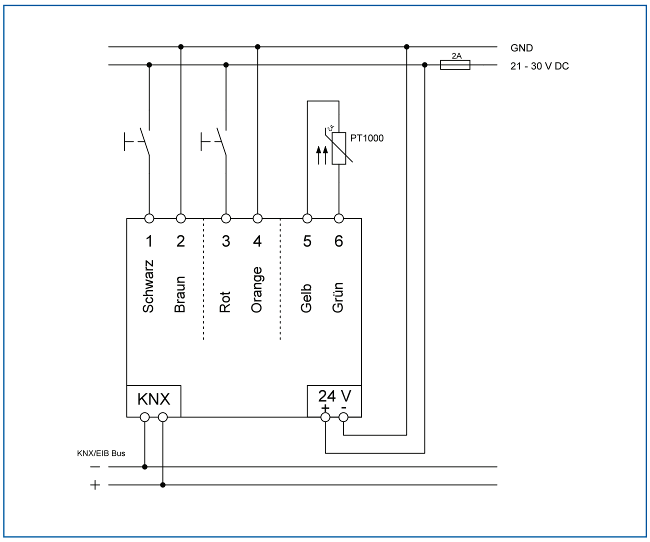


Figure 2: Wiring diagram – BE-GTSP6Tx.01S

2.4 Structure and Handling

The following images show the structure of the devices

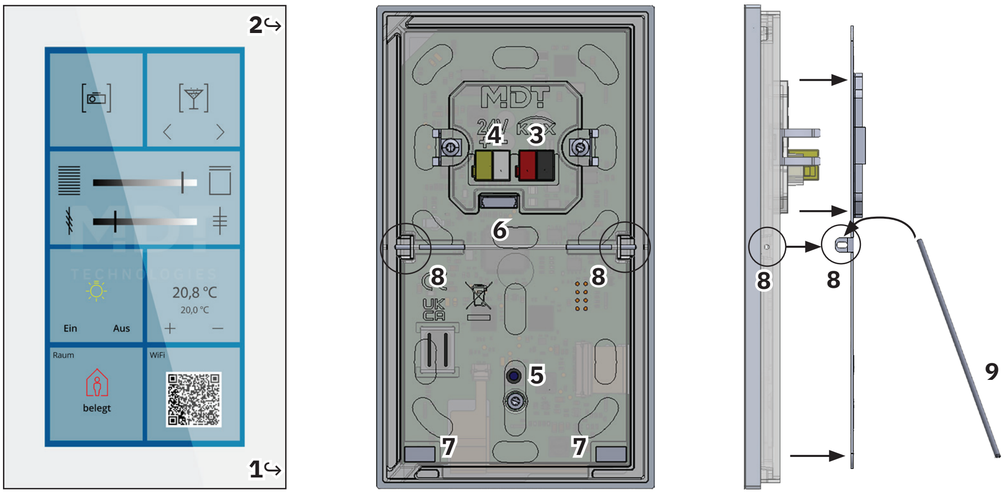


Figure 3: Structure and Handling

1 –Brightness sensor

2 –Temperature sensor

3 –KNX bus connection terminal

4 –Terminal block - Auxiliary voltage

5 –Programming button and LED

6 –External inputs

7 –Holding magnet

8 –Slot for locking pin

9 –Locking pin

2.5 Commissioning

1. Connect the device according to the wiring diagram.
2. Connect the programming interface to the bus.
3. Switch on bus voltage.
4. Press the programming button on the device (red programming LED lights up continuously).
5. Set and program the individual address in the ETS (programming LED turns off).

2.6 Security

2.6.1 KNX Secure

Important: The use of **KNX Secure** functionality requires **ETS from version 5.7** onwards.

KNX Secure has two different ways: IP Secure and Data Secure.

KNX IP Secure enables secure transmission in IP networks by encrypting and authenticating transmitted messages. IP Secure ensures that KNX tunnelling or routing messages at IP level cannot be read or manipulated. KNX IP Secure forms an additional security layer that protects all KNXnet IP data traffic.

KNX Data Secure ensures that messages/telegrams sent by KNX devices (regardless of the KNX medium) are encrypted and/or authenticated, provided that both participants are KNX Data Secure-capable. If one of the participants does not support KNX Data Secure, communication will continue to be unencrypted.

Device certificate
For the secure commissioning of a KNX Secure device, the device certificate is used. The key contained in the certificate must be scanned or entered once by the integrator/installer in the ETS. The device certificate is no longer required for further transmissions, unless the device is reset via a master reset (see 2.7 Reset to factory settings). The certificates of all devices in a project should be detached from the device label after initial commissioning and kept for the project.

Secure Mode
If a device is operated with security enabled, it works in "secured mode" (Secure Mode) and transmits the data encrypted. Recognisable by the blue shield symbol.

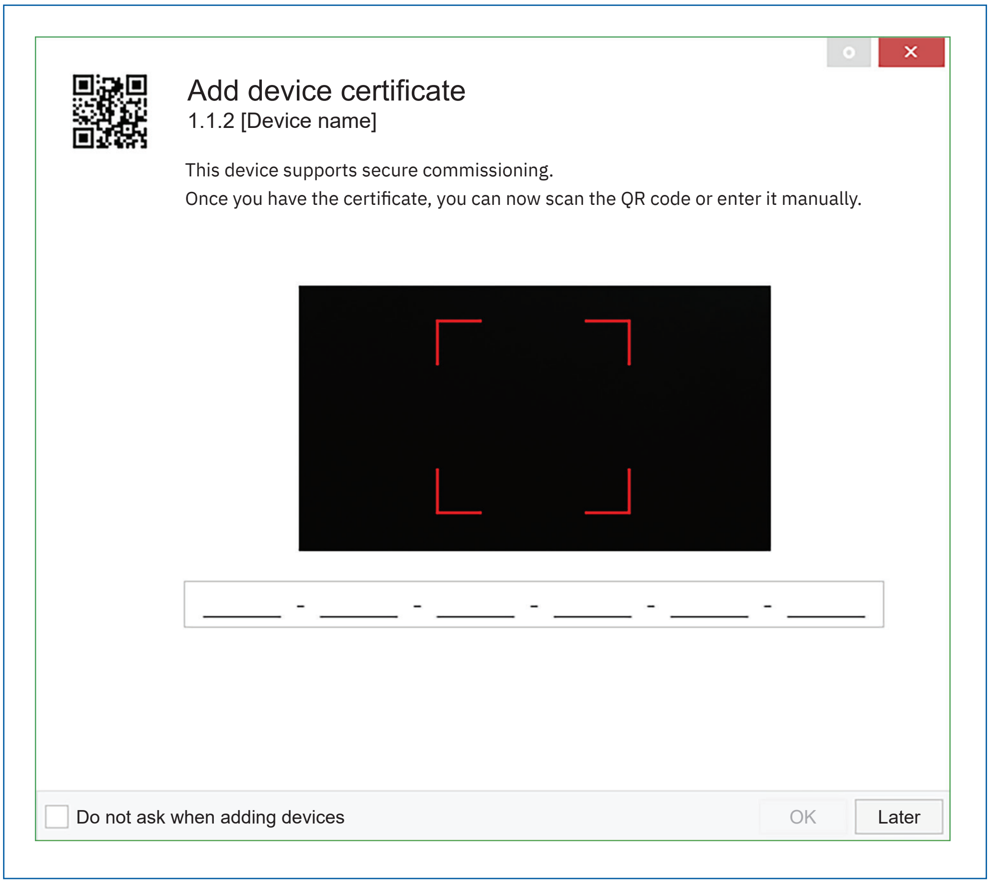
Unsecured mode - Plain Mode
If a device is operated without security enabled, this is referred to as "unsecured mode" (Plain Mode). The data is transmitted unencrypted.

2.6.2 Project password

Activated KNX Secure strictly requires an ETS project password. Without a project password, secure commissioning is not possible and the devices are loaded in unsecured mode.

2.6.3 Commissioning with activated KNX Secure

When importing the application program into the KNX project, a note appears regarding the need for a project password. **If the process is cancelled at this point, the device will be loaded without KNX Secure functions.** The device certificate is then entered (see chapter 2.6.1). If a webcam is connected, this can be done by scanning the QR code; alternatively, the certificate can be entered via the keyboard.



Add device certificate
1.1.2 [Device name]

This device supports secure commissioning.
Once you have the certificate, you can now scan the QR code or enter it manually.

______ - ______ - ______ - ______ - ______ - ______

☐ Do not ask when adding devices

Figure 4: Commissioning with ETS – Security: Add device certificate

2.7 Reset to factory settings

If the device has already been in use or if the initial start-up has failed, it must be reset to factory settings according to the following procedure.

1. Press and hold the programming button for at least 10 seconds. The programming LED will then flash.
2. Now briefly release the button and press again for at least 5 seconds until the programming LED flashes quickly. The LED goes out when the button is released.
3. The device will reset and reboot.

3 Communication objects

3.1 Standard settings of the communication objects

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

Standard settings – General objects								
No.	Name	Object function	Length	C	R	W	T	U
1	In operation	Output	1 Bit	■	■		■	
2	Day / Night	Day = 0 / Night = 1 Day = 1 / Night = 0	1 Bit	■		■	■	■
3	Time	Receive current value	3 Byte	■		■	■	■
3	Time	Send current value	3 Byte	■	■		■	
4	Date	Receive current value	3 Byte	■		■	■	■
4	Date	Send current value	3 Byte	■	■		■	
5	Time / Date	Receive current values	8 Byte	■		■	■	■
5	Time / Date	Send current values	8 Byte	■	■		■	
6	Page change	Input	1 Byte	■		■		
7	Display	Brightness - Input	1 Byte	■		■		
7	Display	Brightness - Input	2 Byte	■		■		
8	Display	Brightness - Output	1 Byte	■	■		■	
9	Presence	Input	1 Bit	■		■	■	■
10	Code lock	Reset	1 Bit	■		■		
11	Diagnosis 1	Diagnosis object	14 Byte	■	■		■	
12	Diagnosis 2	Diagnosis object	14 Byte	■	■		■	

Table 1: Communication objects – Standard settings: General objects

Standard settings – Device settings via scene object								
No.	Name	Object function	Length	C	R	W	T	U
16	Device setting	Scene number	1 Byte	■	■	■	■	■

Table 2: Communication objects – Standard settings: Device settings via scene object

Standard settings – Audio control								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
17	Audio control	Set button tone	1 Byte	■		■		
18	Audio control	Set tone for page change	1 Byte	■		■		
19	Audio control	Play signal tone 1	1 Bit	■		■		
20	Audio control	Play signal tone 2	1 Bit	■		■		
21	Audio control	Play signal tone 3	1 Bit	■		■		
22	Audio control	Play signal tone 4	1 Bit	■		■		
23	Audio control	Play signal tone 5	1 Bit	■		■		
24	Audio control	0 = mute / 1 = loud	1 Bit	■		■		
25	Audio control	Volume: Button tones	1 Byte	■		■		
26	Audio control	Volume: Swipe gesture	1 Byte	■		■		
27	Audio control	Volume: Signal tone 1	1 Byte	■		■		
28	Audio control	Volume: Signal tone 2	1 Byte	■		■		
29	Audio control	Volume: Signal tone 3	1 Byte	■		■		
30	Audio control	Volume: Signal tone 4	1 Byte	■		■		
31	Audio control	Volume: Signal tone 5	1 Byte	■		■		

Table 3: Communication objects – Standard settings: Audio control

Standard settings – Messages								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
33	Message 1:	Trigger message - input	1 Byte 2 Byte 4 Byte 14 Byte	■		■		
+ 1	**next message (... 20)**							
53	Message 1:	Message: Output	1 Bit	■	■		■	
+ 1	**next message (... 20)**							

Table 4: Communication objects – Standard settings: Messages

Standard settings – Ambient lighting								
No.	Name	Object function	Length	C	R	W	T	U
73	Ambient lighting	Colour: Red	1 Byte	■		■		
73	Ambient lighting	RGB value	3 Byte	■		■		
73	Ambient lighting	RGBW value	6 Byte	■		■		
73	Ambient lighting	HSV value	3 Byte	■		■		
73	Ambient lighting	CO2 value	2 Byte	■		■		
73	Ambient lighting	VOC value	2 Byte	■		■		
73	Ambient lighting	Relative humidity	2 Byte	■		■		
74	Ambient lighting	Colour: Green	1 Byte	■		■		
75	Ambient lighting	Colour: Blue	1 Byte	■		■		
75	Ambient lighting	Colour: White	1 Byte	■		■		
76	Ambient lighting	Brightness	1 Byte	■		■		
77	Ambient lighting	Switch	1 Bit	■		■		
78	Ambient lighting	Status Colour: Red	1 Byte	■	■		■	
78	Ambient lighting	Status: RGB value	3 Byte	■	■		■	
78	Ambient lighting	Status: RGBW value	6 Byte	■	■		■	
78	Ambient lighting	Status: HSV value	3 Byte	■	■		■	
79	Ambient lighting	Status Colour: Green	1 Byte	■	■		■	
79	Ambient lighting	Status Colour: White	1 Byte	■	■		■	
80	Ambient lighting	Status Colour: Blue	1 Byte	■	■		■	
81	Ambient lighting	Status: On/Off	1 Bit	■	■		■	
81	Ambient lighting	Status Colour: White	1 Byte	■	■		■	

Table 5: Communication objects – Standard settings: Ambient lighting

Standard settings – Temperature measurement: Internal

No.	Name	Object function	Length	C	R	W	T	U
82	Temperature measurement: Internal	Send measured value	2 Byte	■	■		■	
83	Temperature measurement: Internal	External sensor - Input	2 Byte	■		■	■	■
84	Temperature measurement: Internal	Maximum value exceeded	1 Bit	■	■		■	
85	Temperature measurement: Internal	Minimum value fallen below	1 Bit	■	■		■	

Table 6: Communication objects – Standard settings: Temperature measurement: Internal

Standard settings – Temperature controller

No.	Name	Object function	Length	C	R	W	T	U
91	Temperature controller 1	Preset setpoint	2 Byte	■		■		
92	Temperature controller 1	Comfort: Preset setpoint	2 Byte	■		■		
92	Temperature controller 1	Preset (Basic) Comfort setpoint	2 Byte	■		■		
92	Temperature controller 1	Combined object (Heating): Preset setpoint	8 Byte	■		■		
92	Temperature controller 1	Combined object: Preset setpoint	8 Byte	■		■		
93	Temperature controller 1	Standby: Preset setpoint	2 Byte	■		■		
94	Temperature controller 1	Night: Preset setpoint	2 Byte	■		■		
95	Temperature controller 1	Heat protection: Preset setpoint	2 Byte	■		■		
95	Temperature controller 1	Frost protection: Preset setpoint	2 Byte	■		■		
96	Temperature controller 1	Combined object (Cooling): Preset setpoint	8 Byte	■		■		
97	Temperature controller 1	Send current setpoint	2 Byte	■	■		■	
98	Temperature controller 1	Manual setpoint shift (2 Byte)	2 Byte	■		■		
99	Temperature controller 1	Manual setpoint shift (1 Byte)	1 Byte	■		■		
99	Temperature controller 1	Manual setpoint shift (1 = + / 0 = -)	1 Bit	■		■		
100	Temperature controller 1	Setpoint shift: Send status	2 Byte	■	■		■	
101	Temperature controller 1	Control value Heating: Send control value	1 Byte	■	■		■	

Standard settings – Temperature controller								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
101	Temperature controller 1	Control value Heating: Send control value	1 Bit	■	■		■	
101	Temperature controller 1	Control value Heating/Cooling: Send control value	1 Byte	■	■		■	
101	Temperature controller 1	Control value Heating/Cooling: Send control value	1 Bit	■	■		■	
102	Temperature controller 1	Control value Cooling: Send control value	1 Byte	■	■		■	
102	Temperature controller 1	Control value Cooling: Send control value	1 Bit	■	■		■	
103	Temperature controller 1	Control value Heating: Send status	1 Byte	■	■		■	
103	Temperature controller 1	Control value Heating/Cooling: Send status	1 Byte	■	■		■	
104	Temperature controller 1	Control value Cooling: Send status	1 Byte	■	■		■	
105	Temperature controller 1	Additional level: Send control value Heating	1 Bit	■			■	
106	Temperature controller 1	Mode selection	1 Byte	■		■		
107	Temperature controller 1	Comfort mode: Comfort extension	1 Bit	■		■		
108	Temperature controller 1	Mode: Comfort	1 Bit	■		■		
109	Temperature controller 1	Mode: Night	1 Bit	■		■		
110	Temperature controller 1	Mode: Frost protection	1 Bit	■		■		
110	Temperature controller 1	Mode: Heat protection	1 Bit	■		■		
110	Temperature controller 1	Mode: Frost / Heat protection	1 Bit	■		■		
111	Temperature controller 1	DPT_HVAC Mode: Send controller status	1 Byte	■	■		■	
111	Temperature controller 1	DPT_HVAC Status: Send controller status	1 Byte	■	■		■	
112	Temperature controller 1	DPT_HVAC Mode: Send controller status	1 Byte	■	■		■	
112	Temperature controller 1	DPT_HVAC Status: Send controller status	1 Byte	■	■		■	
112	Temperature controller 1	RHCC Status: Send controller status	2 Byte	■	■		■	
112	Temperature controller 1	DPT_RTC combined status: Send controller status	2 Byte	■	■		■	

Standard settings – Temperature controller								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
112	Temperature controller 1	DPT_RTSM combined status: Send controller status	1 Byte	■	■		■	
113	Temperature controller 1	Send Frost alarm	1 Bit	■	■		■	
114	Temperature controller 1	Send Heat alarm	1 Bit	■	■		■	
115	Temperature controller 1	Receive flow temperature Heating	2 Byte	■		■	■	
117	Temperature controller 1	Diagnosis: Status	14 Byte	■	■		■	
118	Temperature controller 1	Window contact: 0 = closed / 1 = open	1 Bit	■		■	■	■
118	Temperature controller 1	Window contact: 1 = closed / 0 = open	1 Bit	■		■	■	■
119	Temperature controller 1	Lock object Heating: Lock control value	1 Bit	■	■	■	■	■
120	Temperature controller 1	Lock object Cooling: Lock control value	1 Bit	■	■	■	■	■
123	Temperature controller 1	Switchover: 1 = Heating / 0 = Cooling	1 Bit	■		■		
124	Temperature controller 1	Status: 1 = Heating / 0 = Cooling	1 Bit	■	■		■	
125	Temperature controller 1	Send Heating request	1 Bit	■	■		■	
126	Temperature controller 1	Send Cooling request	1 Bit	■	■		■	
127	Temperature controller 1	Receive outside temperature / reference value	2 Byte	■		■		
+39	**Temperature controller 2**							
160	Temperature controller 2	Receive external temperature	2 Byte	■		■		

Table 7: Communication objects – Standard settings: Temperature controller

Standard settings – External inputs: PT1000								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
169	Temperature measurement: PT1000	Send measured value	2 Byte	■	■		■	
170	Temperature measurement: PT1000	External sensor - Input	2 Byte	■		■	■	■
171	Temperature measurement: PT1000	Maximum value exceeded	1 Bit	■	■		■	
172	Temperature measurement: PT1000	Minimum value fallen below	1 Bit	■	■		■	
173	Temperature measurement: PT1000	Sensor error	1 Bit	■		■		

Table 8: Communication objects – Standard settings: External inputs - PT1000

Standard settings – Status elements								
No.	Name	Object function	Length	C	R	W	T	U
178	Status element 1:	Switch, Percent value, Decimal value ...	1 Bit 1 Byte 2 Byte 4 Byte 14 Byte	■	■	■	■	■
+ 1	**next Status element (... 12)**							

Table 9: Communication objects – Standard settings: Status elements

Standard settings – Functions								
No.	Name	Object function	Length	C	R	W	T	U
190	Function 1:	Switch	1 Bit	■			■	
190	Function 1:	Forcible control	2 Bit	■			■	
190	Function 1:	Percent value, Decimal value, Scene	1 Byte	■			■	
190	Function 1:	Colour temperature, Temperature value, Brightness	2 Byte	■			■	
190	Function 1:	RGB value, HSV value	3 Byte	■			■	
190	Function 1:	RGBW value	6 Byte	■			■	
190	Function 1:	Text	14 Byte	■			■	
190	Function 1:	Dimming On/Off	1 Bit	■			■	
190	Function 1:	Blinds/Shutter Up/Down	1 Bit	■			■	
190	Function 1:	Short: Shutter Up/Down/Stop	1 Bit	■			■	
190	Function 1:	Short button: Switch	1 Bit	■			■	
190	Function 1:	Short button: Forcible control	2 Bit	■			■	
190	Function 1:	Short button: Percent value, Decimal value, Scene	1 Byte	■			■	
190	Function 1:	Short button: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
190	Function 1:	Short button: RGB value, HSV value	3 Byte	■			■	
190	Function 1:	Short button: RGBW value	6 Byte	■			■	
190	Function 1:	Short button: Text	14 Byte	■			■	

Standard settings – Functions

No.	Name	Object function	Length	C	R	W	T	U
190	Function 1:	Status value 1	1 Bit 1 Byte 2 Byte 4 Byte 14 Byte	■		■	■	■
+1		**next Status value (... 4)**						
190	Function 1:	Status: LED 1	1 Bit	■		■	■	■
+1		**next LED (... 8)**						
190	Function 1:	Status: Symbol 1	1 Bit	■		■	■	■
+1		**next Symbol (... 4)**						
190	Function 1:	Mode selection (HVAC-Mode)	1 Byte	■			■	
190	Function 1:	Setpoint shift	1 Bit 1 Byte 2 Byte	■			■	
190	Function 1:	Setpoint setting	2 Byte	■			■	
190	Function 1:	Fan coil: Damper adjustment and status	1 Bit	■		■	■	■
190	Function 1:	Save scene	1 Byte	■			■	
190	Function 1:	Switch HSV	1 Bit	■			■	
190	Function 1:	Switch RGB	1 Bit	■			■	
190	Function 1:	Switch RGBW	1 Bit	■			■	
190	Function 1:	Colour control - switch	1 Bit	■			■	
190	Function 1:	Play / Pause	1 Bit	■			■	
190	Function 1:	Status: Consumption – House	2 Byte 4 Byte	■		■	■	■
191	Function 1:	Status	1 Bit	■		■	■	■
191	Function 1:	Dimming relative	4 Bit	■			■	
191	Function 1:	Status for display	1 Bit 2 Bit 1 Byte 2 Byte 3 Byte 6 Byte 14 Byte	■		■	■	■
191	Function 1:	Short button: Status for display		■		■	■	■
191	Function 1:	Long: Central Shutter Up/Down/Stop	1 Bit	■			■	

Standard settings – Functions

No.	Name	Object function	Length	C	R	W	T	U
191	Function 1:	Stop / Slats Open/Close	1 Bit	■			■	
191	Function 1:	Status: HVAC status	1 Byte	■		■	■	■
191	Function 1:	External temperature - Input	2 Byte	■		■	■	■
191	Function 1:	Fan coil: Damper adjustment - Step and status	1 Byte	■		■	■	■
191	Function 1:	Hue (H), dimming relative	4 Bit	■			■	
191	Function 1:	Red, dimming relative	4 Bit	■			■	
191	Function 1:	Colour temperature - dimming relative	4 Bit	■			■	
191	Function 1:	Status: Play / Pause	1 Bit	■		■	■	■
191	Function 1:	HSV Status: On/Off	1 Bit	■		■	■	■
191	Function 1:	RGB Status: On/Off	1 Bit	■		■	■	■
191	Function 1:	RGBW Status: On/Off	1 Bit	■		■	■	■
191	Function 1:	Status: Current grid consumption	2 Byte 4 Byte	■		■	■	■
192	Function 1:	Absolute dimming	1 Byte	■			■	
192	Function 1:	Status for change of direction	1 Bit	■			■	
192	Function 1:	Group long: Switch	1 Bit	■			■	
192	Function 1:	Group long: Forcible control	2 Bit	■			■	
192	Function 1:	Group long: Percent value, Decimal value, Scene	1 Byte	■			■	
192	Function 1:	Group long: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
192	Function 1:	Group long: RGB value, HSV value	3 Byte	■			■	
192	Function 1:	Group long: RGBW value	6 Byte	■			■	
192	Function 1:	Group long: Text	14 Byte	■			■	
192	Function 1:	Long button: Switch	1 Bit	■			■	
192	Function 1:	Long button: Forcible control	2 Bit	■			■	
192	Function 1:	Long button: Percent value, Decimal value, Scene	1 Byte	■			■	
192	Function 1:	Long button: Colour temperature, Temperature value, Brightness	2 Byte	■			■	

Standard settings – Functions

No.	Name	Object function	Length	C	R	W	T	U
192	Function 1:	Long button: RGB value, HSV value	3 Byte	■			■	
192	Function 1:	Long button: RGBW value	6 Byte	■			■	
192	Function 1:	Long button: Text	14 Byte	■			■	
192	Function 1:	Status: Current setpoint	2 Byte	■		■	■	■
192	Function 1:	Saturation (S) - dimming relative	4 Bit	■			■	
192	Function 1:	Green - dimming relative	4 Bit	■			■	
192	Function 1:	Brightness - dimming relative	4 Bit	■			■	
192	Function 1:	Stop	1 Bit	■			■	
192	Function 1:	HSV colour setting	3 Byte	■			■	
192	Function 1:	RGB colour setting	3 Byte	■			■	
192	Function 1:	RGBW colour setting	6 Byte	■			■	
192	Function 1:	Hue (H) - absolute	1 Byte	■			■	
192	Function 1:	Red (R) - absolute	1 Byte	■			■	
192	Function 1:	Red (R) - absolute and status	1 Byte	■		■	■	■
192	Function 1:	Status: Grid consumption/feed-in	2 Byte 4 Byte	■		■	■	■
193	Function 1:	Status for toggle	1 Bit	■		■	■	■
193	Function 1:	Status: Absolute height position	1 Byte	■		■	■	■
193	Function 1:	Fan coil step: Setting and status	1 Byte	■		■	■	■
193	Function 1:	Group extra long: Switch	1 Bit	■			■	
193	Function 1:	Extra long group: Forcible control	2 Bit	■			■	
193	Function 1:	Group extra long: Percent value, Decimal value, Scene	1 Byte	■			■	
193	Function 1:	Group extra long: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
193	Function 1:	Group extra long: RGB value, HSV value	3 Byte	■			■	
193	Function 1:	Group extra long: RGBW value	6 Byte	■			■	
193	Function 1:	Group extra long: Text	14 Byte	■			■	

Standard settings – Functions								
No.	Name	Object function	Length	C	R	W	T	U
193	Function 1:	Long button: Status for display	1 Bit 2 Bit 1 Byte 2 Byte 3 Byte 6 Byte 14 Byte	■		■	■	■
193	Function 1:	Status: Setpoint shift	1 Byte 2 Byte	■		■	■	■
193	Function 1:	Brightness (V) - dimming relative	4 Bit	■			■	
193	Function 1:	Blue - dimming relative	4 Bit	■			■	
193	Function 1:	Brightness - Colour temperature transition	6 Byte	■			■	
193	Function 1:	Colour temperature (proportion in %) - absolute	1 Byte	■			■	
193	Function 1:	Colour temperature (K) - absolute	2 Byte	■			■	
193	Function 1:	Status: Stop	1 Bit	■		■	■	■
193	Function 1:	HSV status	3 Byte	■		■	■	■
193	Function 1:	RGB status	3 Byte	■		■	■	■
193	Function 1:	RGBW status	6 Byte	■		■	■	■
193	Function 1:	Hue (H) - Status	1 Byte	■		■	■	■
193	Function 1:	Red (R) - Status	1 Byte	■		■	■	■
193	Function 1:	Green (G) - absolute and status	1 Byte	■		■	■	■
193	Function 1:	Status: Current power, PV	2 Byte 4 Byte	■		■	■	■
194	Function 1:	Status: Dimming value for display	1 Byte	■		■	■	■
194	Function 1:	Absolute height position	1 Byte	■			■	
194	Function 1:	Extra long: Blinds/Shutter Up/Down	1 Bit	■			■	
194	Function 1:	2. Object: Switch	1 Bit	■			■	
194	Function 1:	2. Object: Forcible control	2 Bit	■			■	
194	Function 1:	2nd object: Percent value, Decimal value, Scene	1 Byte	■			■	
194	Function 1:	2. Object: Colour temperature, Temperature value, Brightness	2 Byte	■			■	

Standard settings – Functions								
No.	Name	Object function	Length	C	R	W	T	U
194	Function 1:	2. Object: RGB value, HSV value	3 Byte	■			■	
194	Function 1:	2. Object: RGBW value	6 Byte	■			■	
194	Function 1:	2. Object: Text	14 Byte	■			■	
194	Function 1:	Additional status	1 Bit 1 Byte	■		■	■	■
194	Function 1:	Mode selection (HVAC-Mode)	1 Byte	■			■	
194	Function 1:	HSV colour setting	3 Byte	■			■	
194	Function 1:	RGB colour setting	3 Byte	■			■	
194	Function 1:	White - dimming relative	4 Bit	■			■	
194	Function 1:	Status: Colour temperature (K)	2 Byte	■		■	■	■
194	Function 1:	Absolute brightness	1 Byte	■			■	
194	Function 1:	Volume control	1 Bit 1 Byte	■			■	
194	Function 1:	Controller On/Off	1 Bit	■			■	
194	Function 1:	Saturation (S) - absolute	1 Byte	■			■	
194	Function 1:	Green (G) - absolute	1 Byte	■			■	
194	Function 1:	Blue (B) - absolute and status	1 Byte	■		■	■	■
195	Function 1:	Extra long: Stop / Slats Open/Close	1 Bit	■			■	
194	Function 1:	Status: Daily total, PV	4 Byte	■		■	■	■
195	Function 1:	Status: Absolute position of slats	1 Byte	■		■	■	■
195	Function 1:	Status: HVAC status	1 Byte	■		■	■	■
195	Function 1:	Status: Controller On/Off	1 Bit	■		■	■	■
195	Function 1:	HSV status	3 Byte	■		■	■	■
195	Function 1:	RGB status	3 Byte	■		■	■	■
195	Function 1:	RGBW colour setting	6 Byte	■			■	
195	Function 1:	Brightness - Status: Dimming value	1 Byte	■		■	■	■
195	Function 1:	Status: Colour temperature (K)	2 Byte	■		■	■	■
195	Function 1:	Status: Volume	1 Byte	■		■	■	■
195	Function 1:	Saturation (S) - Status	1 Byte	■		■	■	■
195	Function 1:	Green (G), status	1 Byte	■		■	■	■

Standard settings – Functions								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
195	Function 1:	White (W) - absolute and status	1 Byte	■		■	■	■
195	Function 1:	Status: Current power, Wallbox	2 Byte 4 Byte	■		■	■	■
196	Function 1:	Absolute position of slats	1 Byte	■			■	
196	Function 1:	Fan coil: Auto/Manual and status	1 Bit	■		■	■	■
196	Function 1:	Additional status	1 Bit 1 Byte	■		■	■	■
196	Function 1:	HSV Status: On/Off	1 Bit	■		■	■	■
196	Function 1:	RGB Status: On/Off	1 Bit	■		■	■	■
196	Function 1:	RGBW status	6 Byte	■		■	■	■
196	Function 1:	Colour temperature - Status: On/Off	1 Bit	■		■	■	■
196	Function 1:	Brightness - Status: Dimming value	1 Byte	■		■	■	■
196	Function 1:	Playlist	1 Bit 1 Byte	■			■	
196	Function 1:	Brightness (V) - absolute	1 Byte	■			■	
196	Function 1:	Blue (B) - absolute	1 Byte	■			■	
196	Function 1:	Status: Daily total, Wallbox	4 Byte	■		■	■	■
197	Function 1:	Switchover: Heating / Cooling	1 Bit	■			■	
197	Function 1:	RGBW Status: On/Off	1 Bit	■		■	■	■
197	Function 1:	Status: Playlist	1 Byte 14 Byte	■		■	■	■
197	Function 1:	Brightness (V) - Status	1 Byte	■		■	■	■
197	Function 1:	Blue (B) - Status	1 Byte	■		■	■	■
197	Function 1:	Status: Current power, Battery	2 Byte 4 Byte	■		■	■	■
198	Function 1:	Status: Heating / Cooling	1 Bit	■		■	■	■
198	Function 1:	Text (via 14 byte object)	14 Byte	■		■	■	■
198	Function 1:	Status: Battery charge level	1 Byte	■		■	■	■
199	Function 1:	Lock object	1 Bit	■		■	■	■
199	Function 1:	Function name	14 Byte	■		■	■	■
+10	**next Function (... 64)**							

Table 10: Communication objects – Standard settings: Functions

Standard settings – Slap function

No.	Name	Object function	Length	C	R	W	T	U
830	Slap function:	Switch, Forcible control, Percent value, Decimal value, Scene ...	1 Bit 2 Bit 1 Byte 2 Byte 3 Byte 6 Byte 14 Byte	■			■	
831	Slap function:	Status	1 Bit	■		■	■	■
839	Slap function:	Lock object	1 Bit	■		■	■	■

Table 11: Communication objects – Standard settings: Slap function

Standard settings – External inputs

No.	Name	Object function	Length	C	R	W	T	U
840	Input 1: Inputs 1 / 2:	Switch	1 Bit	■			■	
840	Input 1:	Send state	1 Bit	■			■	
840	Input 1: Inputs 1 / 2:	Forcible control	2 Bit	■			■	
840	Input 1: Inputs 1 / 2:	Percent value, Decimal value, Scene	1 Byte	■			■	
840	Input 1:	Save scene	1 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Colour temperature, Temperature value, Brightness	2 Byte	■			■	
840	Input 1: Inputs 1 / 2:	RGB value, HSV value	3 Byte	■			■	
840	Input 1: Inputs 1 / 2:	RGBW value	6 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Text	14 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Dimming On/Off	1 Bit	■			■	
840	Input 1: Inputs 1 / 2:	Blinds/Shutter Up/Down	1 Bit	■			■	

Standard settings – External inputs								
No.	Name	Object function	Length	C	R	W	T	U
840	Input 1: Inputs 1 / 2:	Short button: Switch	1 Bit	■			■	
840	Input 1: Inputs 1 / 2:	Short button: Forcible control	2 Bit	■			■	
840	Input 1: Inputs 1 / 2:	Short button: Percent value, Decimal value, Scene	1 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Short button: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Short button: RGB value, HSV value	3 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Short button: RGBW value	6 Byte	■			■	
840	Input 1: Inputs 1 / 2:	Short button: Text	14 Byte	■			■	
840	Inputs 1 / 2:	Short: Shutter Up/Down/Stop	1 Bit	■			■	
841	Input 1:	Status	1 Bit	■		■	■	■
841	Inputs 1 / 2:	Long: Central Shutter Up/Down/Stop	1 Bit	■			■	
841	Input 1: Inputs 1 / 2:	Dimming relative	4 Bit	■			■	
841	Input 1: Inputs 1 / 2:	Stop / Slats Open/Close	1 Bit	■			■	
841	Input 1: Inputs 1 / 2:	Short button: Status for toggle	1 Bit	■		■	■	■
842	Input 1:	2. Object: Send state	1 Bit	■			■	
842	Input 1:	Status for change of direction	1 Bit	■			■	
842	Input 1: Inputs 1 / 2:	Long button: Switch	1 Bit	■			■	
842	Input 1: Inputs 1 / 2:	Long button: Forcible control	2 Bit	■			■	
842	Input 1: Inputs 1 / 2:	Long button: Percent value, Decimal value, Scene	1 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Long button: Colour temperature, Temperature value, Brightness	2 Byte	■			■	

Standard settings – External inputs

No.	Name	Object function	Length	C	R	W	T	U
842	Input 1: Inputs 1 / 2:	Long button: RGB value, HSV value	3 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Long button: RGBW value	6 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Long button: Text	14 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Group long: Switch	1 Bit	■			■	
842	Input 1: Inputs 1 / 2:	Group long: Forcible control	2 Bit	■			■	
842	Input 1: Inputs 1 / 2:	Group long: Percent value, Decimal value, Scene	1 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Group long: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Group long: RGB value, HSV value	3 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Group long: RGBW value	6 Byte	■			■	
842	Input 1: Inputs 1 / 2:	Group long: Text	14 Byte	■			■	
843	Input 1: Inputs 1 / 2:	Status for toggle	1 Bit	■		■	■	■
843	Input 1: Inputs 1 / 2:	Long button: Status for toggle	1 Bit	■		■	■	■
843	Inputs 1 / 2:	Status: Absolute height position	1 Byte	■		■	■	■
843	Input 1: Inputs 1 / 2:	Group extra long: Switch	1 Bit	■			■	
843	Input 1: Inputs 1 / 2:	Extra long group: Forcible control	2 Bit	■			■	
843	Input 1: Inputs 1 / 2:	Group extra long: Percent value, Decimal value, Scene	1 Byte	■			■	
843	Input 1: Inputs 1 / 2:	Group extra long: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
843	Input 1: Inputs 1 / 2:	Group extra long: RGB value, HSV value	3 Byte	■			■	

Standard settings – External inputs								
No.	Name	Object function	Length	C	R	W	T	U
843	Input 1: Inputs 1 / 2:	Group extra long: RGBW value	6 Byte	■			■	
843	Input 1: Inputs 1 / 2:	Group extra long: Text	14 Byte	■			■	
844	Inputs 1 / 2:	Status: Dimming value for display	1 Byte	■		■	■	■
844	Input 1: Inputs 1 / 2:	Extra long: Blinds/Shutter Up/Down	1 Bit	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: Switch	1 Bit	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: Forcible control	2 Bit	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: Percent value, Decimal value, Scene	1 Byte	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: Colour temperature, Temperature value, Brightness	2 Byte	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: RGB value, HSV value	3 Byte	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: RGBW value	6 Byte	■			■	
844	Input 1: Inputs 1 / 2:	2. Object: Text	14 Byte	■			■	
845	Input 1: Inputs 1 / 2:	Extra long: Stop / Slats Open/Close	1 Bit	■			■	
849	Input 1: Inputs 1 / 2:	Lock object	1 Bit	■		■	■	■
+10	**Input 2**							

Table 12: Communication objects – Standard settings: External inputs

Standard settings – Universal Logic

No.	Name	Object function	Length	C	R	W	T	U
860	Logic 1:	Universal logic: Input 1	1 Bit 2 Bit 1 Byte 2 Byte 4 Byte	■		■	■	■
861	Logic 1:	Universal logic: Input 1 - comparative value		■		■	■	■
862	Logic 1:	Universal logic: Input 2		■		■	■	■
863	Logic 1:	Universal logic: Input 2 - comparative value		■		■	■	■
864	Logic 1:	Universal logic: Input 3	1 Bit 1 Byte	■		■	■	■
865	Logic 1:	Universal logic: Input 4	1 Bit 1 Byte	■		■	■	■
866	Logic 1:	Universal logic: Input 5	1 Bit 1 Byte	■		■	■	■
868	Logic 1:	Universal logic: Lock	1 Bit	■		■		
868	Logic 1:	Universal logic: Release	1 Bit	■		■		
869	Logic 1:	Universal logic: Output	1 Bit 1 Byte	■	■		■	
+ 10	**next Logic**							

Table 13: Communication objects – Standard settings: Universal Logic

Standard settings – Logic gate / Inverter

No.	Name	Object function	Length	C	R	W	T	U
860	Logic 1:	Logic: Input 1	1 Bit	■		■	■	■
+ 1	**next Logic input (... 8)**							
860	Logic 1:	Inverter: Input 1	1 Bit	■		■	■	■
861	Logic 1:	Inverter: Output 1	1 Bit	■	■		■	
+ 1	**next Inverter (... 4)**							
868	Logic 1:	Logic: Lock	1 Bit	■		■		
868	Logic 1:	Logic: Release	1 Bit	■		■		
869	Logic 1:	Logic: Output	1 Bit 1 Byte	■	■		■	
+10	**next Logic**							

Table 14: Communication objects – Standard settings: Logic gate / Inverter

Standard settings – Time switch

No.	Name	Object function	Length	C	R	W	T	U
General objects								
945	Time switch	Sunrise - Output	1 Bit	■	■		■	
946	Time switch	Sunset - Output	1 Bit	■	■		■	
947	Time switch	Dusk - Output	1 Bit	■	■		■	
948	Time switch	Day/Night - Output	1 Bit	■	■		■	
1039	Time switch	Central lock	1 Bit	■		■		
1040	Time switch	Status: Central lock	1 Bit	■	■		■	
1041	Time switch	Holiday: Switch	1 Bit	■		■		
1041	Time switch	Holiday: Number of days	1 Byte	■		■		
1042	Time switch	Holiday: Status	1 Bit	■	■		■	
1042	Time switch	Holiday: Status (duration in days)	1 Byte	■	■		■	
1043	Time switch	Public holiday: Activation (for external logic)	1 Bit	■		■		
1044	Time switch	Public holiday: Status	1 Bit	■	■		■	
1046	VisuControl Easy II Interface	Input/Output	14 Byte	■	■	■	■	■
Functions								
955	Time switch F1:	Shutter Up/Down	1 Bit	■			■	
955	Time switch F1:	Blinds Up/Down	1 Bit	■			■	
955	Time switch F1:	Dimming On/Off	1 Bit	■			■	
956	Time switch F1:	Switch	1 Bit	■			■	
956	Time switch F1:	Forcible control	2 Bit	■			■	
956	Time switch F1:	Percent value, Decimal value, Scene	1 Byte	■			■	
956	Time switch F1:	Colour temperature, Temperature value, Brightness	2 Byte	■			■	
956	Time switch F1:	Setpoint shift	1 Byte 2 Byte	■			■	
956	Time switch F1:	Mode selection (HVAC-Mode)	1 Byte	■			■	
956	Time switch F1:	Absolute height position	1 Byte	■			■	
956	Time switch F1:	Dimming absolute	1 Byte	■			■	
957	Time switch F1:	Status: Dimming value	1 Byte	■		■	■	■

Standard settings – Time switch								
No.	**Name**	**Object function**	**Length**	**C**	**R**	**W**	**T**	**U**
957	Time switch F1:	Status: Absolute height position	1 Byte	■		■	■	■
957	Time switch F1:	Status for display	1 Bit 2 Bit 1 Byte 2 Byte	■		■	■	■
958	Time switch F1:	Absolute position of slats	1 Byte	■			■	
959	Time switch F1:	Status: Absolute position of slats	1 Byte	■		■	■	■
960	Time switch F1:	Input for threshold comparator	1 Byte 2 Byte 4 Byte	■		■		
960	Time switch F1:	Lock	1 Bit	■		■		
960	Time switch F1:	Release	1 Bit	■		■		
961	Time switch F1:	Status: Lock	1 Bit	■	■		■	
+7	**next Function**							

Table 15: Communication objects – Standard settings: Time switch

The preset standard settings can be taken from the tables. The priority of the individual communication objects, as well as the flags, can be adjusted by the user as required. The flags assign each communication object its respectiThe preset default settings of the communication objects can be taken from the respective tables. The priority of the individual communication objects, as well as the flags, can be adjusted by the user as required. The flags assign their respective function in programming to the communication objects: C stands for communication, R for reading, W for writing, T for transmit, and U for updating.

4 ETS Parameters

4.1 Device configuration

4.1.1 Device selection

Before configuration, the device type must first be selected. This adapts the database to the corresponding device.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Device selection	■ Glass Touch Smart (BE-GTS06TX.01S) ■ **Glass Touch Smart Plus (BE-GTSP6TX.01S)**	Selection of the device to be configured next.

Table 16: Settings – Device selection

4.1.2 General settings

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Basic setting		
Startup time	00:02 ... 04:00 mm:ss **[00:02]**	Setting the time between restart and functional start-up of the device.
Send "In operation" cyclically	■ **not active** ■ active	Setting whether an "In operation" telegram should be sent.
Cycle time	00:01 ... 24:00 hh:mm **[00:02]**	Setting for the interval at which the telegrams should be sent.
Value for Day/Night	■ “Day” = 1 / “Night” = 0 ■ **"Day" = 0 / "Night" = 1**	Setting the polarity, with which value the "Day" or "Night" mode is activated.
Behaviour after restart	■ **“Day”** ■ “Night”	Setting for which mode the device is in after a restart.
Behaviour after programming	■ load parameter values ■ **restore device settings**	Setting for how the button should behave after programming.
Time for long keypress	0.1 – 30 s **[0.6 s]**	Setting for when a long keypress is recognised.

ETS text	Value range **[Default value]**	Comment
Time for extra long keypress	0.1 – 30 s **[1.5 s]**	Setting for when an extra-long keypress is recognised.
Behaviour after bus power return		
Status for toggle	■ no request ■ **request**	Setting to determine whether the objects/values should be queried automatically when the bus voltage returns.
Day/Night object	■ no request ■ **request**	
Date / Time	■ no request ■ **request**	
Object for external display brightness	■ no request ■ **request**	
Status elements	■ no request ■ **request**	
Values for Ambient lighting	■ no request ■ **request**	
Diagnosis objects (for service purposes)	■ not active ■ **active**	Activation of 2 diagnosis objects. These are for service purposes only!

Table 17: General settings

Startup time
This time defines when the device "boots up" after a restart (reset, reprogramming, bus voltage return). This can be important, for example, if a bus reset is performed. If there are many devices on one line, all devices would start simultaneously and load the bus. With a variable time, the devices can start at different times.

"In operation"
The "in operation" object is used to show on the bus that the device is "alive". When activated, an ON telegram is sent cyclically at the set interval.

Behaviour after restart
This determines whether the device is in "Day" or "Night" mode after a restart.

Important: This setting only applies as long as no value has been received via the Day/Night object. If this is the case, the received object value applies.

If the set value should remain valid, the parameter "Day/Night object" (see "Behaviour on bus voltage return") must be set to "no request".

Behaviour after programming
This determines whether, after reprogramming the device, the values from the ETS (parameter values) are loaded or the current device settings (settings page) are restored.

Diagnosis objects
When activated, 2 objects appear (14 Byte, Diagnosis 1 + 2).

Important: These objects have no effect on general function and are for service purposes only (when the customer contacts MDT support).

Note: The objects for time and date (send or receive) depend on the setting of the Time switch, whether it is configured as "Master" or "Slave".

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
1	In operation – Output	1 Bit	Sending a cyclical "In operation" telegram.
2	Day/Night – Day = 0 / Night = 1; Day = 1 / Night = 0	1 Bit	Receiving a value, whether "Day" or "Night"
3	Time – Receive current value	3 Byte	Receipt of the time.
3	Time – Send current value	3 Byte	Sending the time.
4	Date – Receive current value	3 Byte	Receipt of the date.
4	Date – Send current value	3 Byte	Sending the date.
5	Time/Date – Receive current values	8 Byte	Receipt of the values for time and date.
5	Time/Date – Send current values	8 Byte	Sending the values for time and date.
11	Diagnosis 1	14 Byte	Sending a diagnosis text (for service purposes)
12	Diagnosis 2	14 Byte	Sending a diagnosis text (for service purposes)

Table 18: General communication objects

4.1.3 Code lock

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Code lock: User 1 (... 4)	■ **not active** ■ active	Activation of the respective Code lock. **Numbering 1 ... 4 only for the "Plus" variant.**
☐ ☐ ☐ ☐	0 ... 9 **[0]**	For each activated Code lock, an individual 4-digit code can be entered.
Reset code lock input	■ **after change to Standby** ■ after time ■ after page change ■ via object ■ after display switch-off	Setting when and how the input should be reset.
Time	00:01 ... 05:00 mm:ss **[00:10]**	Setting a time after which the input is reset. **When resetting "after time".**

Table 19: Settings – Code Lock

Code lock: User
With the basic device (BE-GTS**0**6Tx.01S), only one code lock user can be activated.
With the "Plus" variant (BE-GTS**P**6Tx.01S), up to 4 users can be activated.

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
10	Code lock – Reset	1 Bit	Resetting the code lock. When resetting via "object".

Table 20: Communication objects – Code Lock

4.1.4 Display settings

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Display orientation	■ **vertical** ■ horizontal	Setting whether the display is used in portrait or landscape format.
Behaviour when presence = 1	■ no action ■ **switch on display**	Setting the action to be performed when a "1" is received on the "Presence" object.
Page after presence	■ **Standby** ■ Page 1 ... ■ Page 13 ■ only switch on	Action to be performed with a "1" on the presence object. **For behaviour "switch on display"**
Behaviour when presence = 0	■ **no action** ■ switch off display	Setting the action to be performed when a "0" is received on the "Presence" object.
Brightness control	■ not active ■ **via internal sensor** ■ via external brightness value	Setting whether the control should be managed by the internal sensor or via an external value (via object).
Brightness control "not active". The following applies for [Standard settings]: For 2 values, the first value is for "Day", the second for "Night".		
Brightness value	■ **via fixed values** ■ via 1 Byte object “Brightness - Input”	Selection of how the brightness is set.
Brightness "Day" / "Night"	0 ... 100 % **[100 %]** **[10 %]**	Definition of the brightness for the respective operation. **With "via fixed values".**
Minimum brightness "Day" / "Night"	0 ... 100 % **[10]** **[5]**	Definition of the brightness limits for the respective operation. **With "via 1 Byte object "Brightness - Input".**
Maximum brightness "Day" / "Night"	0 ... 100 % **[100]** **[70]**	
Control speed of display brightness	■ slow ■ medium ■ fast ■ **very fast** ■ direct	Setting how quickly the brightness should be adjusted. **With "via 1 Byte object "Brightness - Input".**

ETS text	Value range **[Default value]**	Comment
Brightness control "with internal sensor". **Setting "Day"** and **"Night"** are the same. They only differ in the [Standard settings]		
Send brightness via object	■ **not active** ■ active	Setting whether the brightness value should be sent.
Adjust display brightness to surroundings	Brightness level 1 – 10 **[Brightness level 8]**	Setting the basic brightness of the display
Control speed of display brightness	■ slow ■ **medium** ■ fast	Setting how quickly the brightness should be adjusted.
Short-term info	■ **not active** ■ active	Activation of the function.
Display time	00:01 ... 04:00 mm:ss **[00:20]**	Time for which the display is activated for a short-term info.
Minimum brightness "Day" / "Night"	0 ... 100 % **[10]** **[5]**	Definition of the limit values for the respective operation. The first Default value applies to "Day". The second Default value applies to "Night".
Maximum brightness "Day" / "Night"	0 ... 100 % **[100]** **[70]**	
Switch-off threshold	■ not active ■ threshold 1 (very dark) ■ **threshold 2 (dark)** ■ threshold 3 (moderately dark)	Definition of the threshold for switching off in the respective operation.
Brightness control "via external brightness value". **Settings "Day"** and **Settings "Night"** are the same. They only differ in the [Default value]. In this case (with 2 values), the first Default value applies to "Day", the second to "Night".		
Minimum/Maximum display brightness	■ **do not consider** ■ consider	Setting whether the display brightness should have an effect.
Control speed of display brightness	■ slow ■ **medium** ■ fast	Setting how quickly the brightness should be adjusted.
Short-term info	■ **not active** ■ active	Activation of the function.
Display time	00:01 ... 04:00 mm:ss **[00:20]**	Time for which the display is activated for a short-term info.

ETS text	Value range **[Default value]**	Comment
Minimum brightness "Day" / "Night"	0 … 100 % **[10]** **[5]**	Definition of the limit values for the respective operation. **For "Minimum/Maximum display brightness" → "consider"**
Maximum brightness "Day" / "Night"	0 … 100 % **[100]** **[70]**	
Value for display switch-off	0 … 65535 Lux **[100]** **[10]**	Value below which the display will be switched off.
Maximum display brightness	0 … 65535 Lux **[500]** **[50]**	Value at which the display reaches its maximum brightness.
Settings **Display behaviour "Day"** and **Display behaviour "Night"** are the same.		
Start page	▪ not active ▪ **Standby** ▪ Page 1 … ▪ Page 13	Setting which page should be active after the last operation.
Time until switch to start page	00:00:01 … 05:00 mm:ss **[00:00:20]**	Setting the time after which (following the last operation) the selected page is switched to.
Display switch-off	▪ **not active** ▪ active	Setting whether the display switches off completely after the last operation.
Time until switch-off	00:05 … 02:00:00 hh:mm:ss **[00:02:00]**	Setting the time after which the display switches off completely.

Table 21: Settings – Display settings

Display orientation
Important: When switching between "vertical" and "horizontal", the DCA configuration is reset if it was previously transferred.

Brightness control
The display brightness and behaviour can be controlled in 3 different ways – separately for "Day" and "Night":

- "**not active**": The brightness is either set to a fixed value via a parameter, or a fixed brightness value (in %) is received via the 1 Byte object "Display – Brightness - Input". In the second case, the minimum/ maximum possible brightness can also be limited.

- **"via internal sensor":** The device has an internal brightness sensor and can dynamically adjust the display brightness to the surroundings. The "brightness level" influences the dimming behaviour and the threshold from which the display is dimmed. The parameters for minimum and maximum brightness define the thresholds up to which the display can be dimmed. The switch-off threshold defines the brightness at which the display switches off completely.
- **"via external brightness value":** A brightness value (in Lux) is received via the 2 Byte object "Display – Brightness - Input". In the settings for "Day" and "Night", a value can be defined below which the display switches off or the maximum brightness is determined. If the parameter "Minimum/Maximum display brightness" is set to "consider", additional values for the minimum/maximum brightness for the respective operation can be defined.
- **Note:** The brightness can be defined via an object to synchronise several displays.

Short-term info

By briefly touching the display, it can be temporarily activated for a definable period. This allows, for example, the time to be displayed at night without permanently activating the display. After the time has elapsed, the display switches off again.

Display behaviour

"Start page" defines which page should be active after the last operation of the device. The "Time until switch to start page" defines when the switch occurs. By activating "Display switch-off", a time can be defined after which the display switches off completely following the last operation.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
7	Display – Brightness - Input	2 Byte	Receiving a brightness value (in Lux).
7	Display – Brightness - Input	1 Byte	Receiving a brightness value (in %).
8	Display – Brightness - Output	1 Byte	Sending a brightness value (in %).
9	Presence – Input	1 Bit	Input for presence/motion.

Table 22: Communication objects – Display settings

4.1.5 Touch settings

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Swipe gestures	■ not active ■ **1 finger mode** ■ 2 finger mode ■ 1 finger from edge	Setting whether and to which touch the touch display should respond for page switching.
Reaction to "Touch"	■ fast ■ **medium** ■ slow	Time at which the display responds to a touch.
Display touch operation by darkening the button in "Day" / "Night" mode	■ 0 % (no transparency) ■ 10 % … ■ **50 %** … ■ 100 % (do not display tile)	Setting a darkening effect that activates when switch area is touched.
Colour for Touch-display "Day" / "Night"	■ free setting ■ **defined values**	Setting how the colour is defined.
value	#000000 … #FFFFFF ▦ **[#000000]** **[#949294]**	Definition as a free value. **When "free setting" is selected.**
value	any colour according to the list in the dropdown **[Black]** **[Grey]**	Specification as defined colour. **When "defined values" is selected.**
Page view when swiping		
from top edge downwards	■ **not active** ■ Standby ■ Page 1 … ■ Page 13 ■ **Settings page**	Setting the page to be activated when swiping across the display from top to bottom or from bottom to top.
from bottom edge upwards		

Table 23: Settings – Touch settings

The touch display responds to touches (swipe gestures). You can define how many fingers are used, in which direction the swipe is performed, and how quickly the display reacts to touch. To see whether the touch has been detected, a darkening effect can be set during the touch. Additionally, the display can be made visible in colour. Furthermore, swiping from top to bottom or from bottom to top can each activate a specific page.

Note: Only pages that are active can be accessed.

4.1.6 Tile colours

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Transparency		
Value for "Day" / "Night"	■ 0 % (no transparency) ■ **10 %** ... ■ 50 % ... ■ 100 % (do not display tile)	Setting the value for the transparency.
Tile colours: Standard		
Colour "Day" / "Night"	■ free setting ■ **defined values**	Setting how the colour is defined.
Value	#000000 ... #FFFFFF ▦ **[#C5C2C5]** **[#191819]**	Definition as a free value. **When "free setting" is selected.** **1. Default value for "Day".** **2. Default value for "Night".**
Value	any colour according to the list in the dropdown **[MDT-Grey]** **[MDT-Black]**	Specification as defined colour. **When "defined values" is selected.** **1. Default value for "Day".** **2. Default value for "Night".**
Tile colours: Individual 1 / Individual 2		
Colour "Day"	#000000 ... #FFFFFF ▦ **[#1B191B]** **[#FFFFFF]**	Specification of the colour for Day mode. **1. Default value for "Individual 1".** **2. Default value for "Individual 2".**
Colour "Night"	#000000 ... #FFFFFF ▦ **[#1B191B]** **[#FFFFFF]**	Specification of the colour for Night mode. **1. Default value for "Individual 1".** **2. Default value for "Individual 2".**

Table 24: Settings – Tile colours

Transparency
This is where the transparency of the tile background is set.

- **0 %:** No transparency, so the tile is opaque in front of the screen background.
- **10 % - 90 %:** As the percentage increases, the transparency of the tile background increases.
- **100 %:** Corresponds to full transparency, the tile has no background.

Tile colours

Here, 2 individual colours can be defined. These can then be used in the tables for the "Standby page", the normal "Page" and the "Settings page".

4.1.7 Standard values

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Standard settings for "Day" and "Night" are the same. The only difference is the different default values for the colours.		
Colour: Function name	■ free setting ■ **defined values**	Setting how the colour is defined.
Colour: Symbols / Values / Status values / Buttons	■ free setting ■ **defined values**	Setting how the colour is defined.
Background	■ **only background colour** ■ background image 1 (Day) ■ background image 2 (Night)	Setting how the background is defined.
Colour	■ free setting ■ **defined values**	Setting how the colour is defined. **When "only background colour" is selected.**
Background colour for active pop-up	■ free setting ■ **defined values**	Setting how the colour is defined.
Value	#000000 … #FFFFFF ▦ **[Default value varies according to the parameter]**	Definition as a free value. **Applies to all previous parameters when "free setting" is selected.**
Value	any colour according to the list in the dropdown **[Default value varies according to the parameter]**	Specification as defined colour. **Applies to all previous parameters when "defined values" is selected.**
Individual colours		
Individual colour 1 – 5	#000000 … #FFFFFF ▦ **[Default value varies according to the individual colour]**	Specification of the respective colour.

Table 25: Settings – Standard values

In this menu, the general colour settings for texts, symbols, values or background are defined. In addition, up to 5 individual colours can be set via their own colour field.

4.2 Standby / Status elements

Up to 12 different status values can be displayed via the Standby page. These are individually defined as their respective status element.

4.2.1 Standby configuration

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Standby page	■ not active ■ **active**	Activation of the Standby page.
Standby page for "Day" / "Night"	■ **equal** ■ different	Setting how the presentation of the pages should behave for Day and Night operation.
Settings (when "same") **Settings "Day" / "Night"** (when "different") The first [Default value] applies to "Day", the second value applies to "Night".		
Individual colour settings	☐	By activating via ☑, additional parameters are displayed.
Background	■ **only background colour** ■ background image 1 (Day) ■ background image 2 (Night)	Setting the background display during Standby. **Active with "Individual settings".**
Background colour	■ free setting ■ **defined values**	Setting how the colour is defined. **With "only background colour".**
Value	#000000 ... #FFFFFF ▦ **[#D6D2D6]** **[#191819]**	Definition as a free value. **When "free setting" is selected.**
Value	any colour according to the list in the dropdown **[Light grey]** **[MDT black]**	Specification as defined colour. **When selecting "defined values".**
Brightness settings	■ **apply from "Display settings" menu** ■ individual	Specification of how the brightness settings are defined.
Minimum brightness	0 % – 100 % **[20]**	Setting the minimum brightness. **With selection "individual".**
Maximum brightness	0 % – 100 % **[100]**	Setting the maximum brightness. **With selection "individual".**

ETS text	Value range **[Default value]**	Comment
Jump from Standby page by tapping	▪ **not active** ▪ active	Activation of the function.
to page	1 ... 10 **[1]**	Specification of the page to which should be switched from the Standby page. **The number of selectable pages [Dynamic range] is determined by the number of activated pages in the "Page configuration" menu.**
Number: Status elements	1 ... 12 **[1]**	Setting how many status elements are activated. **A separate menu for configuration appears for each element.**

Table 26: Settings – Standby configuration

In the "**Standby configuration**" menu, the "**Standby page**" is set for appearance and presentation. On this page, up to 12 status elements can then be displayed according to the selected template.

Standby page for "Day" / "Night"
If "**equal**" is selected, only one "Settings" block appears. If "**different**" is selected, two blocks appear, namely "Settings 'Day'" and "Settings 'Night'". The parameters are the same, but they differ due to the different [Default values].

Note: If the Standby page is not active, no status elements are displayed in the menu tree.

Jump from Standby page by tapping
If the device is in Standby mode, a light tap on the display surface triggers a pulse and switches to the specified page.

4.2.1.1 Standby page

The following table shows the available settings:

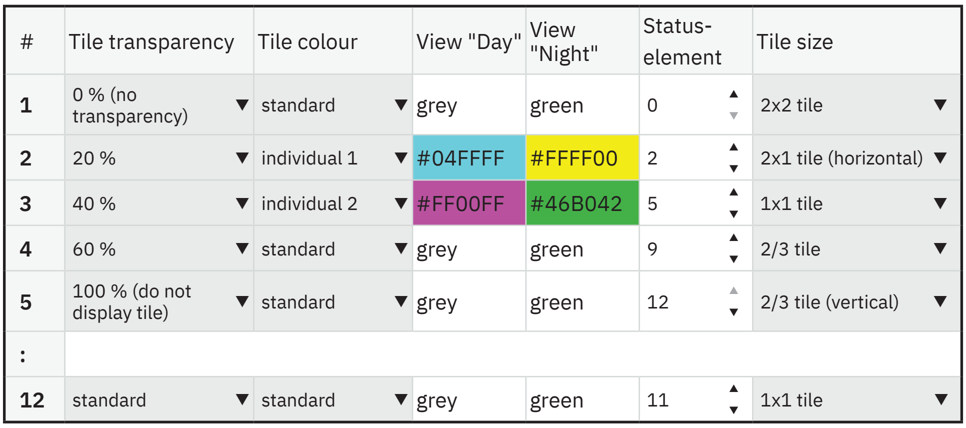
ETS text	Value range **[Default value]**	Comment
Template for presenting the tiles	1 … 19 **[1]**	Specification of the template for how the tiles should be arranged.
Preview	Display of a graphic according to the selected template	The image shows the presentation on the screen.

Table 27: Settings – Standby page

When a template is selected, the corresponding graphic is displayed in the preview. This shows the presentation on the screen with the numbering of the tiles. These are further configured in the following table.

Note: The default values are defined in the "Tile settings" menu.

The following table is displayed according to the selected template (example):



#	Tile transparency	Tile colour	View "Day"	View "Night"	Status-element	Tile size
1	0 % (no transparency) ▼	standard ▼	grey	green	0	2x2 tile ▼
2	20 % ▼	individual 1 ▼	#04FFFF	#FFFF00	2	2x1 tile (horizontal) ▼
3	40 % ▼	individual 2 ▼	#FF00FF	#46B042	5	1x1 tile ▼
4	60 % ▼	standard ▼	grey	green	9	2/3 tile ▼
5	100 % (do not display tile) ▼	standard ▼	grey	green	12	2/3 tile (vertical) ▼
:						
12	standard ▼	standard ▼	grey	green	11	1x1 tile ▼

Table 28: Configuration of a Standby page

Note: The example table refers to the setting "Standby page for "Day" / "Night" → "equal" in the "Standby configuration" menu. Then both columns, "View "Day"" and "View "Night"", appear.

With the setting "Standby page for "Day" / "Night" → "different", the Standby pages for "Day" and "Night" are each configured in their own menu. Thus, for example, in the "Standby page "Day"" menu, only the "View "Day"" column appears. The same applies to the Standby page for "Night".

In the "Status element" column, configured status elements can be assigned to the tiles.

Note: Status element 0 = not active. This leaves the tile empty.

Tile sizes

A "1x1 tile" divides the entire display area into 8 sections. This tile is the reference size for the other tiles. A "2/3 tile" means 2/3 of a 1x1 tile. With this size, a maximum of 12 tiles is possible. Accordingly, a 2x1 tile is twice as large as the 1x1 tile, etc.

4.2.1.2 Status element 1 (… 12)

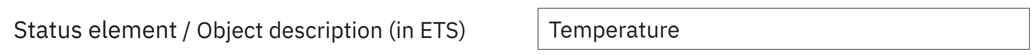
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Status element / Object description (in ETS)	Any text [up to 40 bytes allowed]	Text for the description of the status element and the object. **The text appears only in the ETS.**
	Copy text	By clicking, the above text is transferred to the description field in the display.
Text on display	Any text [up to 40 bytes allowed]	Name of the element in the display. **The text appears only in the display.**
Text colour	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Defining the colour for the text.
Datapoint type / Function	■ not active ■ **DPT 1.001 Switch** ■ DPT 1 Symbol ■ DPT 5.001 Percent value (0…100 %) ■ DPT 5.005 Decimal value (0…255) ■ DPT 7.012 Current [mA] ■ DPT 7.013 Brightness [Lux] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 9.005 Speed [m/s] ■ DPT 9.007 Humidity [%] ■ DPT 9.008 Air quality [ppm] ■ DPT 9.021 Current [mA] ■ DPT 9.024 Power [kW] ■ DPT 9.025 Flow rate [l/h] ■ DPT 12.1200 Volume [l] ■ DPT 12.1201 Volume [m^3] ■ DPT 13.002 Flow rate [m^3/h] ■ DPT 13.010 Active energy [Wh] ■ DPT 13.013 Active energy [kWh] ■ DPT 14.056 Power [W] ■ DPT 14.065 Speed [m/s] ■ DPT 14.076 Volume [m^3] ■ DPT 14.077 Flow rate [m^3/h] ■ DPT 14.1200 Volume flow for meter [m^3/h] ■ DPT 16.000 String ■ Internal temperature sensor	Setting of the datapoint type or the function to be displayed as a status element.

ETS text	Value range **[Default value]**	Comment
	■ Date ■ Time	
Decimal digits	0 ... 3 **[0]**	Setting of the decimal digits for the selected base unit. **Visible for corresponding datapoint types (specification).**
Text for "OFF" / "ON"	Any text [up to 10 bytes allowed]	Text to describe the function. **Only for "DPT 1.001"**
Symbol for "OFF" / "ON"	Any symbol according to the selection list	Inserting a fixed symbol. **Only for "DPT1 Symbol"**
Colour for "OFF" / "ON"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the text colour. **Only for "DPT1 Symbol"**
Display format	■ **not active** ■ scale value > 1000 (value / 1000) ■ scale value < 1 (value x 1000)	Setting of the display format. **Selection of value ranges for scaling depending on the DPT.**
Decimal digits	0 ... 3 **[0]**	Displayed decimal digits. **For "Scale value...".**
Scaled unit	Any text [up to 14 bytes allowed]	Definition of the unit of the scaled value.
Unit	Any text [up to 14 bytes allowed]	Definition of the unit of the selected datapoint type.
Display format	■ **Day/Month/Year** ■ Day/Month ■ Day of the week	Selection of the format. **For function/DPT "Date"**
Display format	■ hh:mm:ss ■ **hh:mm** ■ s	Selection of the format. **For function/DPT "Time"**
Position on display	■ right-aligned ■ **central**	Setting of the position in which the text should be displayed.
Font size	■ small ■ medium ■ **large** ■ extra large	Definition of the font size. **"extra large" not for 1 Bit, String, Internal sensor**
Colour: Status value	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the text colour.

Table 29: Settings – Status elements 1 (... 12)

For each status element, a text field is available for free labelling.



Status element / Object description (in ETS) Temperature

Figure 5: Text field – Status element / Object description

A text of up to 40 characters can be stored in the field.

The text for the "**Status element / Object description**" appears both in the menu behind the corresponding status element and in the communication objects of the status elements (here using status element 1 as an example):

Status element / Object description (in ETS)
Status element 1: Temperature

...

Communication objects
⇆|178 Status element 1: Temperature

Figure 6: Presentation – Status element / Object description

There is also a text field "**Text on display**" available. The text described here appears only in the display. By clicking the "Copy text" button, the text from the "Status element / Object description" is copied.

A variety of datapoint types as well as the current date, current time and the temperature display of the internal sensor are available for the status elements. The display / presentation for each element can be configured individually. For example, values with decimal digits can be defined or, for certain datapoint types, values can be scaled.

Scaling

Scaled values are useful when the value of the base unit is too large or too small.

Example:

DPT 9.024 Power [kW]

If the measured power is 20 W, and thus significantly less than 1 kW, a more plausible value can be displayed using the display format "Scale value < 1 (value x 1000)". In this case, instead of "0.02 kW", "20 W" is now displayed.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
178	Status element 1: – On/Off, Percent value, Decimal value, Brightness, Current ...	1 Bit 1 Byte 2 Byte 4 Byte 14 Byte	Receiving a status value for display.
+ 1	**next Status element**		

Table 30: Communication objects – Status elements

4.3 Page layout

Note: The "Page layout" is located in the ETS together with the "Functions" in the shared menu "Page layout / Functions".
For better clarity, each point is described in its own chapter.

4.3.1 Page configuration

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Number: Pages	0 ... 13 **[1]**	Setting for how many pages should be used.
Navigation bar	■ not active ■ **active**	Activation of the navigation bar.
Object "Page change"	■ not active ■ **active**	Activation of the object.

Table 31: Settings – Page configuration

Note: If "**Number: Pages**" → "**0**" is selected, only the start page with status values is displayed on the device.

If "**Number: Pages**" → "**1**" to "**13**" is selected, a separate configuration menu is displayed for each page.

By activating the "**Navigation bar**", it can then be specified for each activated page whether it should be displayed via the navigation bar.

By activating **Object "Page change"**, a 1 Byte object is displayed. This object can be used to call up the corresponding page. The assignment of the pages within the object is as follows:
Value "0" = Standby page, Value "1" = Page 1, Value "2" = Page 2 ...

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
6	Page change – Input	1 Byte	Receiving a value to change the page.

Table 32: Communication objects – Page configuration

4.3.2 Page 1 (... 13)

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Description of the page (in ETS)	Any text [up to 40 bytes allowed]	Text used to describe the page in the ETS.
Consider page with swipe gesture	■ not active ■ **active**	Setting for whether the page is active for the swipe gesture. **If "Navigation bar" is not active in the "Page configuration" menu.**
Consider page with swipe gesture and display in navigation bar	■ not active ■ **active**	Setting for whether the page is active for swipe gesture and navigation bar. **If "Navigation bar" is active in the "Page configuration" menu.**
Page colour in navigation bar	■ free setting ■ **defined values**	Setting how the colour is defined. **If "Navigation bar" is active in the "Page configuration" menu.**
value	#000000 ... #FFFFFF ▦ **[#FFFFFF]**	Definition as a free value. **When "free setting" is selected.**
value	any colour according to the list in the dropdown **[MDT-Blue]**	Specification as defined colour. **When selecting "defined values".**
Code lock		
Code lock for the page	■ **not active** ■ active	Setting for whether the code lock should be active for the current page.
User 1 (...4) may operate the page	☐	By ticking the box ☑, the corresponding user is activated. **Basic version: 1 user.** **Plus version: Up to 4 users.**
Template		
DCA settings	■ **not active** ■ active	By activating this, configuration is carried out via the DCA. The following parameters are then hidden.
Template for presenting the tiles	1 ... 14 **[1]**	Selection of the tiles to be displayed.
Preview	Display of a graphic with the representation according to the selected template	The image shows the presentation on the screen.

Table 33: Settings – Page 1 (... 13)

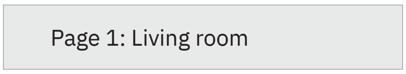
A text field for free labelling is available for each page.

Description of the page (in ETS) | Living room

Figure 7: Text field – Description of the page

A text of up to 40 characters can be stored in the field.

The text entered in "**Description of the page**" appears in the menu behind the corresponding page (here using "Page 1" as an example):



Page 1: Living room

Figure 8: Presentation – Description of the page

Consider page with swipe gesture
This means that the corresponding page can be scrolled further by "swiping". If a page is not active, it can only be selected via "Jump target".

Navigation bar
When activated, a line becomes visible at the bottom of the display, in which a bar is visible for each page where "... display in navigation bar" has been activated. The navigation bar is always designed to span the entire width of the display (vertical or horizontal orientation). If only 2 pages are activated, the bars are correspondingly long. If, for example, 8 pages are activated, the bars are shorter. This makes it clear for each page at which position you are in the sequence of pages.

Code lock
Here you can decide whether the page should be operable by everyone or only by a specific user.
Note: With the basic version of the device, 1 code lock user is possible; with the "Plus" version of the device, up to 4 users are possible.

Only as many users are displayed as code locks have been activated in the 'Code lock' menu.

Template
When a template is selected, the associated graphic is displayed in the preview. This shows the representation on the display with the numbering of the tiles. These are further configured in the following table. A template can be configured either via the ETS or via the associated DCA (Device Configuration App). The instructions for the DCA can be found in the download area of the device at:

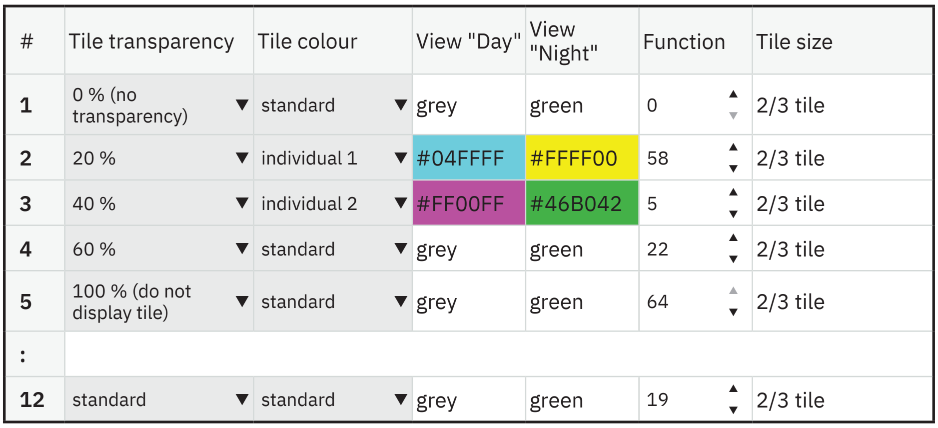
https://www.mdt-group.com/products/product-detail/glass-touch-smart.html

Important:

- As soon as a change is made in the DCA, the parameter "DCA settings" changes to "active" and the following parameters are hidden.
- If the text in the field "Description of the page (in ETS)" is changed via the DCA, this text is also adopted in the ETS.

Note: The default values are defined in the "Tile settings" menu.

The following table is displayed as an example for selecting a template:



#	Tile transparency	Tile colour	View "Day"	View "Night"	Function	Tile size
1	0 % (no transparency) ▼	standard ▼	grey	green	0 ▲▼	2/3 tile
2	20 % ▼	individual 1 ▼	#04FFFF	#FFFF00	58 ▲▼	2/3 tile
3	40 % ▼	individual 2 ▼	#FF00FF	#46B042	5 ▲▼	2/3 tile
4	60 % ▼	standard ▼	grey	green	22 ▲▼	2/3 tile
5	100 % (do not display tile) ▼	standard ▼	grey	green	64 ▲▼	2/3 tile
:						
12	standard ▼	standard ▼	grey	green	19 ▲▼	2/3 tile

Table 34: Configuration of a page

In the "Function" column, configured functions can be assigned to the tiles.

Note:

- One function may only be assigned to one tile.
- Function 0 = not active. This leaves the tile empty.

Tile sizes

A "1x1 tile" divides the entire display area into 8 sections. This tile is the reference size for the other tiles. A "2/3 tile" means 2/3 of a 1x1 tile. With this size, a maximum of 12 tiles is possible. Accordingly, a 2x1 tile is twice as large as the 1x1 tile, etc.

4.4 Functions

The "Functions" are located in the ETS together with the "Page layout" in a common menu. For better clarity, the functions are described in a separate chapter.

4.4.1 Function blocks

Up to 64 functions can be configured individually. For this, 8 function blocks with up to 8 functions each are available (functions 1-8, 9-16 ... 57-64). For each activated function, a separate menu appears

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Description of the function block	Any text [up to 40 bytes allowed]	Text for the description of the function block.
Number: Functions	0 ... 8 **[1]**	Setting for how many functions are activated.

Table 35: Settings – Function blocks

A text field for free labelling is available for each function block.


Description of the function block: Kitchen

Figure 9: Text field – Description of the function block

A text of up to 40 characters can be stored in the field.

The text entered in "**Description of the function block**" appears in the menu behind the corresponding function block (here using "Functions 1-8" as an example):


– Functions 1-8: Kitchen

Figure 10: Presentation – Description of the function block

Number: Functions
For each activated function, a menu is displayed in the menu tree in which this function can then be configured.

4.4.2 Function 1 (... 64)

For each individual function, there are some identical parameters that apply to all function types. The function types themselves differ through individual settings.

4.4.2.1 Identical parameters

For the sake of simplicity, the identical parameters are described in a separate chapter.
Note: The parameters are displayed as soon as a function type is activated.

4.4.2.1.1 Identical parameters – Text fields

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Function / Object description (in ETS)	Any text [up to 40 bytes allowed]	Text for the description of the function and the communication objects.
	Copy text	When clicked, the text of the "Function description" is transferred to the field for "Function name ...".
Function name (displayed on screen)	Any text [up to 40 bytes allowed]	Text for the description of the function. Displayed only on the display.
Colour: Function name	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Definition of the text colour for the name.

Table 36: Settings – Function 1 (... 64)

A text field for free labelling is available for each function.

Function / Object description (in ETS) Hallway light

Figure 11: Text field – Function / Object description

A text of up to 40 characters can be stored in the field.

The text for the "**Function / Object description**" appears both in the menu behind the corresponding function and for the communication objects of the function (here using function 1 as an example):

Function / Object description (in ETS)
Function 1: Hallway light
...
Communication objects
⇆|190 Function 1: Hallway light

Figure 12: Display – Function / Object Description

Furthermore, a text field "**Function name (displayed on screen)**" is available. The text described here appears only on the display.

4.4.2.1.2 Identical parameters – Type of presentation

For the functions "**Switch**", "**Dimming**", "**Blinds / Shutter**", "**Send values**" and "**Switch / Send values short / long**", you can use the "Type of presentation" parameter to select whether either "Symbols" or the "Value as text" should be displayed.

When selecting "**display symbols**", you can then – depending on the function – define the number of symbols for which the status should be displayed. Threshold values can be defined for switching between the symbols. At least 2 symbols must be active for this. The first threshold appears at symbol 2, threshold 2 at symbol 3, etc.
Note: Condition: Threshold 4 > Threshold 3 > Threshold 2 > Threshold 1

Example:
In the function "Send values – Percent values", up to 5 symbols can be activated. The switching values can be freely defined (e.g. symbol 2 becomes active when the status value is greater than 20 %, symbol 3 becomes active when the status value is greater than 40 %, etc.). This also applies to dimming or position values for blinds / shutters.

With "**display value as text**", the corresponding value is displayed in plain text. Here, you can also define the text colour and font size.

If "display symbols" is selected and "Display value below symbol" is activated at the same time, a combination of both options applies.

4.4.2.1.3 Identical parameters – Lock object / Function name

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Lock object / Function name	■ **not active** ■ lock object ■ function name via object	Activation of an additional object.

Table 37: Settings – Function 1 (-64)

This parameter allows you to activate an additional object if required. The following options are available:

- **Lock object**: Using this object, the button function can be locked with a "1". The lock is released with a "0".
- **Function name via object**: This allows the text for the function name to be changed via a 14 Byte object. The current text will be overwritten.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
199	Function 1: – Lock object	1 Bit	Locking/unlocking the button function.
199	Function 1: – Function name	14 Byte	Receiving a text.
+10	**next Function**		

Table 38: Identical communication objects

4.4.3 Function types

From here on, only the specific settings of the individual function types are described.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Function type	■ **not active** ■ Switch ■ Send state ■ Dimming ■ Blinds / Shutter ■ Send values ■ Switch/Send values short/long ■ Status ■ Mode selection ■ Temperatur shift ■ Temperature regulation ■ Temperature / Fan coil (as of SW v1.2.0) ■ Scenes ■ Colour control via Slider ■ Colour control via Color picker (as of SW v1.2.0) ■ Multimedia (as of SW v1.2.0) ■ Page change	Setting the function type.

Table 39: Settings – Function types

4.4.3.1 Function type: Switch

☑ One button
☑ Two buttons

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ One button: Switch ■ **One button: Toggle** ■ Two buttons: Switch	Selection of the operating concept.
Value for pressed button	■ OFF ■ **ON**	Setting the value to be sent. **For "One button: Switch"**
Button assignment: Left (Top) / Right (Bottom)	■ **ON / OFF** ■ OFF / ON	Setting the values to be sent. **For "Two buttons: Switch"**

ETS text	Value range **[Default value]**	Comment
Innovative group control		
Group long keypress	■ **not active** ■ active	Activation of the group.
"Group long" sends	■ **ON and OFF** ■ only ON ■ only OFF	Defines the sending behaviour for a long keypress. **Only for grouped channels, and when "Group long keypress" is active**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Definition of the time for detecting a long keypress. **Basic setting refers to the time in "General Settings".**
Group extra long keypress	■ **not active** ■ active	Activation of the group.
"Group extra long" sends	■ **ON and OFF** ■ only ON ■ only OFF	Defines the sending behaviour for an extra long keypress. **For grouped channels, when "Group long keypress" and "Group extra long keypress" are active**.
Time for extra long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **Basic setting refers to the time in "General Settings".**
Type of presentation	■ **display symbols** ■ display value as text	Setting for how the function should be displayed.
Display value below symbol	☐	Ticking ☑ activates the function. **With presentation "display symbols"**
Font size: Value	■ **small** ■ medium ■ large	Setting the font size for the displayed value. **With presentation "display value as text" or "Display value below symbol"**
Settings for "OFF" / "ON"		
Text for value	Any text [up to 28 bytes allowed]	Entering text.
Symbol	Any symbol, selectable in the dropdown list	Setting the symbol. **"Presentation" → "display symbols"**

ETS text	Value range **[Default value]**	Comment
Colour: Symbol Colour: Text Colour: Symbol / Text	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour. **ETS text according to the display (symbol only / value as text only or display symbol and value as text)**
Button labelling	Any text [up to 28 bytes allowed]	Entering text. **Only for "Two buttons: Switch"**
Colour: Button labelling	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Definition of the text colour.

Table 40: Settings – Function type: Switch

The sub-functions are explained as follows:

- **One button: Switch**: The button always sends the value defined for it (ON/OFF) when pressed.
- **One button: Toggle**: With this function, the button sends the respective inverted value in relation to the last received status value. For this, the "Status" object is linked to the status object of the actuator to be controlled. If, for example, a "1" signal was received as the last value, the button will send a "0" telegram the next time it is pressed. If the button receives no feedback, it alternately sends "1" and "0" values.
- **Two buttons: Switch**: The left/upper button or the right/lower button is assigned the respective value to be sent (ON/OFF) via the parameter **"Button assignment ..."**. Thus, each button only sends this defined value.

With the "**Innovative group control**", it is possible to send to up to three different group addresses by pressing a button for a longer period. The time for the long and extra long keypress can be set individually.

- **Two-button function**: The sending behaviour for the long and extra long group can be set individually.
- **One-button function**: The defined value is always sent for both the long and extra long group.

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

Example:

Time for long keypress: 2 s
Time for extra long keypress: 4 s

If the button is now pressed for at least 4 seconds, the first value is sent immediately, after 2 seconds the value for the "Group long", and after 4 seconds the value for the "Group extra long".

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Switch	1 Bit	Switch function for the button(s).
191	Function 1: – Status	1 Bit	Receiving the status from the actuator.
192	Function 1: – Group long: Switch	1 Bit	Switch function for the long button.
193	Function 1: – Group extra long: Switch	1 Bit	Switch function for the extra long button.
+10	**next Function**		

Table 41: Communication objects – Function type: Switch

4.4.3.2 Function type: Send state

☑ One button

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Value for pressed button	■ OFF ■ **ON** ■ not active	Setting the value to be sent.
Value for released button	■ **OFF** ■ ON ■ not active	Setting the value to be sent.
Behaviour on bus voltage return	■ no action ■ **Send state**	Setting for what should happen after KNX voltage returns.
Additional object		
Value for pressed button	■ OFF ■ ON ■ **not active**	Setting the value to be sent.
Value for released button	■ OFF ■ ON ■ **not active**	Setting the value to be sent.
Settings for "OFF" / "ON" are identical		
Symbol	Any symbol, selectable in the dropdown list	Selection of the respective symbol.
Colour: Symbol / Text	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Definition of the colour.

Table 42: Settings – Function type: Send state

This makes it possible to implement a "send binary state" function. With each activation, a configurable value is sent when the sensor surface is touched, and likewise a configurable value is sent when it is released.

Additional object
Both states (activated/released) can be sent via an additional object. It is possible to configure the values independently of the previous values.

For details on "Text field" and "Lock object", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Send state	1 Bit	Switch function for the button.
191	Function 1: – 2. Object: Send state	1 Bit	Switch function for the additional object.
+10	**next Function**		

Table 43: Communication objects – Function type: Send state

4.4.3.3 Function type: Dimming

☑ One button
☑ Two buttons

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **One button: Dimming** ■ One button: Only ON and brighter ■ One button: Only OFF and darker ■ Two buttons: Dimming ■ Slider: Absolute values	Selection of the operating concept.
Send dimming value	■ **when releasing the button** ■ immediately ■ on change of 1 % ... ■ on change of 10 %	Definition of the sending condition for when the dimming value should be sent. **Only for "Slider: Absolute values"**
Slider minimum value	0 % – 100 % **[0 %]**	Setting the lower limit for the slider.
Slider maximum value	0 % – 100 % **[100 %]**	Setting the upper limit value for the slider.
Colour: Slider	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour.
Button assignment: Left (Top) / Right (Bottom)	■ **brighter / darker** ■ darker / brighter	Button assignment for the function. **For "Two buttons: Dimming"**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **The default setting refers to the time in "General settings".**.
Type of presentation	■ **display symbols** ■ display value as text	Setting for how the function is presented on the screen.
Display value below symbol	☐	Ticking ☑ activates the function. **Only with "display symbols".**
Font size: Value	■ **small** ■ medium ■ large	Setting the font size for the displayed value.
Colour: Value	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the text colour.

ETS text	Value range **[Default value]**	Comment
Status value as bar	☐	Ticking ☑ activates the function. **Not for "Slider: Absolute values"**
Colour: Status bar	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour for the bar. **When "Status value as bar" is active.**
The following parameters apply to "Two buttons: Dimming" and "Slider: Absolute values"		
Labelling: Left (Upper) / Right (Lower) button	■ **via symbol** ■ via text input	Definition of how the respective button should be labelled.
Symbol	Any symbol, selectable in the dropdown list	Selection of a symbol as a label. **When "via symbol" is selected**
Text	Any text [up to 28 bytes allowed]	Entering text. **When "via text input" is selected**
Colour: Symbol / Text	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour for the symbol or the text.
Display slider	■ not active ■ **active**	Setting for whether the slider should be presented on the screen.
Symbol	Fixed symbol is displayed	Symbol for the slider. Cannot be changed.
Symbol 1 (...5) (with setting "Type of presentation" → "display symbols")		
Number: Symbols	1 ... 5 **[2]**	Setting for how many symbols are possible. According to the selection, **Symbol 1**, **Symbol 2**, etc. are displayed.
Threshold 1 (-4)	0 ... 100 % **[Default values vary according to the number of threshold values]**	Setting the thresholds at which another symbol is displayed. ■ **From "Number: Symbols" → "2"** ■ **Threshold 1 visible at Symbol 2, threshold 2 at Symbol 3, etc.**
Symbol	Any symbol, selectable in the dropdown list	Setting the symbol. **"Presentation" → "display symbols"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 44: Settings – Function type: Dimming

For this function, 2 communication objects appear: firstly, the function for a short keypress, the switch object "Dimming On/Off", and secondly, the function for a long keypress, the dimming object "relative dimming". The dimming function is a start-stop dimming. This means that as soon as the dimming function is activated, the button sends a "brighter" or "darker" command as long as the button is pressed. After releasing the button, a "Stop" telegram is sent, which ends the dimming process.

The **two-button function** "Dimming" can be configured either as "brighter / darker" or as "darker / brighter". The following table shows the relationships:

	Button assignment: brighter/darker		**Button assignment: darker/brighter**	
Input	Button 1	Button 2	Button 1	Button 2
Dimming function	brighter	darker	darker	brighter
Switch function	ON	OFF	OFF	ON

Table 45: Two-button function – Dimming

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

Extended setting for pop-up
If the selected tile size is not sufficient to display a function, the function will be shown as a "pop-up" on the display.

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Dimming On/Off	1 Bit	Switch function for the button(s).
191	Function 1: – Dimming relative	4 Bit	Command for relative dimming.
192	Function 1: – Dimming absolute	1 Byte	Sending an absolute dimming value.
193	Function 1: – Status for toggle	1 Bit	Reception of the status with current information about the status of the actuator to be controlled.
194	Function 1: – Status: Dimming value for display	1 Byte	Receiving an absolute dimming value for display on the screen.

Table 46: Communication objects – Function type: Dimming

4.4.3.4 Function type: Blinds / Shutter

☑ One button
☑ Two buttons

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	▪ **One button: Up/Down** ▪ One button: Only Up and Stop ▪ One button: Only Down and Stop ▪ Two buttons: Up/Down ▪ Slider: Absolute value for “Shutter” ▪ Slider: Absolute value for “Blinds”	Selection of the operating concept.
Operating 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)	Setting the concept for how to operate with long/short button. **Only with “Two buttons: Up/Down”.**
Operating function	▪ **Long = Up/Down / Short = Stop / Slats Open/Close** ▪ Short = Up/Down / Long = Stop / Slats Open/Close	Setting the concept for how to operate with long/short button. **For "One button: ..." functions.**
Button assignment: Left (Top) / Right (Bottom)	▪ **Up/Down** ▪ Down / Up	Setting the button assignment for the Up/Down function. **For "Two buttons: Up/Down".**
Slider minimum value	0 % – 100 % **[0 %]**	Smallest value for the slider. **For "Slider: Absolute values ..."**
Slider maximum value	0 % – 100 % **[100 %]**	Largest value for the slider. **For "Slider: Absolute values ..."**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **The basic setting applies to the time in "General settings".**

ETS text	Value range **[Default value]**	Comment
Innovative group control Only with the setting "Long = Up/Down / Short = Stop / Slats Open/Close"		
Group control extra long	■ **not active** ■ active	Activation of the group for extra long key press.
Time for extra long keypress	**Default setting** 0.1 s – 30.0 s	Setting for when an extra long keypress is recognised. **Basic setting refers to the time in "General Settings".**
Type of presentation	■ **display symbols** ■ display value as text	Setting for how the function is presented on the screen.
Display value below symbol	☐	Ticking ☑ activates the function. **Only with "display symbols".**
Colour: Status value "Height"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour.
Colour: Status value "Slats"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour. **For "Slider: Absolute value for "Blinds"**
Font size: Values	■ **small** ■ medium ■ large	Setting the font size for the displayed value. **With presentation "display value as text" or "Display value below symbol"**
Colour: Slider "Blinds" / "Slats"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour. **For "Slider: Absolute value for "Blinds".**
Colour: Slider "Shutter"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour. **For "Slider: Absolute value for Shutter"**
Display slider	■ **not active** ■ active	Setting for whether the slider should be presented on the screen.
Symbol	Fixed symbol is displayed	Symbol for the slider. Not changeable.
Status value as bar	☐	Ticking ☑ activates the function. **Not for "Slider: Absolute value ..."**
Colour: Bar	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour for the bar. **When "Status value as bar" → active.**

ETS text	Value range **[Default value]**	Comment
The following parameters apply to "Two buttons:" and "Slider:" functions		
Labelling: Left (Upper) / Right (Lower) button	■ **via symbol** ■ via text input	Definition of how the respective button should be labelled.
Symbol	Any symbol, selectable in the dropdown list	Selecting the symbol for labelling. **When "via symbol" is selected**
Symbol: Blinds / Slats	Any symbol, selectable in the dropdown list	Selecting the symbol for labelling. **For "via symbol" and "Slider: Absolute values for "Blinds"**
Text	Any text [up to 28 bytes allowed]	Entering text. **When "via text input" is selected**
Text for button "Blinds" / "Slats"	Any text [up to 28 bytes allowed]	Entering text. **For "via text input" and "Slider: Absolute values for "Blinds"**
Colour: Symbol / Text	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour for the symbol or the text.
Colour: Symbol / Text "Blinds" / "Slats"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour for the symbol or the text. **For "Slider: Absolute values "Blinds"**
Symbols (when setting "Type of presentation" → "display symbols")		
Presentation of the status of ...	■ **height position** ■ position of slats	Setting which status should be displayed on the display. **For "Slider: Absolute values "Blinds"**
Number: Symbols	1 ... 5 **[2]**	Setting for how many symbols are possible. According to the selection, **Symbol 1**, **Symbol 2**, etc. are displayed.
Threshold 1 (-4)	0 ... 100 % **[Default values vary according to the number of threshold values]**	Setting the thresholds at which another symbol is displayed. ■ **From "Number: Symbols" → "2"** ■ **Threshold 1 visible at Symbol 2, threshold 2 at Symbol 3, etc.**
Symbol	Any symbol, selectable in the dropdown list	Setting the symbol. **"Presentation" → "display symbols"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour for the symbol.

Table 47: Settings – Function type: Blinds / Shutter

For the blinds function, 2 communication objects appear: firstly, the function for the stop/step object "Stop / Slats Open/Close" and secondly, the function for the movement object "Blinds / Shutter Up/Down". The movement object is used for moving up and down. The stop/step object has two functions: firstly, it stops the upward or downward movement if the end position has not yet been reached, and secondly, it is used for adjusting the slats.

With the **two-button function** , the button assignment can be set. The following table shows the relationships:

	Function Up/Down		**Function Down/Up**	
Input	Left button	Right button	Left button	Right button
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 – Blinds function

With the **one-button function**, each keypress toggles between upward and downward movement. As shutter actuators always use a "1" signal for downward movement and a "0" signal for upward movement, the button outputs this accordingly. It is also possible to swap the action for long and short keypress. This allows you to select whether to move with a long or short keypress. The stop/step object then adopts the respective other operating concept.

Innovative group control

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

MDT Single Object Control

☑ Two buttons

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

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

It is now possible to start the upward/downward movement with a short keypress and also to stop an active upward/downward movement with a short keypress.

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

Extended setting for pop-up

If the selected tile size is not sufficient to display a function, the function will be shown as a "pop-up" on the display.

Important: When selecting **"Slider: Absolute values "Blinds"**, only one status (height or slats) can be displayed. This allows you to individually set which status should be visible on the display.

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Blinds/Shutter Up/Down	1 Bit	Up/Down command for the Shutter actuator.
190	Function 1: – Short: Shutter Up/Down/Stop	1 Bit	MDT Single Object Control: Up/Down/Stop function. **Only for two-button function and for shutters**
191	Function 1: – Stop / Slats Open/Close	1 Bit	Open/close slats and stop command.
191	Function 1: – Long: Central shutter Up/Down/Stop	1 Bit	MDT Single Object Control: Central object for Up/Down/Stop function. **Only for two-button function and for shutters**
192	Function 1: – Status for change of direction	1 Bit	Reception of the status with current information about the direction of the Shutter actuator. **Only for single channel function**.
193	Function 1: – Status: Absolute height position	1 Byte	Receiving the status from the actuator for display on the screen.
194	Function 1: – Absolute height position	1 Byte	Sending an absolute value to the actuator.
194	Function 1: – Extra long: Blinds/Shutter Up/Down	1 Byte	Up/Down command for the Shutter actuator.
195	Function 1: – Extra long: Stop / Slats Open/Close	1 Bit	Open/close slats and stop command.
195	Function 1: – Status: Absolute position of slats	1 Byte	Receiving the status from the actuator for display on the screen.
196	Function 1: – Absolute position of slats	1 Byte	Sending an absolute value to the actuator.
+10	**next Function**		

Table 49: Communication objects – Function type: Blinds / Shutter

4.4.3.5 Function type: Send values

Various sub-functions are available for this function type:

ETS text	Value range **[Default value]**	Comment
Subfunction	▪ **One button: Send value** ▪ One button: Toggle values ▪ Two buttons: Send values ▪ Two buttons: Toggle values ▪ Two buttons: Shift values	Selection of the operating concept.

Table 50: Settings – Function type: Send values

4.4.3.5.1 Subfunction: Send values

☑ One button
☑ Two buttons

This function allows various values of a datapoint type to be sent.
Various sub-functions are available for this function type:

ETS text	Value range **[Default value]**	Comment
Datapoint type	▪ **DPT 1.001 Switch** ▪ DPT 2.001 Forcible control ▪ DPT 5.001 Percent 0...100 % ▪ DPT 5.005 Decimal value 0..255 ▪ DPT 17.001 1 Byte Scene number ▪ DPT 7.600 Colour temperature [K] ▪ DPT 9.001 Temperature [°C] ▪ DPT 9.004 Brightness [Lux] ▪ DPT 232.600 RGB value 3x(0...255) ▪ DPT 251.600 RGBW value 4x(0...255) ▪ Non standard DPT HSV value ▪ DPT 16.000 String	Setting of the datapoint type to be sent.
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **One button: Send value**

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text for left (upper) / right (lower) button	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Two buttons: Send value**
Unit for display	Any text [up to 5 bytes allowed]	Text entry for the unit of the corresponding datapoint type. **Only for relevant datapoint types.**
Change symbol colour via status object	☐	Ticking ☑ activates the function. **For datapoints "RGB/RGBW/HSV"**
Evaluate status object	☐	Ticking ☑ activates the function. **For datapoint "String"**
Labelling: Left (Upper) / Right (Lower) button	Any text [up to 28 bytes allowed]	Entering text. **With selection "Two buttons:"**
Type of presentation	■ **display symbols** ■ display value as text	Setting for how the function is presented on the screen.
Display value / text below symbol	☐	Ticking ☑ activates the function. ■ **With selection "display symbols"** ■ **"Text" for "String (DPT 16.000)"**
Text for value = 0	Any text [up to 14 bytes allowed]	Enter a text for the value. ■ **For "On/Off (DPT 1.001)"** ■ **For type "display value as text"**
Text for value = 1		
Text for value 00 – no priority, OFF	Any text [up to 14 bytes allowed]	Enter a text for the corresponding value. ■ **For "Forcible control (DPT 2.001)** ■ **For type "display value as text"**
Text for value 01 – no priority, ON		
Text for value 10 – priority, OFF		
Text for value 11 – priority, ON		
Colour: Value / Unit	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Font size: Values	■ **small** ■ medium ■ large	Setting the font size.

ETS text	Value range **[Default value]**	Comment
Symbols (when setting "Type of presentation" → "display symbols")		
Number: Symbols	1 ... 5 **[2]**	Number of possible symbols. **The number of symbols and naming depend on the datapoint type.**
Threshold 1 (-4)	Values according to the selected datapoint type	Setting the thresholds at which another symbol is displayed. **From "Number: Symbols" → "2"**
Text for value "ON" / "OFF"	Any text [up to 14 bytes allowed]	Entering text. **For "On/Off (DPT 1.001)"**
Text for "xx - priority ..."	Any text [up to 14 bytes allowed]	Entering text. **For "Forcible control (DPT 2.001)"**
Scene number	not active, 1 – 64 **[1]**	Setting the scene number. **For "Scene number (DPT 17.001)"**
Comparative text	Any text [up to 14 bytes allowed]	Entering text. **for DTP "String"**
Symbol	Any symbol, selectable in the dropdown list	Setting a symbol.
Colour: Symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Special function	▪ **innovative group control** ▪ additional object	Selecting a special function.
Special function "**innovative group control**" Setting options for the values are identical for "Group long" and "Group extra long".		
Group long keypress	▪ **not active** ▪ active	Activation/deactivation of the group.
Group extra long keypress	▪ **not active** ▪ active	Activation/deactivation of the group. **"Group long keypress" → active.**
Left (Upper) button	▪ **not active** ▪ active	Activation/deactivation of the button. **"Two buttons: Send value"**
Right (Lower) button	▪ **not active** ▪ active	Activation/deactivation of the button. **"Two buttons: Send value"**
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **"One button: Send value"**

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text for left (upper) / right (lower) button	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **"Two buttons: Send value"**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting a long keypress. **Basic setting refers to the time in "General Settings".**
Time for extra long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **Basic setting refers to the time in "General Settings".**
Special function "**additional object**"		
Datapoint type (2. Object)	■ **DPT 1.001 Switch** ■ DPT 2.001 Forcible control ■ DPT 5.001 Percent 0...100 % ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 1 Byte Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value ■ DPT 16.000 String	Setting of the datapoint type to be sent.
Left (Upper) button	■ **not active** ■ active	Activation/deactivation of the button. **Two buttons: Send value**
Right (Lower) button	■ **not active** ■ active	Activation/deactivation of the button. **Two buttons: Send value**
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **One button: Send value**

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text for left (upper) / right (lower) button	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Two buttons: Send value**

Table 51: Settings – Subfunction: Send values

Symbols

If "display symbols" is selected as the "type of presentation", these can then be set accordingly. Depending on the datapoint type, various settings are possible. For DPT 1Bit, symbols can be defined for "ON" and "OFF", for DPT 2 Bit up to 4 symbols for the possible states of the priorities of forcible control, etc. For some datapoint types, different symbols can be changed via definable threshold values. When selecting "DPT 16.000 String", up to 4 symbols can be changed via defined comparison texts. As soon as one of these texts is received, the corresponding symbol is activated.

Innovative group control

Here, additional values can be sent via your own objects using long and extra-long keypress. The durations for the keypress can be set individually. The datapoint type selected for the function always applies.

Note: "Group extra long" can only be activated if "group long" is active.

Additional object

A second object appears, which is also triggered by a simple keypress. The datapoint type of the value to be sent for this can be set individually.

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the button(s). DPT according to parameter setting.
191	Function 1: – Status for display		Receiving the status for display. DPT according to parameter setting.
192	Function 1: – Group long: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function with long keypress. DPT according to parameter setting.
193	Function 1: – Group extra long: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function with extra-long keypress. DPT according to parameter setting.
194	Function 1: – 2. Object: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the button(s). DPT according to parameter setting.
+10	**next Function**		

Table 52: Communication objects – Subfunction: Send values

4.4.3.5.2 Subfunction: Toggle values

☑ One button
☑ Two buttons

This function allows you to switch between up to 4 different values of a datapoint type.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Datapoint type	▪ DPT 2.001 Forcible control ▪ **DPT 5.001 Percent 0...100 %** ▪ DPT 5.005 Decimal value 0..255 ▪ DPT 17.001 Scene number ▪ DPT 7.600 Colour temperature [K] ▪ DPT 9.001 Temperature [°C] ▪ DPT 9.004 Brightness [Lux] ▪ DPT 232.600 RGB value 3x(0...255) ▪ DPT 251.600 RGBW value 4x(0...255) ▪ Non standard DPT HSV value	Setting of the datapoint type to be sent.
Number: Values	2 ... 4 **[2]**	Setting for how many values should be switched between.
1.-4. Toggle value / Toggle value RGB/ White/HSV, Toggle scene number	Any value according to the set datapoint type	Setting of the respective value or the scene number.
Unit for display	Any text [up to 5 bytes allowed]	Entering text. **For DPTs with "Unit"**
Buttons: Left (Top) / Right (Bottom) toggle	▪ **next / previous** ▪ previous / next	Setting in which direction the values / scenes should be switched when the buttons are pressed. **Only with two-button function.**
Long keypress	▪ **not active** ▪ active	Activation of the function.
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting a long keypress. **Basic setting refers to the time in "General Settings".**

ETS text	Value range **[Default value]**	Comment
Datapoint type	■ DPT 1.001 Switch ■ **DPT 2.001 Forcible control** ■ DPT 5.001 Percent value (0...100 %) ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 1 Byte Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value	Setting of the datapoint type to be sent for the long keypress.
Left (Upper) button	■ **not active** ■ active	Activation/deactivation of the button. **Two buttons: Toggle values**
Right (Lower) button	■ **not active** ■ active	Activation/deactivation of the button. **Two buttons: Toggle values**
Value / Scene number / RGB value / White value / HSV value	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **One button: Toggle values**
Value / Scene number / RGB value / White value / HSV value for left (upper) / right (lower) button	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Two buttons: Toggle values**
Switching type	■ **limit stop (after the last value, this is repeated)** ■ overrun (after the last value, the first value is sent again)	Setting for what should happen when the last switching value is reached. **With selection "Two buttons:"**
Labelling: Left (Upper) / Right (Lower) button	Any text [up to 28 bytes allowed]	Entering text. **With selection "Two buttons:"**
Type of presentation	■ **display symbols** ■ display value as text	Setting for how the function is presented on the screen.
Display value below symbol	☐	Ticking ☑ activates the function. **Only with "display symbols".**

ETS text	Value range **[Default value]**	Comment
Text for value 00 – no priority, OFF	Any text [up to 14 bytes allowed]	Enter a text for the corresponding value. ■ **For "Forcible control (DPT 2.001)** ■ **For type "display value as text"**
Text for value 01 – no priority, ON		
Text for value 10 – priority, OFF		
Text for value 11 – priority, ON		
Colour: Value / Unit	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Font size: Values	■ **small** ■ medium ■ large	Setting the font size.
Symbols (when setting "Type of presentation" → "display symbols")		
Number: Symbols	1 ... 5 **[2]**	Setting for how many symbols are possible. **The number of symbols and naming depend on the datapoint type.**
Threshold 1 (-4)	Values according to the selected datapoint type	Setting the thresholds at which another symbol is displayed. **From "Number: Symbols" → "2"**
Text for "xx - priority ..."	Any text [up to 14 bytes allowed]	Enter the relevant text. **For "Forcible control (DPT 2.001)" and when "display value under symbol" is active.**
Scene number	not active, 1 – 64 **[1]**	Setting the scene number. **For "Scene number (DPT 17.001)"**
Symbol	Any symbol, selectable in the dropdown list	Setting the symbol. **"Presentation" → "display symbols"**
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.

Table 53: Settings – Subfunction: Switch 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. The datapoint type for the value to be sent can be set individually.

Parameter "**Switching type" (only for 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.

For the single button function, this parameter is permanently set to “Overrun”.

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

4.4.2.1 Identical parameters

No.	Name / Object function	Length	Usage
190	Function 1: – Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the button(s). DPT according to parameter setting.
191	Function 1: – Status for display		Receiving the status for display. DPT according to parameter setting.
192	Function 1: – Long button: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the button(s) with long keypress. DPT according to parameter setting.
+10	**next Function**		

Table 54: Communication objects – Subfunction: Toggle values

4.4.3.5.3 Subfunction: Shift values

☑ Two buttons

This allows values to be shifted up or down within the set limits.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Datapoint type	■ **DPT 5.001 Percent (0...100 %)** ■ DPT 5.005 Decimal value 0..255 ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux]	Setting of the datapoint type to be sent.
Lower limit	Any value according to the selected datapoint type	Setting of the lower limit value.
Upper limit	Any value according to the selected datapoint type	Setting of the upper limit value.
Step width	Any value according to the selected datapoint type	Setting of the step width.
Unit for display	Any text [up to 5 bytes allowed]	Entering text. **Not for "Percent value DPT 5.001"**
Buttons: Left (Top) / Right (Bottom) shift	■ **Down / Up** ■ Up / Down	Setting of the direction for value shifting.
Repeated sending on pressed key	■ **not active** ■ active	Activation of send repetition when the button is pressed.
Repetition time	0.1 – 30 s **[1.0 s]**	Repeat time between two telegrams when the button is pressed.
Labelling: Left (Upper) / Right (Lower) button	Any text [up to 28 bytes allowed]	Entering text. **With selection "Two buttons:"**
Type of presentation	■ **display symbols** ■ display value as text	Setting for how the function is presented on the screen.
Display value below symbol	☐	Ticking ☑ activates the function. **Only with "display symbols".**
Colour: Value / Unit	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Font size: Values	■ **small** ■ medium ■ large	Setting of the font size.

ETS text	Value range **[Default value]**	Comment
Symbols (when setting "Type of presentation" → "display symbols")		
Number: Symbols	1 ... 5 **[2]**	Setting for how many symbols are possible. According to the selection, **Symbol 1**, **Symbol 2**, etc. are displayed. The same parameters are visible for each symbol.
Threshold 1 (-4)	Values according to the selected datapoint type	Setting the thresholds at which another symbol is displayed. **From "Number: Symbols" → "2"**
Symbol	Any symbol, selectable in the drop-down list	Setting the symbol. **"Presentation" → "display symbols"**
Colour: Symbol	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour.

Table 55: Settings – Subfunction: Shift values

Functional principle
The function shifts the set datapoint type within the set limits. When the "down" button is pressed, the set step size is subtracted from the last value and sent, and when the "up" button is pressed, the set step size is added to the last value and sent.

Lower/Upper limit
Within these limits, the value can be adjusted. The value will neither fall below the lower limit nor exceed the upper limit.

Step width
The step width indicates the distance between values when shifting values. If the value 10 % was sent previously, then with the next "up" command, with a set step width of 10 %, the value 20 % will be sent.

Repeated sending on pressed key
This function allows the value to be increased or decreased as long as the respective button is pressed or until the upper/lower limit value is reached.

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

4.4.2.1 Identical parameters

No.	Name / Object function	Length	Usage
190	Function 1: – Percent value, Decimal value, Colour temperature value, Temperature value, Brightness value		Switch function of the button(s). DPT according to parameter setting.
191	Function 1: – Status for display		Receiving the status for display. DPT according to parameter setting.
+10	**next Function**		

Table 56: Communication objects – Subfunction: Shift values

4.4.3.6 Function type: Switch/Send values short/long

☑ One button
☑ Two buttons

This function allows 2 different values to be sent for the short and long button. The short and long button can have different datapoint types. The settings (actions) for the short and long keypress are the same.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **One button** ■ Two buttons	Setting the operating concept.
Action: Short / Long keypress	■ not active ■ **OFF** ■ ON ■ Toggle ■ Send values	Setting the function for the short or long keypress. **For subfunction "One button".**
Action: Short / Long keypress	■ not active ■ **Switch** ■ Toggle ■ Send values	Setting the function for the short or long keypress. **For subfunction "Two buttons".**
Two-button: "Action short / long keypress" → "Switch"		
Value for left (upper) button	■ **OFF** ■ ON	Setting the value to be sent.
Value for right (lower) button	■ OFF ■ **ON**	Setting the value to be sent.
"Action short / long keypress" → "Send values"		
Datapoint type	■ DPT 2.001 Forcible control ■ **DPT 5.001 Percent value (0...100 %)** ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 1 Byte Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value ■ DPT 16.000 String	Setting of the datapoint type to be sent for the long keypress.

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text for left (upper) / right (lower) button	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Subfunction "Two buttons"**
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Subfunction "One button"**
With a long keypress, also send the value for a short keypress	▪ **not active** ▪ active	Setting whether the value for "short button" is also sent.
Time for long keypress	**Default setting** 0.1 s – 30.0 s	Setting for when a long keypress is recognised. **Basic setting refers to the time in "General Settings".**
Sending condition for long keypress	▪ **left (upper) and right (lower) button may send** ▪ only left (upper) button may send ▪ only right (lower) button may send	Setting the sending condition for the long button. **Subfunction "Two buttons"**
Font size: Values	▪ **small** ▪ medium ▪ large	Setting the font size.
Labelling: Left (Upper) / Right (Lower) button	Any text [up to 28 bytes allowed]	Entering text. **When selecting "Two buttons"**
Presentation of the function	▪ **display action for short button** ▪ display action for long button	Setting for how the function is presented on the screen.
Display value below symbol	☐	Ticking ☑ activates the function.
Colour: Value	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Definition of the colour.

ETS text	Value range **[Default value]**	Comment
Number: Symbols	1 ... 5 **[2]**	Setting for how many symbols are possible. ■ **Number and naming depending on the datapoint type.** ■ **Not for action "Switch / Toggle"**
Threshold 1 (-4)	Values according to the selected datapoint type	Setting the thresholds at which another symbol is displayed. ■ **From "Number: Symbols" → "2"** ■ **For DPTs "5.*, 7.*, 9.*"**
Threshold value 1 - 4	■ 00 - no priority, OFF ■ 01 - no priority, ON ■ 10 - priority, OFF ■ 11 - priority, ON	Setting the thresholds at which another symbol is displayed. **For "Forcible control (DPT 2.001)"**
RGB value / HSV value	#000000 ... #FFFFFF ▨ **[#000000]**	Definition of values as free input. **For DPTs "RGB, RGBW, HSV"**
White value	0 ... 255 **[0]**	Definition of values as free input. **For DPT "RGBW"**
Scene number	not active, 1 – 64 **[default value varies according to the symbol]**	Selection of the scene number at which the symbol is displayed. **For "Scene number (DPT 17.001)"**
Comparative text	Any text [up to 14 bytes allowed]	Entering text. **for DTP "String"**
Symbol / Symbol: value	Any symbol, selectable in the dropdown list	Setting the symbol.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour.

Table 57: Settings – Function type: Switch/Send values short/long

Functional principle

- **Single-button function:** Only one value can be sent for the short and one value for the long keypress. The datapoint type can be set separately in each case.
- **Two-button function:** It is possible to send different values for the short and long keypress for the left (upper) and right (lower) button respectively. Additionally, a send filter can be defined here for both buttons.

Presentation of the function

Only one of the functions can be displayed. Which function – that of the short or the long button – is to be displayed is determined by the parameter.

For more information on "Text fields", the "Type of presentation" and "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Short button: Switch, Forcible control, Percent value, Decimal value, Scene ...		Value / Scene / Text to be sent for the short button. DPT according to setting.
191	Function 1: – Short button: Status for display		Receiving the value for display on the screen. DPT according to setting.
192	Function 1: – Long button: Switch, Forcible control, Percent value, Decimal value, Scene ...		Value / Scene / Text to be sent for the long button. DPT according to setting.
193	Function 1: – Long button: Status for display		Receiving the value for display on the screen. DPT according to setting.
+10	**next Function**		

Table 58: Communication objects – Function type: Switch/Send values short/long

4.4.3.7 Function type: Status

With this function type, various functions can be displayed as a status.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **Status: Values** ■ Status: LEDs ■ Status: Symbols ■ Status: Time / Date ■ Status: Energy (as of SW v1.2.0)	Setting for what should be displayed as status.
Subfunction: "Status: Values"		
Font size: Values	■ small ■ medium ■ **large**	Setting the font size.
Number: Status values	1 … 4 **[1]**	Definition of how many status values should be displayed.
Datapoint type: Status value 1 (… 4)	■ not active ■ **DPT 1.001 Switch** ■ DPT 1 Symbol ■ DPT 5.001 Percent value (0...100 %) ■ DPT 5.005 Decimal value (0...255) ■ DPT 7.012 Current [mA] ■ DPT 7.013 Brightness [Lux] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 9.005 Speed [m/s] ■ DPT 9.007 Humidity [%] ■ DPT 9.008 Air quality [ppm] ■ DPT 9.021 Current [mA] ■ DPT 9.024 Power [kW] ■ DPT 9.025 Flow rate [l/h] ■ DPT 12.1200 Volume [l] ■ DPT 12.1201 Volume [m³] ■ DPT 13.002 Flow rate [m³/h] ■ DPT 13.010 Active energy [Wh] ■ DPT 13.013 Active energy [kWh] ■ DPT 14.056 Power [W] ■ DPT 14.065 Speed [m/s] ■ DPT 14.076 Volume [m³] ■ DPT 14.077 Flow rate [m³/h] ■ DPT 14.1200 Volume flow for meter [m³/h] ■ DPT 16.000 String	Selection of the datapoint type to be displayed as status.

ETS text	Value range **[Default value]**	Comment
Labelling	Any text [up to 28 bytes allowed]	Text for the description of the status value on the display.
Decimal digits	0 ... 3 **[0]**	Setting the decimal places for the selected datapoint type.
Unit	Any text [up to 14 bytes allowed]	Text for the description of the unit. **Not for "DPT 1.001"**
Text for status value ON / OFF	Any text [up to 14 bytes allowed]	Text input for the value. **For "DPT 1.001"**
Colour: Status value	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour. **For "DPT 1.001"**
Colour: Status value / Unit	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour. **Not for "DPT 1.001"**
Display format	■ **not active** ■ scale value > 1000 (value / 1000) ■ scale value < 1 (value x 1000)	Setting of the display format. **Selection of value ranges for scaling depending on the DPT.**
Decimal digits	0 ... 3 **[0]**	Definition of the decimal digits. **Everywhere the display format "scale" is active.**
Scaled unit	Any text [up to 14 bytes allowed]	Entering text for the scaled unit
Colour of the status value description	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Subfunction: "Status: LEDs"		
Number: LEDs	1 ... 8 **[1]**	Definition of how many status LEDs should be displayed.
Status LED 1 (-8)	■ **not active** ■ active	Activation of the corresponding LED.
Labelling	Any text [up to 28 bytes allowed]	Text for the description of the LED.
Colour for LED ON / OFF	any colour according to the list in the dropdown	Setting the colour.
Colour: Labelling	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.

ETS text	Value range **[Default value]**	Comment
Subfunction: "Status: Symbols"		
Number: Symbols	1 … 4 **[1]**	Definition of how many symbols should be displayed.
Symbol 1 (-4)	■ **not active** ■ active	Activation of the corresponding symbol.
Labelling	Any text [up to 28 bytes allowed]	Text for the description of the symbol.
Symbol for value ON / OFF	Any symbol according to the list in the dropdown	Selection of the symbol for the value.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Colour: Labelling	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Subfunction: "Status: Time / Date"		
Time	■ not active ■ **active**	Activation of the function.
Display format	■ **hh:mm:ss** ■ hh:mm	Selection of the format.
Colour: Time	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Date	■ not active ■ **active**	Activation of the function.
Display format	■ **Day/Month/Year** ■ Day/Month ■ Day of the week	Selection of the format.
Colour: Date	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
The subfunction "Status: Energy" is described in detail in the following chapter 4.4.3.7.1 due to its scope		

Table 59: Settings – Function type: Status

Display format / Scaling
Scaled values are useful when the value of the base unit is too large or too small.
Example:
DPT 9.024 Power [kW]
If the measured power is 20 W, and thus significantly less than 1 kW, a more plausible value can be displayed using the display format "Scale value < 1 (value x 1000)". In this case, instead of "0.02 kW", "20 W" is now displayed.

Status: LEDs
Up to 8 LEDs can be used for status display in a tile. Each LED can be controlled individually via an object, receive its own label and be individually configured in terms of colour.

Status: Symbols
Up to 4 symbols can be used for status display in a tile. Each symbol can be controlled individually via an object, receive its own label and be individually configured in terms of colour.

Status: Time / Date
The tile can also be used to display time and date.

For more information on the "Text fields" as well as on "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Status value 1		Input value to be displayed as status value. DPT according to parameter setting.
+1	**next Status value (maximum 4)**		
190	Function 1: – Status: LED 1	1 Bit	Input value for controlling the LED.
+1	**next LED (maximum 8)**		
190	Function 1: – Status: Symbol 1	1 Bit	Input value for controlling the symbol.
+1	**next Symbol (maximum 4)**		
+10	**next Function**		

Table 60: Communication objects – Function type: Status

4.4.3.7.1 Subfunction – Status: Energy

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Energy data: House		
Datapoint type: Consumption	- not active - **DPT 9.024 Power [kW]** - DPT 14.056 Power [W]	Activation and setting of the datapoint type for "Power".
Decimal digits	0 … 3 **[0]**	Definition of the decimal digits.
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Symbol (centrally in the display)	Any symbol, selectable in the drop-down list	Setting a symbol. The symbol appears in the centre of the display.
Colour: Symbol	- **from "Standard values" menu** - any colour according to the list in the dropdown	Setting the colour.
Grid consumption	☐	Ticking ☑ activates the function.
The following parameters appear when "Grid consumption" is activated		
Symbol	Any symbol, selectable in the drop-down list	Setting a symbol for grid consumption.
Colour: Symbol	- **from "Standard values" menu** - any colour according to the list in the dropdown	Setting the colour.
Colour: Grid consumption	- from "Standard values" menu - **any colour according to the list in the dropdown** **[Red]**	Setting the colour. A coloured arrow appears in the display.
Colour: Grid feed-in	- from "Standard values" menu - **any colour according to the list in the dropdown** **[Green]**	Setting the colour. A coloured arrow appears in the display.
Datapoint type: Current consumption	- not active - **DPT 9.024 Power [kW]** - DPT 14.056 Power [W]	Activation and setting of the datapoint type for "Power".
Decimal digits	0 … 3 **[0]**	Definition of the decimal digits.

ETS text	Value range **[Default value]**	Comment
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Datapoint type: Daily total grid consumption/ feed-in	■ not active ■ DPT 13.010 Active energy [Wh] ■ **DPT 13.013 Active energy [kWh]**	Activation and setting of the datapoint type for "Active energy".
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Energy data: Photovoltaics (PV)		
PV system	☐	Tick ☑ activates the function and displays the following parameters.
Symbol	Any symbol, selectable in the dropdown list	Setting a symbol for PV.
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Colour: PV yield	■ from “Standard values” menu ■ **any colour according to the list in the dropdown** **[Green]**	Setting the colour. A coloured arrow appears in the display.
Colour: No PV yield	■ from “Standard values” menu ■ **any colour according to the list in the dropdown** **[Red]**	Setting the colour. A coloured arrow appears in the display.
Datapoint type: Current power	■ not active ■ DPT 9.024 Power [kW] ■ **DPT 14.056 Power [W]**	Activation and setting of the datapoint type for "Power".
Decimal digits	0 ... 3 **[0]**	Definition of the decimal digits.
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Datapoint type: Daily total	■ not active ■ DPT 13.010 Active energy [Wh] ■ **DPT 13.013 Active energy [kWh]**	Activation and setting of the datapoint type for "Active energy".
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.

ETS text	Value range **[Default value]**	Comment
Energy data: Wallbox		
Wallbox	☐	Tick ☑ activates the function and displays the following parameters.
Symbol	Any symbol, selectable in the dropdown list	Setting a symbol for the wallbox.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Colour: Car charging (Wallbox)	■ from "Standard values" menu ■ **any colour according to the list in the dropdown** **[Red]**	Setting the colour. A coloured arrow appears in the display.
Colour: Wallbox not active	■ from "Standard values" menu ■ **any colour according to the list in the dropdown** **[Green]**	Setting the colour. A coloured arrow appears in the display.
Datapoint type: Current power	■ not active ■ DPT 9.024 Power [kW] ■ **DPT 14.056 Power [W]**	Activation and setting of the datapoint type for "Power".
Decimal digits	0 ... 3 **[0]**	Definition of the decimal digits.
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Datapoint type: Daily total	■ not active ■ DPT 13.010 Active energy [Wh] ■ **DPT 13.013 Active energy [kWh]**	Activation and setting of the datapoint type for "Active energy".
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Energy data: Battery		
Battery	☐	Tick ☑ activates the function and displays the following parameters.
Symbol: Battery 0 %	Any symbol, selectable in the dropdown list	Setting a symbol for low battery.
Colour: Symbol	■ from "Standard values" menu ■ **any colour according to the list in the dropdown** **[Red]**	Setting the colour.

ETS text	Value range **[Default value]**	Comment
Symbol: Battery 25 % / 50 % / 75 % / 100 %	Any symbol, selectable in the dropdown list	Setting a symbol for low battery.
Colour: Symbol	■ from "Standard values" menu ■ **any colour according to the list in the dropdown** **[Green]**	Setting the colour for the respective state.
Colour: Battery charging	■ from "Standard values" menu ■ **any colour according to the list in the dropdown** **[Green]**	Setting the colour. A coloured arrow appears in the display.
Colour: Battery discharging	■ from "Standard values" menu ■ **any colour according to the list in the dropdown** **[Red]**	Setting the colour. A coloured arrow appears in the display.
Colour: Battery standby	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour. Indicates that it is neither full nor being charged.
Datapoint type: Current power	■ not active ■ DPT 9.024 Power [kW] ■ **DPT 14.056 Power [W]**	Activation and setting of the datapoint type for "Power".
Decimal digits	0 … 3 **[0]**	Definition of the decimal digits.
Unit	Any text [up to 14 bytes allowed]	Text for describing the unit.
Charge level: Battery	■ **not active** ■ active	When activated, the object "Status: Battery charge level" appears. Display of the state of charge in %.

Table 61: Settings – Function type: Status - Subfunction: Status Energy

This function provides a clear overview of the "Energy" status at a glance. In the centre of the display is the symbol for the house, and in the corners the symbols for grid consumption, wallbox, PV system or battery. If something is supplied, this can be shown graphically, for example, with a green arrow. If something is consumed, this can be shown, for example, with a red arrow in the corresponding direction.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Status: Consumption - House	2 Byte 4 Byte	Reception of the current status value. DPT according to parameter setting.
191	Function 1: – Status: Current grid consumption	2 Byte 4 Byte	Reception of the current status value. DPT according to parameter setting.
192	Function 1: – Status: Grid consumption/feed-in	2 Byte 4 Byte	Reception of the current status value. DPT according to parameter setting.
193	Function 1: – Status: Current power, PV	2 Byte 4 Byte	Reception of the current status value. DPT according to parameter setting.
194	Function 1: – Status: Daily total, PV	4 Byte	Reception of the current status value.
195	Function 1: – Status: Current power, Wallbox	2 Byte 4 Byte	Reception of the current status value. DPT according to parameter setting.
196	Function 1: – Status: Daily total, Wallbox	4 Byte	Reception of the current status value.
197	Function 1: – Current power, Battery	2 Byte 4 Byte	Reception of the current status value. DPT according to parameter setting.
198	Function 1: – Status: Battery charge level	1 Byte	Reception of the current status value.

Table 62: Communication objects – Function type: Status - Subfunction: Status Energy

4.4.3.8 Function type: Mode selection

☑ One button
☑ Two buttons

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **One button** ■ Two buttons	Setting of the operating concept.
Automatic	☐	Ticking ☑ activates the corresponding operating mode.
Comfort	☑	
Standby	☑	
Night	☑	
Frost / Heat protection	☑	
Symbol "Auto" / "Comfort" / "Standby" / "Night" / "Frost / Heat protection"	Any symbol, selectable in the corresponding dropdown list	Setting the respective symbol for the corresponding operating mode.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour for the corresponding symbol.
Long keypress	■ not active ■ **active**	Activation of the long keypress.
Operating mode for long button press	■ Automatic ■ **Comfort** ■ Standby ■ Night ■ Frost protection	Operating mode that is sent with a long keypress. The selectable operating modes are those that have been activated. **Only with "One button"**
Operating mode: Left (Upper) / Right (Lower) button	■ Automatic ■ **Comfort** ■ **Standby** ■ Night ■ Frost protection	Operating mode that is sent with each long keypress. The selectable operating modes are those that have been activated. **Only with "Two buttons"**
Buttons: Left (Top) / Right (Bottom) toggle	■ **next / previous** ■ previous / next	Setting the direction in which the operating modes should be switched when pressing the buttons. **Only with "Two buttons"**

ETS text	Value range **[Default value]**	Comment
Switching type	■ **limit stop (after the last value, this is repeated)** ■ overrun (after the last value, the first value is sent again)	Setting for what should happen when the last switching value is reached. **Only with "Two buttons"**
Switchover considers status object	■ **not active** ■ active	Setting whether the switchover should be performed according to the current status.
Font size: Values	■ **small** ■ medium ■ large	Setting the font size.
Labelling: Left (Upper) / Right (Lower) button	■ **via symbol** ■ via text input	Free text for describing the respective button on the display. **Only with "Two buttons"**
Symbol	Any symbol, selectable in the dropdown list	Definition of a symbol. **When selecting "via symbol"**
Text	Any text [up to 28 bytes allowed]	Entering text. **When selecting "via text input"**
Colour: Symbol / Text	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.

Table 63: Settings – Function type: Mode selection

Functional principle
Up to 5 different operating modes can be sent by briefly pressing a button. These are switched one after the other. Each operating mode can be assigned a symbol.
Each symbol can be individually colour-adjusted.

Long keypress
In addition to switching via a short keypress, an operating mode can be sent with a long keypress. Regardless of the last switching value, only the set operating mode is always sent

Switching type
The following applies to the function via "Two buttons":

- **limit stop**: After sending the last operating mode, this operating mode is sent again.
- **overrun**: After sending the last operating mode, the first operating mode is sent again.

Important: For the function via "One button" this parameter is internally fixed to "overrun".

Switchover considers status object
If the status value is not considered during switchover, the device remembers the last value sent and sends the next or previous value at the next operation, regardless of whether another value has been sent to the object in the meantime.
If the status value is considered during switchover, the device sends the next higher or next lower switching value at the next operation – based on the last received status value. For this, the object "Status: HVAC-Mode" is displayed.

For more information on the "Text fields" as well as on "Lock object / Function name",
see 4.4.2.1 Identical parameters

The table shows the available communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Mode selection (HVAC-Mode)	1 Byte	Switching the operating mode.
191	Function 1: – Status: HVAC-Mode	1 Byte	Receiving the status from the temperature controller.

Table 64: Communication objects – Function type: Mode selection

4.4.3.9 Function type: Temperature shift

☑ Two buttons

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **shift via 1 Bit** ■ shift via 1 Byte ■ shift via 2 Byte ■ shift via 2 Byte “Basic Comfort Setpoint”	Setting how the shifting should be carried out.
Buttons: Left (Top) / Right (Bottom) shift the values	■ **Down / Up** ■ Up / Down	Setting the direction in which the values are shifted.
Step width	0.1 … 5 K **[0.2]**	Setting the step width between two transmission commands. **Not for "Shift via 1 Bit"**
Lower limit	-10 … 10 K **[-3]**	Setting the lower or upper limit of the setpoint shift. **For "Shift via 1 / 2 Byte"**
Upper limit	-10 … 10 K **[3]**	
Lower limit	0 … 45 °C **[19 °C]**	Setting the lower or upper limit of the setpoint shift. **For "Shift via 2 Byte Basic Comfort Setpoint"**
Upper limit	0 … 45 °C **[23 °C]**	
Shift based on	■ object "Status: Setpoint shift" ■ **object "Setpoint shift"**	Setting what the setpoint shift refers to. **For "Shift via 2 Byte"**
Shift based on	■ **object "Status Basic Comfort setpoint"** ■ object "Basic Comfort setpoint"	Setting what the setpoint shift refers to. **For "Shift via 2 Byte Basic Comfort Setpoint"**
Use internal temperature	■ **not active** ■ active	Setting whether the internally measured temperature value should be used to display the actual value.
Repeated sending on pressed key	■ **not active** ■ active	Setting whether the shift should be repeated at fixed intervals when the button is pressed.
Repetition time	0.1 s – 30 s **[1.0 s]**	Setting the repeat time between two transmissions.

ETS text	Value range **[Default value]**	Comment
Font size: Values	▪ **small** ▪ medium ▪ large	Definition of the font size on the display.
Symbol: Left (Upper) / Right (Lower) button	Any symbol, selectable in the dropdown list	Assigning a symbol to the respective button.
Colour: Symbol	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the respective colour.
Type of presentation	▪ **display symbols** ▪ display value as text	Setting for how the function should be displayed.
Labelling: Actual temperature	Any text [up to 28 bytes allowed]	Entering text. **Only for "display value as text"**
Colour: Text	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Labelling: Setpoint temperature	Any text [up to 28 bytes allowed]	Entering text.
Unit for display	Any text [up to 5 bytes allowed]	Entering text.
Colour: Value / Unit	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour. **Only with "display symbols".**
Additional status	▪ **1 Bit (1 = active / 0 = not active)** ▪ 1 Byte (> 0% = active, 0% = not active)	Setting which object is used to display the additional status.
Colour for text "Active" / "Inactive"	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour. **Only for "display value as text"**
Symbol for "Active" / "Inactive"	Any symbol, selectable in the dropdown list	Definition of a symbol. **Only with "display symbols".**
Colour for symbol "Active" / "Inactive"	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour. **Only with "display symbols".**

Table 65: Settings – Function type: Temperature shift

Functional principle
This function shifts the current setpoint within the set limits. When the "-" button is pressed, the setpoint is reduced by the set step size from the last value, and when the "+" button is pressed, the setpoint is increased by the set step size to the last value.

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

Step width
The step size indicates the distance between two sent telegrams. For example, with a step size of 0.5 K and a setpoint of 21 °C, pressing the "–" button would set it to 20.5 °C and pressing the "+" button would set it to 21.5 °C.

Shift based on
If the status value is not considered during switchover, the device remembers the last value sent and sends the next or previous value at the next operation, regardless of whether another value has been sent to the object in the meantime.
If the status value is taken into account during switching, the device sends the next higher or lower switching value the next time it is operated – based on the last received status value. For example, if the value "1 K" was sent at the last keypress, then "2 K" from another location, the next "+" button press will send the value "2.5 K".

Note: The names used for the objects refer to MDT Temperature Controllers.

The temperature shift can be carried out in 4 different ways:

- **Shift via 1 Bit**
  In this case, the button only sends the command "1" for an upward shift of the setpoint and "0" for a downward shift of the setpoint.
- **Shift via 1 Byte**
  In this case, the button sends a 1 Byte value, which is multiplied by the step size set in the controller. To ensure that the display and the current setpoint are synchronised, the step size and the limits of the setpoint shift must be specified in the button.
- **Shift via 2 Byte**
  Here, the button sends a 2 Byte temperature value, which is added to or subtracted from the set base comfort value. The button sends the shift by the set step size with each keypress. To ensure that the display and the current setpoint are synchronised, the limits of the setpoint shift must be specified in the button and set to the same values as in the controller to be controlled.
- **Shift via 2 Byte "Basic Comfort Setpoint"**
  With this shift, the button sends a new basic Comfort setpoint to the controller to be controlled. It evaluates the object "Status: Basic Comfort Setpoint" and sends the new setpoint +/- the set step size to the controller to be controlled. The range for the setpoint shift can be limited via the limits to be set for the setpoint shift.

Presentation
The setpoint shift can be presented in different ways. There are options via symbols and individual labelling of the buttons and values as text.

Additional status
An additional status can be displayed on the tile. Here, the size of the object is set (1 Bit / 1 Byte).

For more information on the "Text fields" as well as on "Lock object / Function name",
see 4.4.2.1 Identical parameters

The table shows the available communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Setpoint shift	1 Bit 1 Byte 2 Byte	Sending the setpoint shift. DPT depending on the parameter setting.
191	Function 1: – External temperature - Input	2 Byte	Receipt of an external temperature for displaying the actual temperature.
192	Function 1: – Status: Current setpoint	2 Byte	Receipt of the current setpoint value from the controller to be controlled.
193	Function 1: – Status: Setpoint shift	1 Byte 2 Byte	Receipt of the current setpoint shift. **Not for "Shift via 1 Bit".**
194	Function 1: – Additional status	1 Bit 1 Byte	Receipt of an additional status value.

Table 66: Communication objects – Function type: Temperature shift

4.4.3.10 Function type: Temperature regulation

This function includes the temperature shift as well as the operating mode switchover.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Temperature shift		
Subfunction	■ **shift via 1 Bit** ■ shift via 1 Byte ■ shift via 2 Byte ■ shift via 2 Byte “Basic Comfort Setpoint”	Setting how the shifting should be carried out.
Buttons: Left (Top) / Right (Bottom) shift the values	■ **Down / Up** ■ Up / Down	Setting the direction in which the values are shifted.
Step width	0.1 ... 5 K **[0.5]**	Setting the step width between two transmission commands.
Lower limit	-10 ... 10 K **[-3]**	Setting the lower or upper limit of the setpoint shift. **For "Shift via 1 / 2 Byte"**
Upper limit	-10 ... 10 K **[3]**	
Lower limit	0 ... 45 °C **[19 °C]**	Setting the lower or upper limit of the setpoint shift. **For "Shift via 2 Byte Basic Comfort Setpoint"**
Upper limit	0 ... 45 °C **[23 °C]**	
Shift based on	■ **object "Status: Setpoint shift"** ■ object "Setpoint shift"	Setting for what the setpoint shift refers to. **For "Shift via 2 Byte"**
Shift based on	■ **object "Status Basic Comfort setpoint"** ■ object "Basic Comfort setpoint"	Setting for what the setpoint shift refers to. **For "Shift via 2 Byte Basic Comfort Setpoint"**
Use internal temperature	■ **not active** ■ active	Setting whether the internally measured temperature value should be used to display the actual value.
Repeated sending on pressed key	■ **not active** ■ active	Setting whether the shift should be repeated at fixed intervals when the button is pressed.
Repetition time	0.1 s – 30 s **[1.0 s]**	Setting the repeat time between two transmissions.

ETS text	Value range **[Default value]**	Comment
Symbol: Left (Upper) / Right (Lower) button	Any symbol, selectable in the dropdown list	Assigning a symbol to the respective button.
Colour: Symbol / Text	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Special presentation	■ only setpoint temperature ■ **setpoint and actual temperature**	Setting for which values should be displayed.
Labelling: Setpoint temperature	Any text [up to 28 bytes allowed]	Enter a text. Appears on the display.
Colour: Setpoint temperature / unit	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Labelling: Actual temperature	Any text [up to 28 bytes allowed]	Enter a text. Appears on the display.
Colour: Actual temperature / unit	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Unit for display	Any text [up to 5 bytes allowed]	Entering text.
Mode selection		
Active buttons		
Comfort	☐	Ticking ☑ activates the corresponding button on the display.
Standby	☐	
Night	☐	
Symbols for buttons / status		
Comfort	Any symbol, selectable in the corresponding dropdown list	Assignment of a symbol for the respective operating mode.
Standby		
Night		
Frost / Heat protection		
Colour for active operating mode	■ from “Standard values” menu ■ **any colour according to the list in the dropdown** **[Red]**	Setting the colour.

ETS text	Value range **[Default value]**	Comment
Colour for inactive operating mode	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Additional status	▪ **1 Bit (1 = active / 0 = not active)** ▪ 1 Byte (> 0% = active, 0% = not active)	Setting which object is used to display the additional status.
Symbol for "Active" / "Inactive"	Any symbol, selectable in the dropdown list	Definition of a symbol.
Colour: “Active” symbol	▪ from “Standard values” menu ▪ **any colour according to the list in the dropdown** **[Red]**	Setting the colour.
Colour: “Inactive” symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Switchover: Heating / Cooling	▪ **not active** ▪ active	Activation of the function.
Symbol: Heating / Cooling	Any symbol, selectable in the dropdown list	Definition of a symbol.
Colour: Symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Extended setting for pop-up		
Status on basic tile	▪ **Status: HVAC** ▪ Status: Heating / Cooling	Setting for which status should be displayed on the basic tile.

Table 67: Settings – Function type: Temperature regulation

The function includes the function types "Mode selection" and "Temperature shift" from the previous chapters. Here, both can be used within one function for control.

For more information on the "Text fields" as well as on "Lock object / Function name", see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Setpoint shift	1 Byte 2 Byte	Sending the setpoint shift. DPT depending on the parameter setting.
191	Function 1: – External temperature - Input	2 Byte	Receipt of an external temperature for displaying the actual temperature.
192	Function 1: – Status: Current setpoint	2 Byte	Receipt of the current setpoint value from the controller to be controlled.
193	Function 1: – Status: Setpoint shift	1 Byte 2 Byte	Receipt of the current setpoint shift. DPT depending on the parameter setting.
194	Function 1: – Mode selection (HVAC-Mode)	1 Byte	Switching the operating mode.
195	Function 1: – Status: HVAC-Mode	1 Byte	Receiving the status from the temperature controller.
196	Function 1: – Additional status	1 Bit 1 Byte	Receipt of an additional status value. DPT according to setting.
197	Function 1: – Switchover: Heating / Cooling	1 Bit	Sending the switching command.
198	Function 1: – Status: Heating / Cooling	1 Bit	Receiving the status from the controller.

Table 68: Communication objects – Function type: Temperature regulation

4.4.3.11 Function type: Temperature / Fan coil

☑ Two buttons

Note: This function is only possible as of SW v1.2.0

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ Temperature + Presets ■ **Temperature + Fan coil** ■ Fan coil	Selection of which functions should be displayed on the display.
The following parameters are valid for: "**Temperature + Presets**" and "**Temperature + Fan coil**"		
Step width	0.1 … 5 K **[0.5]**	Setting the step width between two transmission commands.
Lower limit	0 … 45 °C **[19 °C]**	Setting the lower limit of the adjustable range.
Upper limit	0 … 45 °C **[23 °C]**	Setting the upper limit of the adjustable range.
Use internal temperature	■ **not active** ■ active	Setting whether the internally measured temperature value should be used to display the actual value.
Repeated sending on pressed key	■ **not active** ■ active	Setting whether the value should be repeated at fixed intervals when the button is held down.
Repetition time	0.1 s – 30 s **[1.0 s]**	Setting the repeat time between two transmissions.
Special presentation	■ only setpoint temperature ■ **setpoint and actual temperature**	Setting for which values should be displayed.
Labelling: Setpoint temperature	Any text [up to 28 bytes allowed]	Enter a text. Appears on the display.
Colour: Setpoint temperature / unit	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
Labelling: Actual temperature	Any text [up to 28 bytes allowed]	Enter a text. Appears on the display.
Colour: Actual temperature / unit	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.

ETS text	Value range **[Default value]**	Comment
Unit for display	Any text [up to 5 bytes allowed]	Entering text.
Value for button “Heating”	■ Value "0" ■ **Value "1"**	Setting the value.
Value for button “Cooling”	■ **Value "0"** ■ Value "1"	Setting the value.
Switchover: Heating / Cooling	■ **not active** ■ active	Activation of the function.
Symbol: Heating / Cooling	Any symbol, selectable in the dropdown list	Definition of a symbol.
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.
The following parameters are valid for **all 3 subfunctions**		
Buttons: Left (Top) / Right (Bottom) shift the values	■ **Down / Up** ■ Up / Down	Setting the direction in which the values are shifted.
Datapoint type for status "Controller On/Off"	■ **DPT 1.001 Switch On/Off** ■ DPT 20.102 HVAC mode	Selection of the datapoint type.
Value for ON	■ Value “0” ■ **Value "1"**	Setting for which received value the controller is considered to be "ON". **For DPT 1.001**
Value for OFF	■ **Value “0”** ■ Value "1"	Setting for which received value the controller is considered to be "OFF". **For DPT 1.001**
Operating mode for ON	■ Automatic ■ **Comfort** ■ Night ■ Standby ■ Frost protection	Setting for which received operating mode the controller is considered to be "ON". **For DPT 20.102**
Operating mode for OFF	■ Automatic ■ Comfort ■ Night ■ **Standby** ■ Frost protection	Setting for which received operating mode the controller is considered to be "OFF". **For DPT 20.102**
Symbols for buttons / status: Valid for all 3 subfunctions (see comment for deviations)		
Symbol: Left (Upper) / Right (Lower) button	Any symbol, selectable in the dropdown list	Assigning a symbol to the respective button.

ETS text	Value range **[Default value]**	Comment
Colour: Symbol / Text	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Symbol: Controller ON / OFF	Any symbol, selectable in the dropdown list	Assigning a symbol to the respective button.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the respective colour.
Symbol: Automatic	Any symbol, selectable in the dropdown list	Definition of a symbol. **Only for "Temperature + Fan Coil"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the respective colour.
Symbol: Manual operation	Any symbol, selectable in the dropdown list	Definition of a symbol. **Only for "Temperature + Fan Coil"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the respective colour.
Symbol: Fan	Any symbol, selectable in the dropdown list	Definition of a symbol. **Only for "Temperature + Fan Coil" and "Fan Coil"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the respective colour.
Symbol: Damper adjustment OFF / ON	Any symbol, selectable in the dropdown list	Definition of a symbol. **Only for "Fan coil"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the respective colour.
Individual settings for **"Temperature + Presets"**		
Preset: Temperature 1 / 2 / 3	☐	Tick ☑ activates the respective function.
Value	0 ... 45 °C **[Standard value varies according to the preset]**	Setting the temperature for the respective preset.
Set values with a long keypress	■ **not active** ■ active	Activation of the function.

ETS text	Value range **[Default value]**	Comment
Colour for active presets	▪ from "Standard values" menu ▪ **any colour according to the list in the dropdown** **[Red]**	Setting the colour.
Display setpoint	▪ **not active** ▪ active	Setting whether the setpoint value should be displayed on the screen. When activated, the object "Status: Setpoint" appears
Individual settings for **"Temperature + Fan Coil"**		
Fan Coil: Maximum level	1 ... 5 **[5]**	Determining the number of levels.
Fan Coil: Value for "Automatic"	▪ Value "0" ▪ **Value "1"**	Setting which value should be used to switch to "Automatic".
Fan Coil: Value for "Manual"	▪ **Value "0"** ▪ Value "1"	Setting which value should be used to switch to "Manual".
Individual settings for **"Fan Coil"**		
Maximum number: Levels	1 ... 5 **[5]**	Determining the number of levels.
Value for "Automatic"	▪ Value "0" ▪ **Value "1"**	Setting which value should be used to switch to "Automatic".
Value for "Manual"	▪ **Value "0"** ▪ Value "1"	Setting which value should be used to switch to "Manual".
Value for automatic damper control	▪ **Value "0"** ▪ Value "1"	Setting which value should be used to switch to "Automatic".
Value for manual damper control	▪ Value "0" ▪ **Value "1"**	Setting which value should be used to switch to "Manual".
Maximum number: Damper positions	1 ... 5 **[5]**	Definition of the number of damper positions.
Datapoint type: Operating mode switchover	▪ **DPT 1.006 Man / Auto** ▪ DPT 20.105 HVAC control mode	Setting the datapoint type for the function.
Symbol: Automatic / Manual operation	Any symbol, selectable in the dropdown list	Definition of the respective symbol. **Only for DPT 1.006**
Colour: Symbol	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the respective colour. **Only for DPT 1.006**

ETS text	Value range **[Default value]**	Comment
Number: Functions	0 … 6 **[5]**	Definition of the number of functions.
Function 1 (… 6)	Any function, selectable in the dropdown list	Setting of the respective function.
Symbol	Any symbol, selectable in the dropdown list	Setting of the respective symbol.
Colour: Symbol	▪ from “Standard values” menu ▪ any colour according to the list in the dropdown **[Standard values vary depending on the function]**	Setting the respective colour.

Table 69: Settings – Function type: Temperature / Fan coil

This function allows the control of air conditioning units. Various settings can be made for this in the different submenus.

Important: For some objects for Fan Coil control, the device expects the actuator status as feedback on the same object! Without status, for example, the controller cannot be switched On or Off.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Setpoint setting	2 Byte	Sending the setpoint.
190	Function 1: – Fan coil: Automatic damper adjustment and status	1 Bit	Sending of operation and receiving of status. **Status feedback via the same object!**
191	Function 1: – Fan coil: Damper adjustment – Level and status	1 Byte	Sending of the level and receiving of status. **Status feedback via the same object!**
191	Function 1: – External temperature - Input	2 Byte	Receiving an external temperature value.
192	Function 1: – Status: Current setpoint	2 Byte	Receipt of the current setpoint value from the controller to be controlled.
193	Function 1: – Fan coil level: Setting and status	1 Byte	Sending of the level and receiving of status. **Status feedback via the same object!**
194	Function 1: – Controller On/Off	1 Bit	Switch function for the controller.
194	Function 1: – Mode selection (HVAC-Mode)	1 Byte	Sending of the corresponding operating mode.
195	Function 1: – Status: Controller On/Off	1 Bit	Reception of the status from the controller.
195	Function 1: – Status: HVAC-Mode	1 Byte	Reception of the status from the controller.

No.	Name / Object function	Length	Usage
196	Function 1: – Status: Control value	1 Byte	Reception of the current status value.
196	Function 1: – Fan Coil: Auto/Manual and status	1 Bit 1 Byte	Sending of operation and receiving of status. **Status feedback via the same object!**
197	Function 1: – Switchover: Heating / Cooling	1 Bit	Sending the switching command.
198	Function 1: – Status: Heating / Cooling	1 Bit	Receiving the status from the controller.

Table 70: Communication objects – Function type: Temperature / Fan coil

4.4.3.12 Function type: Scenes

☑ One button

The scene function enables the calling up and saving of scenes.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Scene number	1 - 64 **[1]**	Setting of the scene number to be sent.
Save scene	■ **not active** ■ active	Release for saving scenes.
Time for long key-press	**Default setting** 0.1 s - 30.0 s	Setting for when a long keypress is recognised. **Only when "Save scene" is active**
Symbol	Any symbol, selectable in the dropdown list	Setting the symbol.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.

Table 71: Settings – Function type: Scenes

Functional principle

- With a **short keypress**, the scene is sent.
- With a **long keypress**, the scene is saved (when "Save scene" is active).

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

Scene No.	Call up		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 72: Scene call-up and saving

It is presented by a symbol, which can also be changed in colour.

For more information on the "Text fields" as well as on "Lock object / Function name", see 4.4.2.1 Identical parameters

The table shows the available communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Scene	1 Byte	Sending of the set scene.
190	Function 1: – Save scene	1 Byte	Sending/saving of the set scene.

Table 73: Communication objects – Scene

4.4.3.13 Function type: Colour control via Slider

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ HSV colour space ■ RGB colour space ■ RGBW colour space ■ Colour temperature TW 1 (DPT 249.600) ■ Colour temperature TW 2 (DPT 5.001) ■ Colour temperature TW 3 (DPT 7.600)	Setting of the type of colour control.
General parameters:		
Button assignment: Left (Top) / Right (Bottom)	■ **brighter / darker** ■ darker / brighter	Setting how the buttons for the brighter/ darker function are assigned.
Presentation	view with sliders	Setting how the function is shown on the screen. Cannot be changed!
Send value	■ **when releasing the button** ■ send immediately ■ on change of 1 % ■ on change of 2% ... ■ on change of 10%	Setting the sending condition for the value.
The following parameters are specific to the various subfunctions		
Show symbol	■ not active ■ **active**	Setting whether the symbol should be displayed.
Show symbol	■ not active ■ **red** ■ green ■ blue	Setting whether and in which colour the symbol should be displayed. **For "HSV colour space" → "Saturation (S)"**
Symbol: Slider	Fixed symbol according to the subfunction	Display of the symbol. **If "Show symbol" → "active".**
Colour: Slider	fixed color according to the subfunction	Specification/definition of the colour. ■ **"Show symbol" → "not active"** ■ **Fixed colour or colour selection according to the subfunction**
Colour: Slider	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	

ETS text	Value range **[Default value]**	Comment
Slider minimum value	0 ... 100 % **[0 %]**	Definition of the minimum value. **For "Colour temperature TW 2": Slider "Tunable White" + Slider "Brightness".**
Slider maximum value	0 ... 100 % **[100 %]**	Definition of the maximum value. **For "Colour temperature TW 2": Slider "Tunable White" + Slider "Brightness".**
Slider minimum value	2000 ... 3300 K **[2700 K]**	Definition of the minimum value. **For "Colour temperature TW 1 / TW 3": Slider "Tunable White".**
Slider maximum value	4000 ... 8000 K **[6000 K]**	Definition of the maximum value. **For "Colour temperature TW 1 / TW 3": Slider "Tunable White".**
Symbol: Left (Upper) / Right (Lower) button	Any symbol, selectable in the dropdown list	Setting the symbol for the button.
Colour: Symbol / Text	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Slider "White"	☐	Tick ☑ activates the parameter. **For "RGBW colour space"**
Slider "Brightness"	☐	Tick ☑ activates the parameter. **For "Tunable White"**
Slider "Brightness (V)"	☐	Tick ☑ activates the parameter. **For "HSV colour space"**
Extended setting for pop-up		
Symbol for OFF / ON	Any symbol according to the selection in the dropdown	Selection of a symbol for the respective value.
Colour: Symbol	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Display status value below slider	☐	Ticking ☑ activates the function.
Colour: Status value	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour. **Only if "Display status value below slider" is activated.**

Table 74: Settings – Function type: Colour control via Slider

The control is displayed via sliders. These can each be configured separately.

Difference in "Colour temperature TW 1 / 2 / 3"
Colour temperature control / presentation can be carried out via different datapoint types. For each of the 3 options, the corresponding objects are displayed.

For more information on the "Text fields" as well as on "Lock object / Function name",
see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Switch HSV	1 Bit	Switch-on object
190	Function 1: – Switch RGB	1 Bit	Switch-on object
190	Function 1: – Switch RGBW	1 Bit	Switch-on object
190	Function 1: – Colour temperature - switch	1 Bit	Switch-on object
191	Function 1: – Hue (H) - dimming relative	4 Bit	Object for relative dimming
191	Function 1: – Red - dimming relative	4 Bit	Object for relative dimming
191	Function 1: – Colour temperature - dimming relative	4 Bit	Object for relative dimming
192	Function 1: – Saturation (S) - dimming relative	4 Bit	Object for relative dimming
192	Function 1: – Green - dimming relative	4 Bit	Object for relative dimming
192	Function 1: – Brightness - dimming relative	4 Bit	Object for relative dimming
193	Function 1: – Brightness (V) - dimming relative	4 Bit	Object for relative dimming
193	Function 1: – Blue - dimming relative	4 Bit	Object for relative dimming
193	Function 1: – Brightness - Colour temperature transition	6 Byte	Sending a colour value
193	Function 1: – Colour temperature (proportion in %) - absolute	1 Byte	Sending an absolute value
193	Function 1: – Colour temperature (K) – absolute	2 Byte	Sending an absolute value
194	Function 1: – HSV colour setting	3 Byte	Sending a colour value
194	Function 1: – RGB colour setting	3 Byte	Sending a colour value
194	Function 1: – White - dimming relative	4 Bit	Object for relative dimming
194	Function 1: – Status: Colour temperature (K)	2 Byte	Receiving the status value
194	Function 1: – Brightness - absolute	1 Byte	Sending an absolute value
195	Function 1: – HSV Status	3 Byte	Receiving the status value
195	Function 1: – RGB Status	3 Byte	Receiving the status value
195	Function 1: – RGBW colour setting	6 Byte	Sending a colour value
195	Function 1: – Brightness - Status: Dimming value	1 Byte	Receiving the status value

No.	Name / Object function	Length	Usage
195	Function 1: – Status: Colour temperature (proportion of CW in %)	1 Byte	Receiving the status value
195	Function 1: – Status: Colour temperature (K)	2 Byte	Receiving the status value
196	Function 1: – HSV Status: On/Off	1 Bit	Receiving the status value
196	Function 1: – RGB Status: On/Off	1 Bit	Receiving the status value
196	Function 1: – RGBW Status	6 Byte	Receiving the status value
196	Function 1: – Colour temperature - Status: On/Off	1 Bit	Receiving the status value
196	Function 1: – Brightness - Status: Dimming value	1 Byte	Receiving the status value
197	Function 1: – RGBW Status: On/Off	1 Bit	Receiving the status value

Table 75: Communication objects – Colour control via Slider

4.4.3.14 Function type: Colour control via Color picker

Note: This function is possible as of SW v1.2.0.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **HSV colour space** ■ RGB colour space ■ RGBW colour space ■ HSV colour space (single objects) ■ RGB colour space (single objects) ■ RGBW colour space (single objects)	Setting of the type of colour control.
send value	■ **when releasing the button** ■ send immediately ■ on change of 1 % ■ on change of 2% ... ■ on change of 10%	Setting the sending condition for the value.
Symbol for button OFF / ON	Any symbol according to the selection in the dropdown	Selection of a symbol for the respective value.
Colour: Symbol	■ from “Standard values” menu ■ **any colour according to the list in the dropdown** **[Red] [Green]**	Setting the colour. First standard value for "OFF", second standard value for "ON"
Extended setting for pop-up		
Behaviour on short keypress	■ **open pop-up window** ■ Toggle	Setting for how the device should respond to a short keypress.
Symbol for OFF / ON	Any symbol according to the selection in the dropdown	Selection of a symbol for the respective value.
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour.

Table 76: Settings – Function type: Colour control via Color picker

Note: After programming, the "Color picker" will automatically be displayed as a colour wheel on the display.

Extended setting for pop-up
Note: If the parameter "Behaviour on short keypress" is set to "toggle", the pop-up opens with a long keypress.

For more information on the "Text fields" as well as on "Lock object / Function name", see 4.4.2.1 Identical parameters

Important: For some colour control objects, the device expects the status on the same object as feedback!

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Switch HSV	1 Bit	Switch-on object.
190	Function 1: – Switch RGB	1 Bit	Switch-on object.
190	Function 1: – Switch RGBW	1 Bit	Switch-on object.
191	Function 1: – HSV Status: On/Off	1 Bit	Receiving the status value.
191	Function 1: – RGB Status: On/Off	1 Bit	Receiving the status value.
191	Function 1: – RGBW Status: On/Off	1 Bit	Receiving the status value.
192	Function 1: – HSV colour setting	3 Byte	Sending a colour value.
192	Function 1: – RGB colour setting	3 Byte	Sending a colour value.
192	Function 1: – RGBW colour setting	6 Byte	Sending a colour value.
192	Function 1: – Hue (H) - absolute	1 Byte	Sending a colour value.
192	Function 1: – Red (R) - absolute	1 Byte	Sending a colour value.
192	Function 1: – Red (R) - absolute and status	1 Byte	Sending a colour value and receiving the status. **Status feedback via the same object!**
193	Function 1: – HSV Status	3 Byte	Receiving the status value
193	Function 1: – RGB Status	3 Byte	Receiving the status value
193	Function 1: – RGBW Status	6 Byte	Receiving the status value
193	Function 1: – Hue (H) - Status	1 Byte	Receiving the status value
193	Function 1: – Red (R) - Status	1 Byte	Receiving the status value
193	Function 1: – Green (G) - absolute and status	1 Byte	Sending a colour value and receiving the status. **Status feedback via the same object!**
194	Function 1: – Saturation (S) - absolute	1 Byte	Sending a colour value.
194	Function 1: – Green (G) - absolute	1 Byte	Sending a colour value
194	Function 1: – Blue (B) - absolute and status	1 Byte	Sending a colour value and receiving the status. **Status feedback via the same object!**
195	Function 1: – Saturation (S) - Status	1 Byte	Receiving the status value

No.	Name / Object function	Length	Usage
195	Function 1: – Green (G) - Status	1 Byte	Receiving the status value
195	Function 1: – White (W) - absolute and status	1 Byte	Sending a colour value and receiving the status. **Status feedback via the same object!**
196	Function 1: – Brightness (V) - absolute	1 Byte	Sending a colour value
196	Function 1: – Blue (B) - absolute	1 Byte	Sending a colour value
197	Function 1: – Brightness (V) - Status	1 Byte	Receiving the status value
197	Function 1: – Blue (B) - Status	1 Byte	Receiving the status value

Table 77: Communication objects – Colour control via Color picker

4.4.3.15 Function type: Multimedia

Note: This function is possible as of SW v1.2.0.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Value for "Play" / "Pause" / "Stop"	■ Value "0" ■ Value "1" **[DEFAULT VALUE] according to the function**	Definition of the value with which the respective function is triggered.
Symbol for "Play" / "Pause" / "Stop" button	Any symbol, selectable in the dropdown list	Selection of a symbol for the respective button.
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour. **Applies to buttons "Play" and "Pause".**
Colour: Symbol "Stop inactive" / "Stop active"	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour. **Applies to button "Stop".**
Volume control Back / Next buttons Text (via 14 byte object)	☐	Ticking ☑ activates the respective function. **With presentation "display symbols"**
Settings when selecting "**Volume control**"		
Volume setting via	■ 1 Bit ■ 1 Byte	Setting how the volume is adjusted.
Value for “Volume down”	■ **Value "0"** ■ Value “1”	Setting with which value the function is triggered. **When set via 1 Bit.**
Value for "Volume up"	■ Value "0" ■ **Value “1”**	Setting with which value the function is triggered. **When set via 1 Bit.**
Step width	0 ... 100 % **[5 %]**	Definition of the value by which it is increased or reduced per keypress. **When set via 1 Byte.**
Symbol for "Volume down" / "Volume up" button	Any symbol, selectable in the dropdown list	Setting a symbol for the corresponding button.

ETS text	Value range **[Default value]**	Comment
Colour: Symbols for "Volume down/up" / Value for "Volume"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Settings when selecting **"Back / Next" buttons**		
Select playlist via	■ 1 Bit ■ 1 Byte	Setting how the playlist is changed.
Value for "Back"	■ **Value "0"** ■ Value "1"	Setting with which value the function is triggered. **When set via 1 Bit.**
Value for "Next"	■ Value "0" ■ **Value "1"**	Setting with which value the function is triggered. **When set via 1 Bit.**
Symbol for button "Back" / "Next"	Any symbol, selectable in the dropdown list	Setting a symbol for the corresponding button.
Colour: Symbols "Back" / "Next" / Value for "Title"	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Display playlist as	■ **Number** ■ Text	Setting how the positions in the playlist are displayed.
Settings when selecting **"Text (via 14 Byte object)"**		
Colour: Text (via 14 Byte object)	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour.
Extended setting for pop-up		
Behaviour on short keypress	■ **open pop-up window** ■ Play / Pause	Setting for how the device should respond to a short keypress.

Table 78: Settings – Function type: Multimedia

This function allows devices for media playback to be controlled and various statuses to be displayed on the screen.

Extended setting for pop-up
Note: If the parameter "Behaviour on short keypress" is set to "Play / Pause", the pop-up opens with a long keypress.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
190	Function 1: – Play / Pause	1 Bit	Sending a value.
191	Function 1: – Status: Play / Pause	1 Bit	Receiving the status.
192	Function 1: – Stop	1 Bit	Sending a stop command.
193	Function 1: – Status: Stop	1 Bit	Receiving the status.
194	Function 1: – Volume control	1 Bit 1 Byte	Sending a value.
195	Function 1: – Status: Volume	1 Byte	Receiving the status.
196	Function 1: – Playlist	1 Bit 1 Byte	Sending a value.
197	Function 1: – Status: Playlist	1 Byte 14 Byte	Receiving the status.
198	Function 1: – Text (via 14 Byte object)	14 Byte	Receiving a text for display.

Table 79: Communication objects – Multimedia

4.4.3.16 Function type: Page change

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Jump target	■ Standby ■ **Page 1** ... ■ Page 13 ■ Settings page ■ Time switch ■ previous page ■ next page	Selection of the page to which should be switched after pressing the button.
Show jump arrow	■ **not active** ■ active	Setting whether an arrow should be displayed as a symbol.
Datapoint type: Status object	■ **not active** ■ DPT 1.001 Switch ■ DPT 5.001 Percent value (0...100 %) ■ DPT 5.005 Decimal value (0...255)	Selection of the datapoint type for displaying a status.
Symbol	Any symbol, selectable in the dropdown list	Setting the symbol. **For DPT 1.001**
Number: Symbols	1 ... 5 **[2]**	Setting how many symbols can be displayed. **For "DPT 5.001" and "DPT 5.005"**
Symbol 1 (... 5)	Any symbol, selectable in the dropdown list	Setting of the symbols. **For "DPT 5.001" and "DPT 5.005"**
Threshold 1 (... 4)	Any value according to DPT **[Standard values vary according to the number of thresholds]**	Setting the thresholds at which another symbol is displayed. ■ **From "Number: Symbols" → "2"** ■ **For "DPT 5.001" and "DPT 5.005"**
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 80: Settings – Function type: Page change

This function switches to a defined page when a button is pressed.

Datapoint type for status object
Additionally, when "jumping" to a page, a status can also be displayed. The datapoint types for "Switch", "Percent value" and "Decimal value" are available for this. This is useful if an additional status is to be displayed on the target page.

Examples:

- All window statuses are displayed on the target page. Using logic, the symbol for the page change can now indicate that at least one window is open.
- Data for temperature control is displayed on the target page. The setpoint could also be displayed as a percentage value.

Symbols and thresholds
If no status object is activated, a symbol for the page change can be defined. For a status object with DPT 1001, a symbol can be set for "ON" and "OFF" respectively.
For status objects with DPT 5.001 and 5.005, up to 5 symbols are possible. Thresholds can be defined to switch between symbols. At least 2 symbols must be active for this. The first threshold appears at symbol 2, threshold 2 appears at symbol 3, etc.

Note: Condition: Threshold 4 > Threshold 3 > Threshold 2 > Threshold 1

Example with DPT 5.001: The toggle values can be freely defined (e.g. symbol 2 becomes active when the status value is greater than 20 %, symbol 3 becomes active when the status value is greater than 40 %, etc.). The same behaviour applies to DPT 5.005.

For more information on the "Text fields" as well as on "Lock object / Function name",
see 4.4.2.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
191	Function 1: – Status for display	1 Bit 1 Byte	Receiving the current status. DPT according to parameter setting.
+10	**next Function**		

Table 81: Communication objects – Page change

4.5 Settings page

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Codelock for this page: User 1	▪ **not active** ▪ active	Setting whether this page is active for a codelock function. **User 2 ... 4 only with "Glass Touch Smart Plus"**
Number: Settings	1 ... 8 **[8]**	Selection of the number of settings to be displayed.
Preview	Displaying a graphic (template)	The image shows the presentation on the screen.

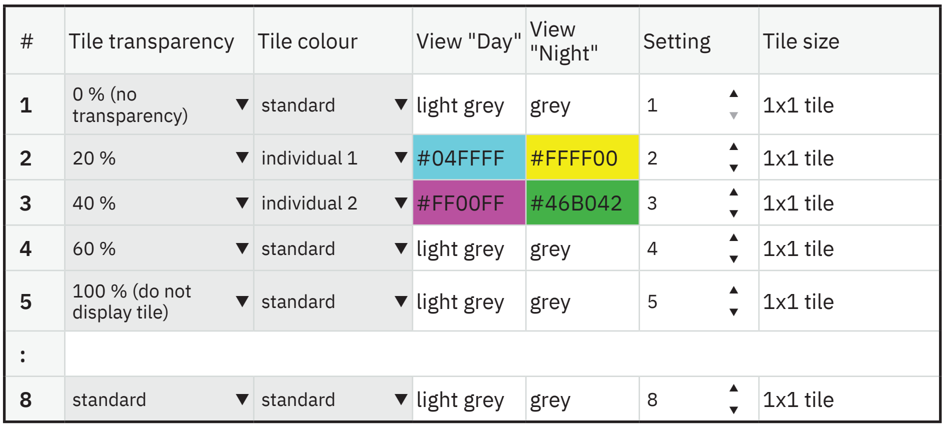
Table 82: Settings – Settings page

Up to 8 "simple basic functions" can be displayed on the settings page – for example, whether the cleaning function is active or whether the device is in programming mode.

A graphic is displayed as a preview template. This shows the display with the numbering of the tiles. The tiles can be further configured in the following table. The functions described in the next chapter are available for selection. These can be assigned to a tile in the "setting" column.
The "Setting 0" in the assignment means "not active". This leaves the tile empty.

Note: Standard values for the tiles (transparency, colour) are defined in the "Tile colours" menu.

The following table will be displayed:



#	Tile transparency	Tile colour	View "Day"	View "Night"	Setting	Tile size
1	0 % (no transparency) ▼	standard ▼	light grey	grey	1 ▲▼	1x1 tile
2	20 % ▼	individual 1 ▼	#04FFFF	#FFFF00	2 ▲▼	1x1 tile
3	40 % ▼	individual 2 ▼	#FF00FF	#46B042	3 ▲▼	1x1 tile
4	60 % ▼	standard ▼	light grey	grey	4 ▲▼	1x1 tile
5	100 % (do not display tile) ▼	standard ▼	light grey	grey	5 ▲▼	1x1 tile
:						
8	standard ▼	standard ▼	light grey	grey	8 ▲▼	1x1 tile

Table 83: Configuration of the settings page

Tile sizes
A "1x1 tile" divides the entire display area into 8 sections. This tile is the reference size for the other tiles. A "2/3 tile" means 2/3 of a 1x1 tile. With this size, a maximum of 12 tiles is possible. Accordingly, a 2x1 tile is twice as large as the 1x1 tile, etc.

4.5.1 Setting 1 (...8)

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Settings description (in ETS)	Any text [up to 40 bytes allowed]	Text to describe the function. **The text appears only in the ETS.**
	Copy text	When clicked, the text of the "Function description" is transferred to the field for "Function name ...".
Settings name (displayed on screen)	Any text [up to 40 bytes allowed]	Text to describe the function. **The text appears only in the display.**
Colour: Settings name	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour.
Settings type	▪ not active ▪ Audio ▪ **Programming mode** ▪ Info ▪ Cleaning function ▪ Brightness ▪ Temperature offset (internal sensor) ▪ Temperature offset (external sensor) ▪ Touch settings ▪ Time until display switches off ▪ Message memory ▪ Time	Selection of the function. **Only for "Glas Touch Smart Plus":** ▪ Audio ▪ Temperature offset (external sensor) ▪ Time
Specific parameters for individual setting types		
Subfunction	▪ **Volume: Button tone** ▪ Volume: Ringtone 1 ... ▪ Volume: Ringtone 5 ▪ Volume: Page change ▪ Mute ▪ Tone on page change ▪ Button tone	Setting of the subfunction. **For type "Audio"**
Step width: Volume	1 ... 20 **[1]**	Setting for the increments in which the volume is adjusted. **For type "Audio" → "Volume: ..."**

ETS text	Value range **[Default value]**	Comment
Duration “Cleaning function”	00:01 ... 01:00 mm:ss **[00:20]**	Time for which the device is locked by the cleaning function. **For type "Cleaning function"**
Colour (Ambient lighting) when cleaning function is active	#000000 ... #FFFFFF ▦ **[#000000]**	Definition of the colour. **For type "Cleaning function"** **Only for "Glas Touch Smart Plus"**
Brightness (Ambient lighting) when cleaning function is active	0 % – 100 % **[100]**	Setting the brightness. **For type "Cleaning function"** **Only for "Glas Touch Smart"**
Subfunction	▪ **Minimum brightness** ▪ Brightness levels	Selection of the brightness function. **For type "Brightness"**
Step width	1 ... 5 % **[1]**	Setting of the step width. **"Brightness" → "Minimum brightness"**
Step width	0.1 ... 5 K **[0.2]**	Setting of the step width. **For type "Temperature offset ..."**
Minimum value	1 ... 5 K **[1]**	Setting of the lower limit value. **For type "Temperature offset ..."**
Maximum value	1 ... 5 K **[5]**	Setting of the upper limit value. **For type "Temperature offset ..."**
Time base	▪ **Second** ▪ Minute	Setting whether the increment is based on seconds or minutes. **For type "Time until display switches off"**
Step width for adjustment	1 ... 10 **[1]**	Setting of the step width. **For type "Time until display switches off"**
Text display	Any text [up to 28 bytes allowed]	Entering text. **For type "Message memory"**
Repeating parameters for setting symbols and colour		
Symbol for " ... "	Any symbol, selectable in the dropdown list	Setting the symbol.
Colour: Symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour.

Table 84: Settings – Settings page: Setting 1 (... 8)

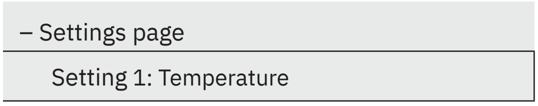
With the settings page, up to 8 functions can be defined for easy adjustment or information directly on the display. These are assigned to the tiles and can be adjusted, for example, using the "+" and "-" buttons.

A text field is available for each setting for free labelling.

Function description (in ETS)	Temperature

Figure 13: Text field – Settings description

A text of up to 40 characters can be stored in the field.
The text for the "**Settings description**" appears in the menu behind the corresponding setting (here using setting 1 as an example):



– Settings page
Setting 1: Temperature

Figure 14: Display – Settings description

Furthermore, a text field "**Settings name (displayed on screen)"** is available. The text described here appears only on the display.

Note: With the "Cleaning function", the ambient lighting flashes for the set duration. And a countdown runs on the display for the set time.

4.6 Slap function

With this function, a simple switch function can be triggered by touching the sensor surface over a large area.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Slap function	■ **not active** ■ active	Activation of the function.
Function description (internal)	Any text [up to 40 bytes allowed]	Text for the description of the function.
Function type	■ **Switch** ■ Send values ■ Scenes ■ Page change	Selection of the function.
Subfunction	■ One button: Switch ■ **One button: Toggle**	Selection of the function. **For function type "Switch"**
Value for pressed button	■ OFF ■ **ON**	Value to be sent. **For "One button: Switch".**
Datapoint type	■ **DPT 1.001 Switch** ■ DPT 2.001 Forcible control ■ DPT 5.001 Percent 0...100 % ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value ■ DPT 16.000 String	Selection of the data type. **For function type "Send values"**
Value / Scene number / RGB value / White value / HSV value / Text	Value range according to the selected datapoint type	Setting the value to be sent.
Scene number	1 ... 64 **[1]**	Selection of the scene. **For function type "Scenes"**

ETS text	Value range **[Default value]**	Comment
Jump target	■ Standby ■ **Page 1** ... ■ Page 13 ■ previous page ■ next page ■ Settings page	Selection of the target page. **For function type "Page change"**
Signalling via ambient lighting	■ **not active** ■ low display time (0.5 s) ■ medium display time (1 s) ■ high display time (1.5 s)	Definition of whether and for how long the slap function should be signalled.
Brightness	1 ... 100 % **[100 %]**	Setting the brightness for the ambient lighting. **Only for "Glas Touch Smart"**
Colour value	#000000 ... #FFFFFF ▦ **[#000000]**	Setting the colour value. **Only for "Glas Touch Smart Plus"**
White value	0 ... 100 % **[100 %]**	Setting the value for "White". **Only for "Glas Touch Smart Plus"**
Lock object	■ **not active** ■ active	Activation of a lock object.

Table 85: Settings – Function type: Slap function

The function can be briefly described in the text field. The text is internal information and is not visible elsewhere.

With the slap function, for example, when entering a dark room – regardless of whether the display is on and which function page is active – the room light can be switched on by touching the surface over a large area, a scene can be triggered, a fixed value (dimming value, colour, etc.) can be sent or a specific page can be called up.

An active slap function can be signalled via the ambient lighting. The time and brightness can be defined.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
830	Slap function: – Switch, Forcible control, Percent value, Decimal value, Scene ...		Sending the configured value. DPT according to parameter setting.
831	Slap function – Status	1 Bit	Receiving the switching status.
839	Slap function – Lock object	1 Bit	Locking/unlocking the function.

Table 86: Communication objects – Slap function

4.7 Device settings via scene object (as of SW v1.2.0)

This function allows various internal settings on the device to be triggered by receiving a scene number.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Number: Settings	0 … 9 **[0]**	Selection of how many additional settings can be activated.

Table 87: Settings – Device settings via scene object (Number: Settings)

Important: Setting 1 is always active. In the selection "Number: Settings", the further settings (from setting 2 onwards) are thus activated.

4.7.1 Setting 1

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Scene number for setting 1	**not active** 1 – 64	Definition of the scene number for setting 1.

Table 88: Settings – Device settings via scene object: Setting 1

Important: Setting 1 is reserved for "Reset settings" and cannot be configured.

4.7.2 Setting 2 - 10

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Scene number	**not active** 1 – 64	Definition of the scene number for the corresponding setting.
Cleaning function	▪ **not active** ▪ activate via activation duration ▪ deactivate ▪ activate permanently	Setting whether and how the cleaning function should be used.

ETS text	Value range **[Default value]**	Comment
The following parameters are displayed when "Cleaning function = not active"		
Display behaviour	■ **OFF** ■ ON ■ no change	Setting how the display should behave.
Ambient lighting	■ **not active** ■ active	Activate / deactivate the surrounding lighting.
White value	0 ... 255 **[0]**	Setting the white value. **For "Ambient lighting" → "active"**
RGB value	#000000 ... #FFFFFF **[#000000]**	Setting the colour value. **Only with Glass Touch Smart Plus and when "Ambient lighting" → "active"**
Audio control	■ **mute** ■ unmute ■ no change	Setting how the audio control should behave. **Only with Glass Touch Smart Plus**
Change language of the functions	■ not active ■ **Language 1** ■ Language 2 ■ Language 3 ■ Language 4	Setting whether and to which language should be changed.
The following parameters are displayed when the cleaning function is activated		
Activation duration	1 ... 240 s **[20 s]**	Setting the time. **For "activate via activation duration"**
RGB value for ambient lighting	#000000 ... #FFFFFF **[#000000]**	Setting the colour value. **Only with Glass Touch Smart Plus**
White value for ambient lighting	0 ... 255 **[0]**	Setting the white value.

Table 89: Settings – Device settings via scene object: Setting 2 - 10

Important: If the cleaning function is permanently activated, a scene must be reserved to deactivate the cleaning function. Otherwise, the button can no longer be operated.

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
16	Device setting – Scene number	1 Byte	Receiving a scene number

Table 90: Communication objects – Device settings via scene object

4.8 Audio control (only Glass Touch Smart Plus)

Note: This function is only available for "Glass Touch Smart Plus". The device has an integrated loudspeaker.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Acoustic confirmation	■ **not active** ■ active	Setting whether operations on the device should be acoustically signalled.
Button tone when pressed	not active 1 – 5 **[1]**	Setting which sound is played when a button is pressed.
Volume control	0 – 100 % **[60 %]**	Setting the volume.
Tone on page change	not active 1 – 2 **[1]**	Setting which sound is played when changing pages.
Volume control	0 – 100 % **[60 %]**	Setting the volume.
Signal tones via objects	**not active** 1 – 5	Setting how many objects can have signal tones activated.
Selection: Signal tone 1 (... 5)	1 ... 10 **[default value according to notification sound]**	Selection of the corresponding signal tone.
Volume control	0 – 100 % **[50 %]**	Setting the volume of the respective signal tone.
Tone for slap function	■ **not active** ■ Play current button tone ■ Play current tone for page change ■ Signal tone	Setting the signal tone when the slap function is activated. **Only visible when the slap function is also active.**
Tone	1 – 5 **[1]**	Setting the signal tone. **Only when "signal tone" is selected.**
Volume control	0 – 100 % **[60 %]**	Setting the volume.

Table 91: Settings – Audio control

In this menu, all settings relating to the acoustic notification via the integrated speaker are made.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
17	Audio control – Set button tone	1 Byte	Setting the tone.
18	Audio control – Set tone for page change	1 Byte	Setting the tone.
19	Audio control – Play signal tone 1	1 Bit	Triggering a signal tone
20	Audio control – Play signal tone 2	1 Bit	Triggering a signal tone
21	Audio control – Play signal tone 3	1 Bit	Triggering a signal tone
22	Audio control – Play signal tone 4	1 Bit	Triggering a signal tone
23	Audio control – Play signal tone 5	1 Bit	Triggering a signal tone
24	Audio control – 0 = mute / 1 = loud	1 Bit	Switches to mute or loud.
25	Audio control – Volume: Button tones	1 Byte	Setting the volume.
26	Audio control – Volume: Swipe gesture	1 Byte	Setting the volume.
27	Audio control – Volume: Signal tone 1	1 Byte	Setting the volume.
28	Audio control – Volume: Signal tone 2	1 Byte	Setting the volume.
29	Audio control – Volume: Signal tone 3	1 Byte	Setting the volume.
30	Audio control – Volume: Signal tone 4	1 Byte	Setting the volume.
31	Audio control – Volume: Signal tone 5	1 Byte	Setting the volume.

Table 92: Communication objects – Audio control

4.9 Messages

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Number: Messages	0 ... 20 **[1]**	Setting for how many messages should be activated.

Table 93: Settings – Activation of messages

Up to 20 messages can be activated here. For each activated message, a separate menu appears in which the corresponding message can be configured.

Note: The selection "0" means "not active". No menu will appear.

4.9.1 Message 1 (... 20)

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Message / Object description	Any text [up to 40 bytes allowed]	Free text input to describe the message and its objects.
Message text	Any text [up to 40 bytes allowed]	Free text input for the message text to be sent.
Priority (1 = highest)	1 ... 20 **[1]**	Setting the priority for each individual message.
Datapoint type / Action for message	▪ 1 Bit DPT 1.001 On/Off ▪ 1 Byte DPT 5.* Unsigned value ▪ 2 Byte DPT 7.* Unsigned value ▪ 2 Byte DPT 9.* Floating point value ▪ 4 Byte DPT 12.* Unsigned value ▪ 4 Byte DPT 13.* Signed value ▪ 4 Byte DPT 14.* Floating point value ▪ 14 Byte DPT 16.* Character set ▪ **Bus failure** ▪ Programming mode	Setting the datapoint type or action that triggers the message.
Trigger message at	▪ Value "0" ▪ **Value "1"**	Setting the value at which the message is to be triggered. **For DPT 1.001**

ETS text	Value range **[Default value]**	Comment
Trigger message at	■ **Shortfall** ■ Exceedance	Setting the action that should trigger the message. **DPT 5.*, 7.*, 9.*, 12.*, 13.*, 14.***
Threshold	Value range according to the selected datapoint type	Setting the alarm threshold **DPT 5.*, 7.*, 9.*, 12.*, 13.*, 14.***
Unit	Any text [up to 10 bytes allowed]	Free text input to describe the unit.
Reset message via	■ Button ■ Button and after time ■ **Button and after end of alarm**	Setting how the message should be reset.
Time	00:00 ... 99:59 mm:ss **[01:00]**	Entering a time. **Reset " ... after time"**
Hysteresis	0 ... 10 % **[2]**	Input of a hysteresis. **For "... after alarm end" and for DPT 5.*, 7.*, 9.*, 12.*, 13.*, 14.***
Displayed on screen		
Colour: Text	Any colour, selectable in the dropdown list	Setting the colour.
Tile colour	Any colour, selectable in the dropdown list	Setting the colour.
Display via ambient lighting		
Display message	■ **not active** ■ active	Setting whether the message is signalled via the lighting.
RGB value	#000000 ... #FFFFFF ▦ **[#FFFFFF]**	Setting the colour value. **With Glass Touch Smart Plus**
White value	1 ... 100 % **[100 %]**	Setting the value for white. **With Glass Touch Smart Plus**
Brightness	1 ... 100 % **[100 %]**	Setting the brightness. **With Glas Touch Smart**
Display message status	■ **permanent** ■ flashing	Specification of how the message should be signalled.

ETS text	Value range **[Default value]**	Comment
Acoustic message (only with Glas Touch Smart Plus)		
Signal tone	■ **not active** ■ Doorbell 1 ■ Doorbell 2 ■ Ping ■ Message 1 ■ Message 2 ■ Alarm 1 ■ Alarm 2 ■ Alarm clock ■ MDT Tone 1 ■ MDT Tone 2	Activation and selection of a signal tone.
Volume control	0 – 100 % **[10 %]**	Setting the volume.
Signal tone	■ **repeat** ■ permanent	Specification of how the tone should be signalled.
Number: Repetitions	1 ... 100 **[5]**	Specification of the repetitions. **When "repeat" is selected.**

Table 94: Settings – Message 1 (... 20)

A text field for free labelling is available.

Message / Object description Central OFF

Figure 15: Text field – Message / Object description

A text of up to 40 characters can be stored in the field.

The text for "**Message / Object description**" appears both in the menu behind the corresponding message and in the communication objects of the message (here using Message 1 as an example):

Message / Object description
Message 1: Central OFF
...
Communication objects
⇆|132 Message 1: Central OFF

Figure 16: Display – Message / Object description

Messages can be triggered via different datapoint types or actions. Values or thresholds (exceeding/undershooting) are defined in the process. The messages can be displayed both via the display and/or via the surrounding orientation light (ambient lighting).

Note: Messages override the minimum/maximum brightness of the ambient lighting.

Acoustic messages are only possible with Glas Touch Smart Plus, as only this device has an integrated speaker.

The table shows the available communication objects:

No.	Name / Object function	Length	Usage
33	Message 1: – Trigger message - Input	1 Byte 2 Byte 4 Byte 14 Byte	Receiving a value to trigger a message. DPT according to the parameter setting.
+1	**next Message**		
53	Message 1: – Message: Output	1 Bit	Sending a message.
+1	**next Message:Output**		

Table 95: Communication objects – Messages

4.10 Ambient lighting

This is a circumferential orientation light on the rear of the device.

Important: The base device "Glas Touch Smart" features lighting with white LEDs. The "Glas Touch Smart Plus" features lighting with RGBW LEDs.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Ambient lighting	■ **not active** ■ active	Activation of the function
Control via	■ **RGBW single objects (DPT 5.005)** ■ RGB combined object (DPT 232.600) + White single object (DPT 5.005) ■ RGBW combined object (DPT 251.600) ■ HSV combined object ■ Signalling: CO2 value ■ Signalling: VOC value ■ Signalling: Relative humidity	Setting how the lighting should be controlled. **Only with Glas Touch Smart Plus.**
Switch on via object	■ **not active** ■ with fixed brightness value ■ with last brightness value	Setting whether, and with what value, the lighting is switched on via object "Ambient lighting - Switch".
value	0 – 100 % **[30 %]**	Setting the brightness value when switching on. ■ **With Glas Touch Smart** ■ **"with fixed brightness value"**
Switch-on value RGB	#000000 ... #FFFFFF ▦ **[#FF0000]**	Setting the colour value when switching on. ■ **With Glass Touch Smart Plus** ■ **"with fixed brightness value"**
Switch-on value White	0 – 100 % **[30 %]**	Setting the white value when switching on. ■ **With Glass Touch Smart Plus** ■ **"with fixed brightness value"**
Ambient lighting active for	■ **"Day" and "Night"** ■ only "Day"	Setting for which mode the lighting should be active. **Only Glas Touch Smart**
Brightness setting "Day" / "Night"		
Limit minimum/maximum brightness	■ **not active** ■ active	Setting whether the brightness should be limited. **For Glas Touch Smart Plus.**

<table>
<tr><th>ETS text</th><th colspan="2">Value range
[Default value]</th><th>Comment</th></tr>
<tr><td>Minimum brightness</td><td colspan="2">0 – 100 % [0 %]</td><td>Setting the minimum brightness.
For Glas Touch Smart.</td></tr>
<tr><td>Maximum brightness</td><td colspan="2">0 – 100 % [100 %]</td><td>Setting the maximum brightness.
For Glas Touch Smart.</td></tr>
<tr><td>Minimum brightness: Red / Green / Blue / White</td><td colspan="2">0 – 100 % [0 %]</td><td>Respective setting of the minimum brightness of the colours.
For Glas Touch Smart Plus and "Limit minimum / maximum brightness" → "active.</td></tr>
<tr><td>Maximum brightness: Red / Green / Blue / White</td><td colspan="2">0 – 100 % [100 %]</td><td>Respective setting of the maximum brightness of the colours.
For Glas Touch Smart Plus and "Limit minimum / maximum brightness" → "active.</td></tr>
<tr><td colspan="4">The following parameters are only available with Glas Touch Smart Plus, and only when controlled via "Signalling: CO2 value / VOC value / Relative humidity".</td></tr>
<tr><td>Number: Levels</td><td colspan="2">2 ... 4 [2]</td><td>Setting how many levels should be signalled.</td></tr>
<tr><td>Threshold 1
(Level 1 -> Level 2)
Threshold 2
(Level 2 -> Level 3)
Threshold 3
(Level 3 -> Level 4)</td><td>400 ... 2000 ppm
[600]
[800]
[1000]</td><td>1 ... 100 %
[40]
[60]
[80]</td><td>Adjustment range of the thresholds at which switching should occur.
■ ppm → CO2/VOC value,
% → relative humidity
■ Thresholds according to the "Number: Levels".</td></tr>
<tr><td>Colour value:
Level 1
Level 2
Level 3
Level 4</td><td colspan="2">A colour field is displayed for each level, in which the individual colour for the level can be set.</td><td>Setting the colours for the different levels.
Levels according to the selection "Number: Levels".</td></tr>
<tr><td colspan="4">Behaviour (for Glas Touch Smart Plus only available when controlled via colour objects)</td></tr>
<tr><td>Behaviour for “Day”</td><td colspan="2">■ switch off
■ switch on when changing from “Night” to “Day”
■ active when display is switched off
■ switch-off with display
■ no change</td><td>Setting how the ambient lighting behaves during "Day".</td></tr>
</table>

ETS text	Value range **[Default value]**	Comment
Behaviour for “Night”	■ switch off ■ **switch on when changing from “Day” to “Night”** ■ active, when display switches off ■ switch off with display ■ no change	Setting how the ambient lighting behaves during "Night". **Only when "Ambient lighting active for" → "Day" and "Night"**
Switch-on value: Brightness	0 – 100 % **[70 %]** **[30 %]**	Definition of the switch-on value. **For Glas Touch Smart.** **First default value for "Day", second value for "Night".**
Switch-on value: RGB	#000000 ... #FFFFFF ▦ **[#000000]**	Definition of the switch-on value. **For Glas Touch Smart Plus.**
Switch-on value: White	0 – 100 % **[70 %]** **[30 %]**	Definition of the switch-on value. **For Glas Touch Smart Plus.** **First default value for "Day", second value for "Night".**

Table 96: Settings – Ambient lighting

The ambient lighting can be activated and configured in various ways. In the basic version, the respective brightness value of the white LED is set. In the "Plus" version, the lighting can be configured across the full colour spectrum via different colour systems or also by signalling CO2, VOC or relative humidity values via thresholds. The **thresholds** for switching between the levels can be freely defined. The unit for the values corresponds to the selected "control".

The table shows the available communication objects:

No.	Name / Object function	Length	Usage
73	Ambient lighting – HSV value	3 Byte	Receiving a colour value.
73	Ambient lighting – RGBW value	6 Byte	Receiving a colour value.
73	Ambient lighting – RGB value	3 Byte	Receiving a colour value.
73	Ambient lighting – CO2 value	2 Byte	Receiving a CO2 value.
73	Ambient lighting – VOC value	2 Byte	Receiving a VOC value.
73	Ambient lighting – relative humidity	2 Byte	Receiving a value for relative humidity.
73	Ambient lighting – Colour: Red	1 Byte	Receiving a colour value.
74	Ambient lighting – Colour: Green	1 Byte	Receiving a colour value.
75	Ambient lighting – Colour: Blue	1 Byte	Receiving a colour value.
76	Ambient lighting – Colour: White	1 Byte	Receiving a colour value.
76	Ambient lighting – Brightness	1 Byte	Receiving a brightness value.
77	Ambient lighting: – Switch	1 Bit	Switching the lighting ON/OFF.

Table 97: Communication objects – Ambient lighting

4.11 Logic functions

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Number: Logic functions	1 … 4 / 8 **[1]**	Setting how many logic functions should be activated.

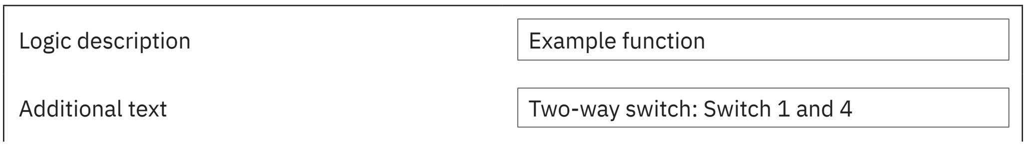
Table 98: Settings – Activation of logic functions

Note: Up to 4 logic functions can be activated for the basic version of the Glass Touch Smart, and up to 8 logic functions for the Glass Touch Smart Plus.

For each activated function, a separate menu appears in which the corresponding logic can be configured.

4.11.1 Logic 1 (… 4 / 8)

There are two labelling fields for the logic functions:

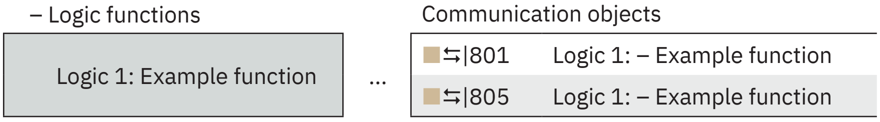


Logic description	Example function
Additional text	Two-way switch: Switch 1 and 4

Figure 17: Text fields – Logic description and additional text

A text of up to 40 characters can be stored in the field.

The text entered for the "**Logic description**" appears both in the menu behind the corresponding function and in the communication objects of the function.



– Logic functions

Logic 1: Example function

…

Communication objects

⇆|801 Logic 1: – Example function
⇆|805 Logic 1: – Example function

Figure 18: Display – Logic description

The stored text for **"Additional text"** appears only in this menu item and serves as an extended description. A text of up to 40 characters is permitted here.

The following allows you to select a main function for the logic:

ETS text	Value range **[Default value]**	Comment
Main function	■ **not active** ■ Universal logic ■ Logic gates / inverter	Activation of a main function.

Table 99: Settings – Logic: Main function

The main functions are described in detail in the following chapters.

4.11.1.1 Universal logic

The universal logic is a “IF - THEN - ELSE” logic.

Unlike the **“Logic gate”** function, the **“Universal logic”** allows not only Boolean 1 Bit values to be linked, but also a variety of datapoint types.

Any datapoint type can be selected for each condition. The assigned object is evaluated as True (1) or False (0) by selecting an assessment (“Evaluation”) and values (“Value” or a “Scene number”).
Up to 4 conditions can be linked with “AND” in this way, and the result can then be linked with a 5th condition using “OR”.

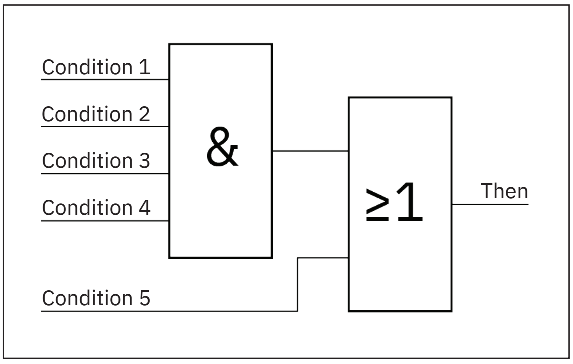


Figure 19: Diagram – Universal logic

Application example:

An awning should be extended as sun protection when

- the brightness is more than 2000 lux.
- and someone is present.
- and the time is between 09:00 and 16:00.
- or is lowered via an external blind push-button.

Function	Number	Datapoint type	Data type	Condition	Value	Comparative value
1	0	7.013	Brightness	greater than or equal	2000	
2	-/-	10.001	Time	between	09:00 h	16:00h
3	3	1.001	Presence	State equal	1	
4	-/-		not active			
5	6	1.001	Blind push button	State equal	1	
THEN	9	1.008	Shutter up/down	State equal	1	
ELSE	-/-	1.008	Shutter up/down	State equal	0	

Table 100: Universal Logic – Example for linking

Main function	Universal logic ▼	
Condition 1: IF		
Text for condition 1	Brightness > 2000 lux	
Datapoint type: Input 1	DPT 7.* 2 Byte Unsigned ▼	
Evaluation	greater than or equal ▼	
Comparative value over	○ Object	● Parameter
Comparative value	2000	
Condition 2: AND	○ not active	● active
Text for condition 2	Time 09:00 to 16:00	
Datapoint type: Input 2	Time ▼	
Evaluation	between 2 comparative values ▼	
from		
Hours	9	
Minutes	0	
to		
Hours	16	
Minutes	0	
Condition 3: AND	○ not active	● active
Text for condition 3	Presence	
Selection Datapoint type: Input 3	DPT 1.002 1 Bit Boolean ▼	
State equal	○ Value "0"	● Value "1"
Condition 4: AND	● not active	○ active
Condition 5: OR	○ not active	● active
Text for condition 5	external blind push button	
Datapoint type: Input 5	DPT 1.002 1 Bit Boolean ▼	
State equal	○ Value "0"	● Value "1"
THEN (condition fulfilled)		
Datapoint type: Output	DPT 1.002 1 Bit Boolean ▼	
Value when output is "True"/"1"	○ Value "0"	● Value "1"
ELSE (condition not fulfilled)	○ not active	● active
Value when output is "False"/"0"	● Value "0"	○ Value "1"

Figure 20: Universal Logic – ETS setting for application example

4.11.1.1.1 Basic settings

The following table shows the available settings:

ETS text	Dynamic range **[Default value]**	Comment
Condition 1: IF		
Text for condition 1	Any text (up to 25 characters allowed)	Description of the condition.
Datapoint type: Input 1	▪ **DPT 1.002 1 Bit Boolean** ▪ DPT 2.001 2 Bit Forcible control ▪ DPT 17.001 1 Byte Scene number ▪ DPT 5.005 1 Byte Decimal value (0...255) ▪ DPT 5.001 1 Byte Percent value (0...100 %) ▪ DPT 6.010 1 Byte Values (-128 to 127) ▪ DPT 7.* 2 Byte Unsigned ▪ DPT 8.* 2 Byte Signed ▪ DPT 9.* 2 Byte Floating point value ▪ DPT 12.* 4 Byte Unsigned ▪ DPT 13.* 4 Byte Signed ▪ DPT 14.* 4 Bytes Floating point value ▪ Time ▪ Day of the week	Setting of the datapoint type for the input
Condition 2: AND		
The settings for "Condition 2" correspond to the parameters from "Condition 1".		
Condition 3: AND		
Condition 3: AND	▪ **not active** ▪ active	Specifies whether the 3rd condition is used.
Text for condition 3	Any text (up to 25 characters allowed)	Description of the condition.
Datapoint type: Input 3	▪ **DPT 1.002 1 Bit Boolean** ▪ DPT 17.001 1 Byte Scene number ▪ DPT 5.005 1 Byte Decimal value (0...255) ▪ DPT 5.001 1 Byte Percent value (0...100 %)	Setting of the datapoint type for the input
Condition 4: AND and Condition 5: OR		
The settings for "Condition 4" and "Condition 5" correspond to the parameters from "Condition 3".		

ETS text	Dynamic range **[Default value]**	Comment
THEN (condition fulfilled)		
Datapoint type: Output	▪ **DPT 1.002 1 Bit Boolean** ▪ DPT 17.001 1 Byte Scene number ▪ DPT 5.005 1 Byte Decimal value (0...255) ▪ DPT 5.001 1 Byte Percent value (0...100 %)	Setting the datapoint type for the output.
Value when output is "True"/"1"	Selection according to the DPT output	Sending the value/scene number when the logic results in a "1".
ELSE (condition not fulfilled)		
ELSE	▪ **not active** ▪ active	Defines whether an alternative parameter should be sent if the logic function is not fulfilled.
Value when output is "False"/"0"	Selection according to the DPT output	Sending the value/scene when the logic results in a "0".
Lock		
Lock / Release	▪ **not active** ▪ Lock at value "1" ▪ Release at value "1"	Setting whether and when the value "1" locks or releases the function.
Initial value	▪ **hold** ▪ set to value for lock	Sending behaviour of the lock. **Not for "Lock / Release" → "not active".**
Value for lock Scene number for lock	Selection according to the DPT output	Sending the value / scene. **Only for "Initial value" → "set to value".**
Sending condition		
Sending condition	▪ **at change of output** ▪ at input telegram	Setting when the output object should be transmitted.
Upon receiving a telegram send on	▪ **all input objects** ▪ Input 1 ▪ Input 1 comparative value ▪ Input 2 ▪ Input 2 comparative value ▪ Input 3 ▪ Input 4 ▪ Input 5 ▪ individual	Defines for which input objects a telegram should be sent. **Only for "Sending condition" → "on input telegram".**

ETS text	Dynamic range **[Default value]**	Comment
Input 1 - 5 Input 1 / 2 comparative value	A checkbox appears for each activated input, which can be activated individually	Selection of the inputs for which an input telegram is expected. **Only for "Upon receiving a telegram send on" → "individual".**
Filter output	▪ **not active** ▪ only send THEN values ▪ only send ELSE values	Filters which change to the output object should be sent.
Send delay / Cyclical sending		
Send delay / cyclical sending	▪ **not active** ▪ send delay ▪ cyclical sending	Activates a delay or a cyclical telegram.
Time base	▪ Tenth of a second ▪ **Second** ▪ Minute ▪ Hour	Setting the time base.
Time	1 … 240 s **[10 s]**	Setting the time value. Unit according to the time base. **Only with Second, Minute, Hour**
Request inputs after reset	▪ **not active** ▪ active	Defines whether and which input objects are actively queried after a reset.

Table 101: Settings – Universal logic

Note: The logic or the logic output only sends when all used inputs are valid.

Send delay / cyclical sending
The send delay can be used to debounce the output. The output is only sent if the condition does not change during the delay time.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
860	Logic 1: – Universal logic: Input 1	1 Bit 2 Bit 1 Byte 2 Byte 4 Byte	Condition 1 of the AND operation.
861	Logic 1: – Universal logic: Input 1 - comparative value		Comparative value for the 1st condition.
862	Logic 1: – Universal logic: Input 2		Condition 2 of the AND operation.
863	Logic 1: – Universal logic: Input 2 - comparative value		Comparative value for the 2nd condition.
864	Logic 1: – Universal logic: Input 3	1 Bit 1 Byte	Condition 3 of the AND operation.
865	Logic 1: – Universal logic: Input 4	1 Bit 1 Byte	Condition 4 of the AND operation.
866	Logic 1: – Universal logic: Input 5	1 Bit 1 Byte	Condition 5 of the OR operation.
868	Logic 1: – Universal logic: Lock	1 Bit	Lock object.
868	Logic 1: – Universal logic: Release	1 Bit	Release object.
869	Logic 1: – Universal logic: Output	1 Bit 1 Byte	Output object of the logic.
+10	**next Logic**		

Table 102: Communication objects – Universal logic

4.11.1.1.2 Settings for "DPT 1.002 1 Bit Boolean"

The following table shows the setting options:

ETS text	Dynamic range **[Default value]**	Comment
State equal	▪ **Value "0"** ▪ Value "1"	Comparative value for the state at the input.

Table 103: Settings – Universal logic: "DPT 1.002 Boolean"

When "Boolean" is selected, the input object is compared with the set value range "Value 0" or "Value 1". The result of this comparison is the result of the linkage of the respective condition.

4.11.1.1.3 Settings for "DPT 2.001 2 Bit Priority"

The following table shows the setting options:

ETS text	Dynamic range **[Default value]**	Comment
value	▪ **00 - no priority, OFF** ▪ 01 - no priority, ON ▪ 10 - priority, OFF ▪ 11 - priority, ON	Comparative value for the state at the input.

Table 104: Settings – Universal logic: "DPT 2.001 Priority"

When this datapoint type is selected, the input object is used to check whether a channel is under forced guidance (prioritised) and whether the channel is locked or not locked. The result of the comparison between the input object and the "Value" gives the result for the linkage of the respective condition ("1" or "0").

4.11.1.1.4 Settings for “DPT 17.001 1 Byte Scene number”

The following table shows the setting options when selecting the datapoint type “Scene Number”:

ETS text	Dynamic range **[Default value]**	Comment
Evaluation	■ **equal** ■ unequal ■ greater than or equal ■ greater ■ smaller than or equal ■ smaller ■ between	Comparison condition for comparing the scene number with the input object.
Scene number	1 – 64 **[1]**	Scene number to be compared
from scene number	1 – 64 **[1]**	Lowest scene number for the comparison **Only when “Evaluation” → “between”.**
to scene number	1 – 64 **[64]**	Highest scene number for the comparison **Only when “Evaluation” → “between”.**

Table 105: Settings – Universal logic: “DPT 17.001 Scene Number”

This datapoint type can be used to query which “scene number” has been written to a group object. This scene number is compared, via a condition to be set under “Evaluation”, with the set scene number or with a scene number range. The result of the comparison with the input object gives the result for the linkage of the respective condition (“1” or “0”).

Note: The evaluation **“between”** is only available for conditions 1 and 2.

4.11.1.1.5 Settings for “DPT 5*-, 6*-, 7*-, 8*-, 9*-, 12*-, 13*-, 14*”

The following table shows the setting options when selecting the datapoint types

- DPT 5.005 1 Byte Decimal value (0...255)
- DPT 6.010 1 Byte Values (-128 to 127)
- DPT 8.* 2 Byte Signed
- DPT 12.* 4 Byte Unsigned
- DPT 14.* 4 Bytes Floating point value
- DPT 5.001 1 Byte Percent value (0...100 %)
- DPT 7.* 2 Byte Unsigned
- DPT 9.* 2 Byte Floating point value
- DPT 13.* 4 Byte Signed

ETS text	Dynamic range **[Default value]**	Comment
Evaluation	■ **equal** ■ unequal ■ greater than or equal ■ greater ■ smaller than or equal ■ smaller ■ between 2 comparative values	Condition for comparison with the group object.
Comparative value over	■ **Object** ■ Parameter	Origin of the comparative value. **Only for “Input 1” and “Input 2”. Not for “Evaluation” → “between 2 comparative values”.**
Comparative value	freely selectable within the permissible range of the datapoint type	Comparison parameter for condition. **Only for “Comparative value over” → “Parameter”.**
Pre-assign second input with value	■ **not active** ■ active	Setting whether a presetting is made. **Only for “Comparative value over” → “Object”.**
value	freely selectable within the permissible range of the datapoint type	Value for presetting the comparison object. **Only for “Pre-assign second input with value” → “active”.**
from	freely selectable within the permissible range of the datapoint type	Lower and upper value for the comparison. **Only for “Evaluation” → “between 2 comparative values”.**
to		

Table 106: Settings – Universal Logic: DPT “5*-, 6*-, 7*-, 8*-, 9*-, 12*-, 13*-, 14* ...”

When comparing with these datapoint types, the value in the input object is matched with a comparison value, taking an evaluation into account. The result of the comparison with the group object provides the result for the linking of the respective condition ("1" or "0").
The comparative value for Condition 1 and Condition 2 can be defined either by a set value or by an external object, which can be preset with a value depending on the configuration.

Note: The evaluation **"between 2 comparative values"** is only available for Conditions 1 and 2.

4.11.1.1.6 Settings for “Time”

The following table shows the setting options when selecting the datapoint type **"Time"**:

ETS text	Dynamic range **[Default value]**	Comment
Evaluation	■ **equal** ■ unequal ■ greater than or equal ■ greater ■ smaller than or equal ■ smaller ■ between 2 comparative values	Condition for comparison with the group object.
Hours	0 ... 23 h **[0]**	Value for the time comparison**.**
Minutes	0 ... 59 min **[0]**	
Hours	0 ... 23 h **[0]**	Value for the 2nd comparative value. **Only for "Evaluation" → "between 2 comparative values".**
Minutes	0 ... 59 min **[0]**	

Table 107: Settings – Universal logic: "Time"

For "Condition 1: IF" and "Condition 2: AND", it is possible to select the datapoint type "Time". With this function, the current time can be compared with an adjustable time value or a time range. For this, the communication object "Time" or "Date/Time" must be connected to a time server. The result of the comparison provides the result for the linking of the respective condition ("1" or "0").

Note: The evaluation "between 2 comparative values" is only available for Conditions 1 and 2.

4.11.1.1.7 Settings for “Day of the week”

The following table shows the setting options when selecting the datapoint type **"Day of the week"**:

ETS text	Dynamic range **[Default value]**	Comment
Evaluation	■ **equal** ■ unequal ■ greater than or equal ■ greater ■ smaller than or equal ■ smaller ■ between 2 comparative values	Condition for comparison with the group object.
Day of the week	■ **Monday** ■ Tuesday ... ■ Sunday	Selection of the day of the week for which the condition applies. **Not when "Evaluation" → "between 2 comparative values" is selected.**
from	■ **Monday** ■ Tuesday ... ■ Sunday	Selection of the day of the week on which the evaluation begins. **Only for "Evaluation" → "between 2 comparative values".**
to	■ **Monday** ■ Tuesday ... ■ Sunday	Selection of the day of the week on which the evaluation ends. **Only for "Evaluation" → "between 2 comparative values".**

Table 108: Settings – Universal logic: "Day of the week"

For "Condition 1: IF" and "Condition 2: AND", it is possible to select the datapoint type "Day of the week". With this function, the current day of the week can be compared with an adjustable day of the week or a time range. For this, the communication object "Date" or "Date/Time" must be connected to a time server. The result of the comparison provides the result for the linking of the respective condition ("1" or "0").

Note: The evaluation **"between 2 comparative values"** is only available for Conditions 1 and 2.

4.11.1.2 Logic gate / inverter

With the "Logic gate" function, up to 8 logical conditions can be linked with the conditions "AND", "OR" and "XOR". Both input conditions and the result of the linking (output condition) can be inverted..

The "Inverter" function allows the reversal (inversion) and the locking or releasing of up to 4 objects.

The following table shows the available setting:

ETS text	Dynamic range **[Default value]**	Comment
Subfunction	■ **Logic gate, 8 inputs with lock** ■ Logic inverter, 4 x with lock	Selection of the subfunction.

Table 109: Settings – Main functions: Logic gate / inverter

4.11.1.2.1 Logic gate, 8 inputs with lock

The following table shows the available settings:

ETS text	Dynamic range **[Default value]**	Comment
Logic function	■ **AND** ■ OR ■ XOR	Selection of the Logic gate.
Input 1 / 2	■ not active ■ **active**	Setting whether the input is processed.
Polarity	■ **normal** ■ inverted	Allows input inversion (0 → 1 or 1 → 0).
Input 3 (... 8)	■ not active ■ **active**	Setting whether the input is processed.
Polarity	■ **normal** ■ inverted	Allows input inversion (0 → 1 or 1 → 0).
Output	■ **normal** ■ inverted	Allows output inversion (0 → 1 or 1 → 0).
Object type output	■ On/Off ■ scene ■ Value 0 - 255 ■ Value 0 - 100 %	Selection of the object type for the result of the linking.
Value when output is "True"/"1"	Selectable within the allowed range of the datapoint type	Value that is sent when the output is "1".

ETS text	Dynamic range **[Default value]**	Comment
Value when output is "False"/"0"	Selectable within the allowed range of the datapoint type	Value that is sent when the output is "0".
Lock / Release	■ **not active** ■ Lock at value "1" ■ Release at value "1"	Setting whether and when the value "1" locks or releases the function.
Initial value	■ **hold** ■ set to value for lock	Definition of what happens in the event of a lock/release. **Not when "Lock / Release" → "not active".**
Value for lock	Selectable within the allowed range of the datapoint type	Value that is output in the event of a lock. **Only when "Output value" → "set to value for lock".**
Sending condition	■ **at change of output** ■ at input telegram	Defines when an output telegram is sent.
Upon receiving a telegram send on	■ **all input objects** ■ Input 1 ■ Input 2 ... ■ Input 8 ■ individual	Restricts the sending of telegrams for input objects. **Only if "Send condition" → "at input telegram.**
Input 1 (...8)	A checkbox appears for each activated input, which can be activated individually	Selection of the inputs for which a transmission takes place. **Only for "Upon receiving a telegram send on" → "individual".**
Filter output	■ **not active** ■ only send THEN value ■ only send ELSE value	Filter condition, whether a transmission takes place only for "THEN" values or only for "ELSE" values of the linkage.
Send delay / cyclical sending	■ **not active** ■ send delay ■ cyclical sending	Enables the delay or cyclic sending of the output.
Time base	■ Tenth of a second ■ **Second** ■ Minute ■ Hour	Setting the time base **Not if "Send delay / cyclical sending" → "not active".**
Time	0 ... 240 **[10]**	Setting the time value. Unit according to the time base. **Only with Second, Minute, Hour**

ETS text	Dynamic range **[Default value]**	Comment
Request inputs after reset	■ **not active** ■ active	Setting whether all inputs are queried after a reset.
Output only sends when all inputs are valid	■ **not active** ■ active ■ Preallocate inputs after reset	Setting the sending behaviour of the output object after a reset.
Input 1 (... 8)	■ **Value "0"** ■ Value "1"	Value with which the outputs are preset after a reset. **Only if "Output sends only when all inputs are valid" → "Preallocate inputs after reset".**

Table 110: Settings – Logic gate / inverter: Logic gate, 8 inputs with lock

Logic functions

AND function

The output is "1" when all inputs are "1".

C	B	U	X
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

Table 111: Logic gate – AND function

OR function

The output is "1" when at least one input is "1".

C	B	U	X
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

Table 112: Logic gate – OR function

XOR function			
The output is "1" when only one input is "1".			
C	**B**	**U**	**X**
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

Table 113: Logic gate – XOR function

Inverter function	
The output is "1" when the input is "0".	
U	**X**
0	1
1	0

Table 114: Logic gate – Inverter function

Object type: Output object
The result of the linkage is written to an output object. This object can contain either a 1 Bit value or a 1 Byte value with predefined content. Using the function "Lock/Release", a predefined value can be written to the output object independently of the input objects "Input 1" to "Input 8". The output object is sent by means of a "Send condition" when there is a "change at the output" or "on input telegram". The send condition can also be filtered so that only the "THEN value" or only the "ELSE value" triggers a telegram.

Send delay / cyclical sending
The send delay can be used to debounce the output. The output is only sent if the condition does not change during the delay period.

Behaviour on reset / bus failure
After a reset or bus failure, the input objects can be requested. Depending on the setting, the output object is only sent when all inputs are valid. Presetting of the inputs until receipt of the input telegram is possible.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
860	Logic 1: – Logic input 1	1 Bit	Input 1 of the logic
861	Logic 1: – Logic input 2	1 Bit	Input 2 of the logic
862	Logic 1: – Logic input 3	1 Bit	Input 3 of the logic
863	Logic 1: – Logic input 4	1 Bit	Input 4 of the logic
864	Logic 1: – Logic input 5	1 Bit	Input 5 of the logic
865	Logic 1: – Logic input 6	1 Bit	Input 6 of the logic
866	Logic 1: – Logic input 7	1 Bit	Input 7 of the logic
867	Logic 1: – Logic input 8	1 Bit	Input 8 of the logic
868	Logic 1: – Logic: Lock	1 Bit	Lock object
868	Logic 1: – Logic: Release	1 Bit	Release object
869	Logic 1: – Logic output	1 Bit 1 Byte	Output of the logic
+10	**next Logic**		

Table 115: Communication objects – Logic gate / inverter: Logic Gate, 8 inputs with lock

4.11.1.2.2 Logic inverter, 4 x with lock

The following table shows the available settings:

ETS text	Dynamic range **[Default value]**	Comment
Function	▪ **Inverter** ▪ do not invert (output = input)	Defines how the inverter group operates.
Inverter 1	**active**	Always active. Not changeable.
Inverter 2 (… 4)	▪ not active ▪ **active**	Activation/deactivation of the respective inverter.
Lock / Release	▪ **not active** ▪ Lock at value "1" ▪ Release at value "1"	Setting whether and when the value "1" locks or releases the function.
Initial value	▪ **hold** ▪ set to value for “False”/“0” ▪ set to value for “True”/“1”	Definition of what happens to the output value in the event of a lock. **Only when "Lock / Release" is active.**

ETS text	Dynamic range **[Default value]**	Comment
Sending condition	▪ **at change of output** ▪ at input telegram	Specifies when a transmission takes place.
Filter output	▪ **not active** ▪ only send THEN value ▪ only send ELSE value	Restriction on whether a transmission takes place for "THEN" or "ELSE" values.
Request inputs after reset	▪ **not active** ▪ active	Specification of whether all inputs are queried after a reset.
Output only sends when all inputs are valid	▪ **not active** ▪ active ▪ Preallocate inputs after reset	Setting the sending behaviour of the output object after a reset.
Input inverter 1 (... 4)	▪ **Value "0"** ▪ Value “1”	Value with which the outputs are preset after a reset. **Only when "Output only sends after ..." → "Preallocate inputs after reset".**

Table 116: Settings – Logic gate / inverter: Logic inverter, 4x with lock

Logic functions

Inverter function	
The output is "1" when the input is "0"	
U	**X**
0	1
1	0

Table 117: Logic inverter – Inverter function

"Do not invert" function	
The output is "1" when the input is "1"	
U	**X**
0	0
1	1

Table 118: Logic inverter – Do not invert function

Object type: Output object
The result of the function is written to an output object either inverted or not inverted, depending on the setting. This object has a 1 Bit value. Via the function "Lock / Release", a predefined value can be output via the output object, independently of the input object and the selected function.
The output object is sent via a "sending condition" either on change of output or on input telegram. The sending condition can be further filtered so that "only THEN values" or "only ELSE values" trigger a telegram.

Behaviour on reset / bus failure
After a reset or bus failure, the input objects can be queried. Depending on the setting, the output object is only sent when all inputs are valid. Preallocation of the inputs until receipt of the input telegram is possible.

The following table shows the corresponding communication objects:

No.	Name / Object function	Length	Usage
860	Logic 1: – Inverter input 1	1 Bit	Input object for inverter input 1
861	Logic 1: – Inverter output 1	1 Bit	Output object for inverter output 1
862	Logic 1: – Inverter input 2	1 Bit	Input object for inverter input 2
863	Logic 1: – Inverter output 2	1 Bit	Output object for inverter output 2
864	Logic 1: – Inverter input 3	1 Bit	Input object for inverter input 3
865	Logic 1: – Inverter output 3	1 Bit	Output object for inverter output 3
866	Logic 1: – Inverter input 4	1 Bit	Input object for inverter input 4
867	Logic 1: – Inverter output 4	1 Bit	Output object for inverter output 4
868	Logic 1: – Logic: Lock	1 Bit	Lock object
868	Logic 1: – Logic: Release	1 Bit	Release object
+10	**next Logic**		

Table 119: Communication objects – Logic gate / inverter: Logic inverter, 4x with lock

4.12 Temperature measurement

The "temperature measurement" is located in the ETS application together with the "Temperature Controller" in a shared menu. For better clarity, both items are described in their own chapters.

4.12.1 Measurement: Internal

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Temperature measurement	■ **not active** ■ active	Activation of temperature measurement.
Send measured value on change of ...	not active, 0.1 K – 5.0 K **[0.2 K]**	Setting for which change the measured value should be sent.
Send measured value cyclically	■ **not active** ■ active	Setting whether the measured value should be sent cyclically.
Cycle time	00:01 ... 01:00 hh:mm **[00:10]**	Setting the interval at which the measured value is sent cyclically.
From internal and external sensor	■ **calculate average** ■ output maximum value ■ output minimum value	Setting which value should be output when using internal and external sensor.
Sensor internal / external	■ **100 % internal** ■ 90 % internal / 10 % external ■ 80% internal / 20% external ... ■ 10 % internal / 90 % external ■ 100 % external	Activation of an external sensor and setting the weighting between internal and external sensor. **When "calculate average" is selected.**
Calibration value for internal sensor	-50 ... 50 x 0.1 K **[0]**	Increase/decrease of the value to correct the measured temperature.
Temperature: Upper message value	**not active** 20 °C – 45 °C	Setting of the upper threshold value. **Visible when “Messages” is active.**
Hysteresis	0 ... 10 % **[5]**	Setting the hysteresis for the upper threshold value.
Temperature: Lower message value	**not active** 3 °C – 30 °C	Definition of the temperature for the lower threshold value.
Hysteresis	0 ... 10 % **[5]**	Setting the hysteresis for the lower threshold value.

Table 120: Settings – Temperature measurement: Internal

With the setting "**Send measured value on change of ...**", you can specify at what change the current measured value should be sent. With the setting "not active", the sensor does not send any value, regardless of how large the change is.
The parameter "**Send measured value cyclically**" allows you to set the intervals at which the current measured value should be sent. The cyclic sending function can be activated or deactivated independently of the "Send measured value on change of ..." setting. Measured values are also sent if the sensor has not detected any change. If both parameters are deactivated, no value is ever sent.

Note: After a restart, the internal temperature value takes about 1 minute before it is sent to the bus and can be displayed on the screen.

With "**From internal and external sensor**", you can set whether only the maximum/minimum value of the internal sensor is output. Alternatively, the average value can be output. When "calculate average" is selected, another parameter "Sensor internal / external" appears. This allows a mean value from the internal and external sensor to be sent.
Via the weighting "**Sensor internal / external**", an external sensor can be activated or deactivated. If the weighting is set to 100 % internal, no external sensor is activated and no communication object appears for it. For any other setting, an external sensor is activated and the corresponding object is displayed. The "mixed" value is sent to the bus via the "Send measured value" object.

Note: As long as the external sensor does not receive a value via the object, only the internal sensor is used! A "mixed" value (according to the set weighting) is always calculated and output when a new external value is received.
External values outside the range "-9.9 ... +50 °C" are invalid. In this case, only the internal value is used.

With the parameter "**Calibration value for internal sensor**", a correction value can be entered. This serves to raise/lower the actually measured value. This setting makes sense if the sensor has been installed in an unfavourable location, such as above a radiator or in a draughty area. When this function is activated, the sensor sends the corrected temperature value.

Via "**Temperature: Upper threshold value**" and "**Temperature: Lower threshold value**", two messages can be output when activated. In addition, a separate **hysteresis** can be set for each threshold value. Both functions each have a separate communication object.

Principle:
If the upper threshold value is exceeded, a “1” is sent. If it is undershot again, a “0” is sent. For undershooting, the following applies: threshold value minus hysteresis.
Example:
Upper threshold value = 25 °C; Hysteresis = 10 %
When 25 °C is exceeded, a “1” is sent; at 22.5 °C, a “0” is sent to reset.

If the lower threshold value is undershot, a “1” is sent. If it is exceeded again, a “0” is sent. For exceeding, the following applies: threshold value plus hysteresis.
Example:
Lower threshold value = 10 °C; Hysteresis = 10 %
When 10 °C is undershot, a “1” is sent; at 11 °C, a “0” is sent to reset.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
82	Temperature measurement: Internal – Send measured value	2 Byte	Sends the current temperature.
83	Temperature measurement: Internal – External sensor - input	2 Byte	Receipt of an externally measured temperature.
84	Temperature measurement: Internal – Maximum value exceeded	1 Bit	Sends a message when the upper threshold value is exceeded.
85	Temperature measurement: Internal – Minimum value fallen below	1 Bit	Sends a message when the lower threshold value is undershot.

Table 121: Communication objects – Temperature measurement: Internal

4.13 Temperature Controller

The “Temperature Controller” is located in the ETS together with the “Temperature measurement” in a shared menu. For better clarity, each item is described in its own chapter.

The activation of the Temperature Controller is carried out via the “Controller type” parameter.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Operating mode	▪ **not active** ▪ Heating ▪ Cooling ▪ Heating and Cooling	Setting the controller operating mode. The further settings depend on the selected controller type.

Table 122: Settings – Controller type

If “**Controller type**” is set to “**not active**”, the controller is deactivated and there are no further settings for the controller. As soon as a specific mode is assigned to the controller, depending on the application “**Heating**”, “**Cooling**” or “**Heating and Cooling**”, further settings can be made and the “Control parameters” menu also appears on the left side.

The task of the control is to match the actual temperature to the specified setpoint as closely as possible. To achieve this, a range of setting options is available to the user. The controller can influence the control variable using three control types (PI control, 2-step control, PWM control). In addition, an additional level can be assigned to the controller.
Furthermore, the controller has four different operating modes (Frost/Heat protection, Night, Comfort, Standby) for differentiated control of various requirement areas.
Other functions of the controller are manual setpoint shift, dynamic setpoint shift taking into account the outside temperature, setpoint specification via independent setpoints (as absolute values), as well as operating mode selection after reset and integration of lock objects.

4.13.1 Specific settings – Temperature controller

The following chapters provide a detailed description of the parameters from the “Temperature Controller” menu.

4.13.1.1 Setpoints, Operating Modes & Priorities

As a basis, it must first be determined how the setpoints are to be specified:

ETS text	Value range **[Default value]**	Comment
Setpoints for Standby / Night	▪ **independent setpoints** ▪ depending on the setpoint Comfort (Basic)	Setting how the setpoints for the controller should be specified.

Table 123: Settings – Setpoints for Standby / Night

The two options are described in detail in the next two chapters.

4.13.1.1.1 Depending on the setpoint Comfort (Basic)

With the setting "depending on setpoint Comfort (Basic)", the operating modes "Standby" and "Night" always refer to the “setpoint Comfort (Basic)”. If this changes due to a setpoint specification, the values for "Standby" and "Night" also change. Therefore, the values for reduction and increase are given as a temperature difference in "K" (Kelvin). "Frost/Heat protection" does not change here and always remains at the configured value.

The following table shows the individual operating modes and their setting ranges:

ETS text	Value range **[Default value]**	Comment
Setpoint: Comfort (basic)	7 ... 35 °C **[21 °C]**	**The basic Comfort value is the reference point of the control.**
Standby reduction / increase	0 K – 10.0 K **[2.0 K]**	Reduction (when "Heating") or increase (when "Cooling") of the temperature when selecting the "Standby" operating mode. Specified relative to the basic comfort value.
Night reduction / increase	0 K – 10.0 K **[3.0 K]**	Reduction (when "Heating") or increase (when "Cooling") of the temperature when selecting the "Night" operating mode is specified relative to the basic comfort value.
Setpoint: Frost protection	3 ... 12 °C **[7 °C]**	Setting the setpoint for the "Frost protection" mode. **Visible when "Heating" is active.**
Setpoint: Heat protection	24 ... 40 °C **[35 °C]**	Setting the setpoint for the "Heat protection" mode. **Visible when "Cooling" is active.**
Dead zone between Heating and Cooling	1 K – 10.0 K **[2.0 K]**	Setting range for the dead zone. **Only visible with "Heating and Cooling".**

Table 124: Settings – Operating modes and setpoints (Depending on setpoint Comfort (Basic))

The specification of a new setpoint is made via the object "Preset (Basic) Comfort setpoint".

In addition, there is a general object for the setpoint specification, the object “Preset setpoint”. If a value is sent via this, it also changes the basic Comfort value. The special feature is that a setpoint setting automatically switches to the “Comfort” operating mode. This applies to a setpoint in “Standby” or “Night” mode.

Important: In the "Frost-" or "Heat protection" operating mode, a setpoint specification is ignored!

Background: Some visualisations send fixed values in "Comfort" and require this value to be reported back. This is only possible for the Temperature Controller if it is also in "Comfort" mode.

Operating mode "Comfort"

The "Comfort" operating mode is the reference operating mode of the Temperature Controller. The values in the "Night" and "Standby" operating modes are based on this. The "Comfort" operating mode should be activated when the room is in use. The basic comfort value is configured as the setpoint.
If the controller type is set to “Heating and Cooling”, the basic Comfort value applies for the heating process. In “Cooling” mode, the value of the dead zone between “Heating” and “Cooling” is added.

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
108	Temperature Controller 1 – Mode: Comfort	1 Bit	Activating the Comfort operating mode.

Table 125: Communication object – Comfort mode

Operating mode "Night"

The “Night” operating mode should cause a significant temperature reduction/increase, e.g. at night or on weekends. The value can be freely configured and refers to the basic comfort value. So, if a 5 K reduction has been configured and a basic Comfort value of 21 °C has been set, the setpoint for “Night” operation mode is 16 °C. In “Cooling” mode, there is a respective increase in the value.

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
109	Temperature Controller 1 – Mode: Night	1 Bit	Activating the Night operating mode.

Table 126: Communication object – Night mode

Operating mode "Standby"

The "Standby" operating mode is used when no one is using the room. It should result in a slight reduction/increase in temperature. This value should be set significantly lower here than in the "Night" operating mode to enable faster reheating/cooling of the room. The value is freely configurable and refers to the basic Comfort value. So if a reduction of 2 K has been set and a basic Comfort value of 21 °C has been set, the setpoint for the "Standby" mode is 19 °C. In “Cooling” mode, the value is increased accordingly. The "Standby" mode is then activated as soon as all other operating modes are deactivated. Therefore, this operating mode does not have a communication object.

Operating mode "Frost/Heat protection"

The "Frost protection" operating mode is activated as soon as the controller is assigned the "Heating" function, the "Heat protection" operating mode is activated as soon as the controller is assigned the "Cooling" function. If the controller is assigned the "Heating and Cooling" function, a combined operating mode called "Frost/Heat protection" is activated.
The “Frost/Heat protection” operating mode automatically switches on “Heating” or “Cooling” when the temperature falls below or exceeds the configured temperature. The temperature is set here as an absolute value. If, for example, the temperature must not fall below a certain value during a longer absence, the “Frost protection” mode should be activated.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
110	Temperature Controller 1 – Mode: Frost protection	1 Bit	Activates the Frost protection mode
110	Temperature Controller 1 – Mode: Heat protection	1 Bit	Activates the Heat protection mode
110	Temperature Controller 1 – Mode: Frost / Heat protection	1 Bit	Activates the Frost/Heat protection mode

Table 127: Communication object – Frost/Heat protection mode

Dead zone

If the operating mode is set to "Heating and Cooling", the following parameter is displayed:

ETS text	Value range **[Default value]**	Comment
Dead zone between Heating and Cooling	1.0 K – 10.0 K **[2.0 K]**	Setting range for the dead zone.

Table 128: Setting – Dead zone

The settings for the dead zone are only possible when the controller type is set to "Heating and Cooling". Once this setting has been made, the dead zone can be configured.
The dead zone is the area in which the controller does not activate either the heating or cooling process. Consequently, the controller does not send any value to the control value in the dead zone and therefore the control value remains switched-off. When setting the dead zone, please note that a low value leads to frequent switching between heating and cooling, whereas a high value leads to a large fluctuation of the actual room temperature.

If the controller is set to "Heating and Cooling", the basic comfort value always forms the setpoint for the heating process. **The setpoint for the cooling process is obtained by adding the basic comfort value and the dead zone.** If the basic comfort value is set to 21 °C and the dead zone to 3K, the setpoint for heating is 21 °C and for cooling is 24 °C.
The dependent setpoints for "Heating and Cooling", i.e. those for the operating modes "Standby" and "Night", can be configured independently of each other again in the controller type "Heating and Cooling". The setpoints are then calculated depending on the basic comfort value, which is the setpoint of the "Comfort" operating mode, for both "Heating" and "Cooling".
The setpoints for “Heat”- and “Frost protection” are independent of the settings for the dead zone and the other setpoints.

The following diagram shows the relationships between the dead zone and the setpoints for the individual operating modes. The following settings were chosen for this example:

Basic Comfort value: 21 °C
Dead zone between Heating and Cooling: 3 K
Standby reduction / increase: 2 K
Night reduction / increase: 4 K

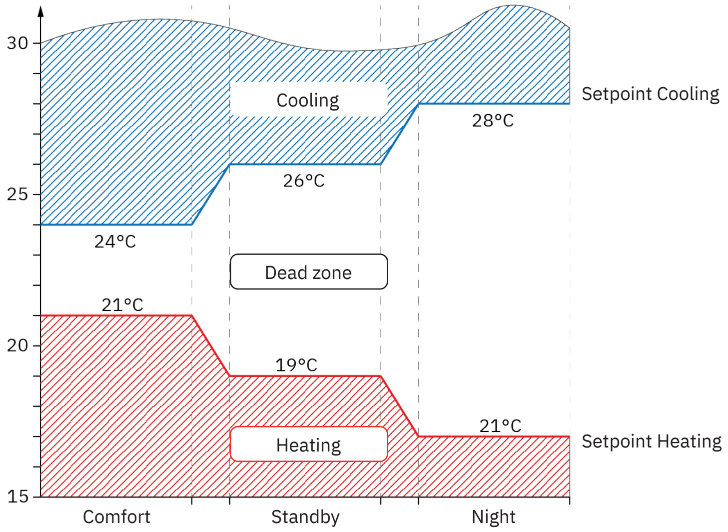


Figure 21: Diagram – Dead zone and corresponding setpoints

4.13.1.1.2 Independent setpoints

With the “Independent setpoints” setting it is possible to specify the values for “Comfort”, “Night”, “Standby” and “Frost protection” (when in Heating mode) or “Heat protection” (in Cooling mode) independently of each other as absolute values in “°C”. This means that there is no longer a reference to the Comfort setpoint.

The following table shows the corresponding settings:

ETS text	Value range **[Default value]**	Comment
Setpoint: Comfort (basic)	7 ... 35 °C **[21 °C]** **[23 °C]**	Adjustable setpoints for the respective described operating mode. **[Standard values for "Heating" (above) and "Cooling" (below)]**
Setpoint: Standby	7 ... 35 °C **[19 °C]** **[24 °C]**	
Setpoint: Night	7 ... 35 °C **[18 °C]** **[25 °C]**	
Setpoint: Frost protection	3 ... 12 °C **[7 °C]**	Setpoint of the Frost protection mode. **Visible when "Heating" is active.**
Setpoint: Heat protection	24 ... 40 °C **[35 °C]**	Setpoint of the Heat protection mode. **Visible when "Cooling" is active.**
Separate objects for setpoints Comfort / Standby / Night / Frost protection / Heat protection	▪ **not active** ▪ active, single objects ▪ active, combined object (DPT 275.100)	Setting of how the setpoint value is to be specified. **Single objects are only possible for "Heating" or "Cooling" mode!**

Table 129: Settings – Operating modes and Setpoints (independent setpoints)

Functional description

By configuring in the ETS, the values for each operating mode are defined. Now, a separate new setpoint can be preset for each operating mode without it affecting another operating mode.
The specification can be made via single objects (only "Heating" or only "Cooling") for each operating mode or as 8 Byte combined objects ("Heating", "Cooling", "Heating and Cooling"). In addition, there is a general object for the setpoint specification, the object – "Preset setpoint". This changes the setpoint that is currently active (except for "Frost/Heat protection").

Sent values are always reported back in the same way. There is no longer a difference when switching between “Heating” and “Cooling” (no shift due to dead zone) or reduction/increase between the operating modes.

Description of the operating modes, see 4.13.1.1.1 Depending on the setpoint Comfort (Basic).

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
91	Temperature Controller 1 – Preset setpoint	2 Byte	General object for setpoint setting
92	Temperature Controller 1 – Comfort: Preset setpoint	2 Byte	Specify setpoint in Comfort mode
92	Temperature Controller 1 – Preset (Basic) Comfort setpoint	2 Byte	Specify setpoint in Comfort mode
92	Temperature Controller 1 – Combined object: Preset setpoint	8 Byte	Setpoint specification via combined object. **Visible with "Heating" or "Cooling"**
92	Temperature Controller 1 – Combined object (Heating): Preset setpoint	8 Byte	Setpoint specification via combined object. **Visible with "Heating and Cooling"**
93	Temperature Controller 1 – Standby: Preset setpoint	2 Byte	Setpoint specification in Standby mode
94	Temperature Controller 1 – Night: Preset setpoint	2 Byte	Setpoint specification in Night mode
95	Temperature Controller 1 – Frost protection: Preset setpoint	2 Byte	Setpoint specification in Frost protection mode
95	Temperature Controller 1 – Heat protection: Preset setpoint	2 Byte	Setpoint specification in Heat protection mode
96	Temperature Controller 1 – Combined object (Cooling): Preset setpoint	8 Byte	Specify setpoint via combined object. **Visible with "Heating and Cooling"**

Table 130: Communication object – Setpoint setting (independent setpoints)

4.13.1.1.3 Priority of operating modes

The following table shows the setting options for this parameter:

ETS text	Value range **[Default value]**	Comment
Priority	▪ **Frost(Heat protection) / Comfort / Night / Standby** ▪ Frost(Heat protection) / Night / Comfort / Standby	Setting the priority order of the operating modes.

Table 131: Setting – Priority of operating modes

The priority of the operating modes can be used to set which operating mode is active with priority if several operating modes have been selected. If, for example, with the priority "Frost / Comfort / Night / Standby", both "Comfort" and "Night" are switched on at the same time, the controller remains in "Comfort" mode until this is switched off. Afterwards, the controller automatically switches to "Night" mode.

4.13.1.2 Operating mode switchover (Mode selection)

There are two ways to switch operating modes: On the one hand, the operating mode can be controlled via the associated 1 Bit communication objects, and on the other hand via a 1 Byte object. The selection of operating modes via 1 Bit is done by directly controlling the individual communication object. Taking into account the set priority, the operating mode controlled via its communication object is switched on or off. To switch the controller from an operating mode with higher priority to one with lower priority, the previous operating mode must first be deactivated with a logical "0". If all operating modes are switched off, the controller switches to "Standby" mode.

Example (set priority: Frost / Comfort / Night / Standby):

	Operating mode		Set operating mode
Comfort	Night	Frost / Heat protection	
1	0	0	Comfort
0	1	0	Night
0	0	1	Frost / Heat protection
0	0	0	Standby
1	0	1	Frost / Heat protection
1	1	0	Comfort

Table 132: Example – Mode selection via 1 Bit

The mode selection via 1 Byte is done via only one object, the DPT HVAC Mode 20.102 according to the KNX specification. For mode selection, a hex value is sent to the “ mode selection” object. The object evaluates the received hex value and thus switches the associated operating mode on and the previously active operating mode off. If all operating modes are switched off (hex value = 0), the “Standby” operating mode is switched on.

The hex values for the individual operating modes can be found in the following table:

Mode selection (HVAC-Mode)	Hex value
Comfort	0x01
Standby	0x02
Night	0x03
Frost / Heat protection	0x04

Table 133: Operating modes – Hex values

The following example is intended to illustrate how the controller processes received hex values and thus switches operating modes on or off. The table is structured from top to bottom.

Example (set priority: Frost / Comfort / Night / Standby):

Received hex value	Processing	Set operating mode
0x01	Comfort = 1	Comfort
0x03	Comfort = 0; Night = 1	Night
0x02	Night = 0; Standby = 1	Standby
0x04	Standby = 0; Frost/Heat protection = 1	Frost / Heat protection

Table 134: Example – Mode selection via 1 Byte

The controller always responds to the last value sent. If, for example, an operating mode was last selected via a 1 Bit command, the controller responds to switching via 1 Bit. If a command was last sent via the 1 Byte object, the controller responds to switching via 1 Byte.

Important: There is no priority between switching via 1 Bit and 1 Byte!

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
106	Temperature Controller 1 – Mode selection	1 Byte	Selection of operating modes
108	Temperature Controller 1 – Mode: Comfort	1 Bit	Activation of Comfort operating mode
109	Temperature Controller 1 – Mode: Night	1 Bit	Activation of Night operating mode
110	Temperature Controller 1 – Mode: Frost / Heat protection	1 Bit	Activates the Frost/Heat protection mode

Table 135: Communication objects – Mode selection

4.13.1.3 HVAC Status objects

There are several ways to visualise the operating modes.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Additional HVAC status object	■ **not active** ■ HVAC Mode (DPT 20.102) ■ RHCC Status (DPT 22.101) ■ RTC combined status (DPT 22.103) ■ RTSM combined status (DPT 22.107)	Setting an additional HVAC status object.
Send HVAC status objects cyclically	**not active** 5 min – 4 h	Setting whether and at what intervals the object should be sent cyclically.

Table 136: Settings – HVAC status objects

The **RHCC Status (DPT 22.101)** is an additional 2 Byte status object. It contains additional status messages. Here too, as with the HVAC object, the hex values for multiple messages are added together and the total value is output.

The following table shows the hex values associated with the individual messages:

Bit	DPT RHCC Status		Hex value
0	Error measuring sensor	1=Error	0x01
7	Heating/Cooling	0=Cooling/1=Heating	0x80
13	Frost alarm	1=Frost alarm	0x2000
14	Heat alarm	1=Heat alarm	0x4000

Table 137: Assignment – DPT RHCC Status

With the RHCC status, various error messages or basic settings can therefore be displayed or queried.

RTC combined status (DPT 22.103)

This is a combined status according to DPT 22.103.
The assignment is as follows:

Bit	Beschreibung / Description	Codierung / Encoding
0	Allgemeiner Fehler General failure information	0=kein Fehler/no failure 1=Fehler/failure
1	Aktiver Mode Active mode	0=Kühlen/Cool mode 1=Heizen/Heat mode
2	Taupunkt status Dew point status	0=kein alarm/no alarm 1=Alarm (RTC gesperrt)/alarm (RTC locked)
3	Frost alarm Frost alarm	0=kein Alarm/no alarm 1=Alarm/alarm
4	Hitze Alarm Overheat alarm	0=kein Alarm/no alarm 1=Alarm/alarm
6	Zusätzliche Heiz-/Kühlstufe (2. Stufe) Additional heating/cooling stage (2nd stage)	0=Inaktiv/inactive 1=Aktiv/active
7	Heizmodus aktiviert Heating mode enabled	0=Falsch/false 1=Wahr/true
8	Kühlmodus aktiviert Cooling mode enabled	0=Falsch/false 1=Wahr/true

Table 138: Assignment – RTC combined status DPT 22.103

RTSM combined status (DPT 22.107)

This is a combined status according to DPT 22.107. The assignment is as follows:

Bit	Beschreibung / Description	Codierung / Encoding
0	Effektiver Wert des Fensterstatus Effective value of the window status	0 = alle Fenster geschlossen/ all windows closed 1 = mindestens ein Fenster geöffnet/ at least one window opened
1	Effektiver Wert des Präsenzstatus Effective value of the presence status	0 = keine Meldung einer Präsenz/ no occupancy from presence detectors 1 = mindestens ein Melder belegt/ occupancy at least from one presence detector
3	Status der Komfortverlängerung Status of comfort prolongation User	0 = Komfortverlängerung nicht aktiv/ comfort prolongation User not active 1 = Komfortverlängerung aktiv/ comfort prolongation User active

Table 139: Assignment – RTSM combined status DPT 22.107

4.13.1.4 Operating mode after reset

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Operating mode after reset	▪ **Comfort with configured setpoint** ▪ Standby with configured setpoint ▪ Hold previous state and setpoint	Setting which operating mode or behaviour should be activated after a bus voltage return.
Operating mode after reprogramming	▪ **Comfort** ▪ Standby	Setting the operating mode after reprogramming. ▪ **When setting "Hold previous state and setpoint".** ▪ **For "Heating" or "Cooling".**
Operating mode after reprogramming	▪ **Comfort (Cooling)** ▪ Comfort (Heating) ▪ Standby (Heating) ▪ Standby (Cooling)	Setting the operating mode after reprogramming. ▪ **When setting "Hold previous state and setpoint".** ▪ **For "Heating and Cooling".**

Table 140: Settings – Operating mode after reset

- **Comfort with configured setpoint**
  After a bus voltage return, Comfort is activated with the setpoint specified by the ETS.
- **Standby with configured setpoint**
  After a bus voltage return, Standby is activated with the setpoint specified by the ETS (Comfort setpoint - Standby reduction).
- **Hold previous state and setpoint**
  The controller recalls the setpoint and mode that was set before the bus was switched off. With this selection, the parameter "Operating mode after reprogramming" can also be used to set which operating mode is active after a reprogramming.

4.13.1.5 Setpoint shift

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Maximum setpoint shift	0 ... 10 K **[3 K]**	Indicates the maximum setpoint shift.
Shift via 1 Bit / 1 Byte object	■ **not active** ■ 1 Bit ■ 1 Byte	Setting whether setpoint shift should be enabled via 1 Bit or 1 Byte.
Step width	0.1 K ... 1 K **[0.5 K]**	Setting the step width for the setpoint shift via 1 Bit /1 Byte. **Visible when "Setpoint shift via 1 Bit /1 Byte" is active.**
Setpoint shift: Status	■ **not active** ■ active	Activation of an object to display the status of the setpoint shift.
Setpoint shift applies to	■ **Comfort** ■ Comfort / Night / Standby	Scope of validity of the setpoint offset.
Action if shift in Night / Standby	■ **no action** ■ change to Comfort	Setting whether, after an offset in Night / Standby, it should switch back to Comfort. **Only when “Setpoint offset applies to” → “Comfort” is active.**
Delete setpoint shift after operating mode change	■ **not active** ■ active	Setting whether the current setpoint shift should be deleted after a change of operating mode or not.
Delete setpoint shift after new absolute setpoint	■ not active ■ **active**	Setting whether the current setpoint offset should be deleted after specifying a new absolute setpoint. **Only with “independent setpoints”.**
Delete setpoint shift after new basic setpoint	■ not active ■ **active**	Setting whether the current setpoint shift should be deleted after a new base setpoint has been specified. **Only when “depending on setpoint Comfort (basic)” is selected.**
Reset basic setpoint to parameterisation after operating mode change	■ not active ■ **active**	Setting whether, after an operating mode change, the basic setpoint should be reset to the parameterised basic setpoint or not. **Only when “depending on setpoint Comfort (basic)” is selected.**
Send setpoint change	■ not active ■ **active**	Setting whether a change of the setpoint should be sent.

ETS text	Value range **[Default value]**	Comment
Send current setpoint cyclically	**not active** 5 min – 4 h	Setting whether and at what intervals the object should be sent cyclically.

Table 141: Settings – Setpoint shift

Setpoint shift

The base Comfort setpoint is firmly configured via the ETS. There are two ways to change this setpoint. On the one hand, a new absolute setpoint can be specified to the controller, which is done via the communication object "(Basic) Comfort setpoint" as a 2 Byte absolute value, and on the other hand, the preset setpoint can be manually increased or decreased. This is done via the objects "manual setpoint shift", either via 1 Bit, 1 Byte or 2 Byte.
With the setpoint shift, the currently set setpoint is shifted as a temperature differencee. The object "Manual setpoint shift" is used for this. With the 1 Byte / 2 Byte objects, a positive Kelvin value is sent to the controller for an increase or a negative Kelvin value for a decrease. With the manual setpoint shift via the 1 Bit object, only on/off commands are sent and the controller increases the setpoint by the set step width when receiving a "1" and decreases the setpoint by the set step width when receiving a "0".
The setpoint offset via 2 bytes is automatically active on the controller, and the corresponding communication object is permanently displayed. The offset via 1 Bit / 1 Byte can be activated via parameters.
Note: When the setpoint is shifted, the configured basic comfort value is not changed as a reference value for the other operating modes!

Via the setting "**Maximum setpoint shift**", the maximum manual shift of the setpoint can be limited. For example, if the controller is set to a basic Comfort value of 21 °C and a maximum setpoint shift of 3 K, the basic comfort value can only be manually shifted within the limits of 18 °C to 24 °C.

Activating the "**Status setpoint shift**" creates another object. With this, the current status of the setpoint shift can be sent. This is important for some visualisations for their correct function.

Via the setting "**Setpoint shift applies to**", it can be set whether the shift applies only to the "Comfort" mode or whether the setting should also be adopted for the "Night" and "Standby" operating modes. The "Frost/Heat protection" operating modes are in any case independent of the setpoint shift.

By means of the setting “**Delete setpoint offset after change of operating mode**”, it can be set whether the new setpoint should be retained after an operating mode change or whether the controller should return to the value parameterised in the ETS after an operating mode change.

“Delete setpoint shift after new absolute setpoint” ensures that the setpoint shift is always deleted as soon as a new setpoint is assigned via object.

“**Delete setpoint shift after new basic setpoint**” ensures that after specifying a new basic setpoint as an absolute value, the previous setpoint shift is deleted and started with the new setpoint.

“**Reset basic setpoint to configuration after change of operating mode**” ensures that after every operating mode change, the setpoint is reset to the configured basic value.

When the parameter “**Send setpoint changes**” is activated, the new, now valid setpoint is sent to the bus via the communication object “Current setpoint” with every change.

When reading in a new absolute Comfort setpoint, a new basic Comfort value is assigned to the controller. There is a significant difference here between the settings “depending on setpoint Comfort (Basic)” and “independent setpoints”.

Setting “depending on setpoint Comfort (Basic)”
This new basic comfort value also automatically causes an adjustment of the dependent setpoints in the other operating modes, as these are relative to the basic Comfort value. All settings for setpoint shifting do not apply here, as a completely new base value is assigned to the controller.
The specification of a setpoint via the communication object “Preset setpoint” offers a special feature. Here the new value is written to the basic Comfort setpoint, a valid setpoint shift is deleted and the controller automatically switches to “Comfort” mode, regardless of which mode the controller was in before. This procedure is required for visualizations that make changes via absolute setpoints. This ensures that the new setpoint sent is also reported back.

Setting “independent setpoints”
Here, an individual absolute value can be specified for each operating mode. If, for example, the setpoint is changed in “Comfort” mode the other setpoints remain unaffected.A special feature is the common object “Preset setpoint”. This always changes the setpoint in the currently valid mode. If, for example, the controller is currently in “Standby” mode and the value “20 °C” is sent via this object the “Standby” setpoint is changed to “20 °C” at this moment.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
91	Temperature Controller 1 – Preset setpoint	2 Byte	Specification of a new absolute setpoint
92	Temperature Controller 1 – Preset (Basic) Comfort setpoint	2 Byte	Specification of a new absolute setpoint
92	Temperature Controller 1 – Combined object (Heating): Preset setpoint	8 Byte	Specification of new absolute setpoints via one combined object
92	Temperature Controller 1 – Comfort: Preset setpoint	2 Byte	Specification of a new absolute setpoint
93	Temperature Controller 1 – Standby: Preset setpoint	2 Byte	Specification of a new absolute setpoint
94	Temperature Controller 1 – Night: Preset setpoint	2 Byte	Specification of a new absolute setpoint
95	Temperature Controller 1 – Frost protection: Preset setpoint	2 Byte	Specification of a new absolute setpoint
95	Temperature Controller 1 – Heat protection: Preset setpoint	2 Byte	Specification of a new absolute setpoint
96	Temperature Controller 1 – Combined object (Cooling): Preset setpoint	8 Byte	Specification of new absolute setpoints via one combined object
97	Temperature controller 1 – Send current setpoint	2 Byte	Sends the currently set setpoint
98	Temperature controller 1 – Manual setpoint shift (2 Byte)	2 Byte	Shift of the setpoint relative to the preset Comfort setpoint. Object is permanently displayed
99	Temperature Controller 1 – Manual setpoint shift (1 = + / 0 = -)	1 Bit	Increase/decrease of the setpoint relative to the preset Comfort setpoint by the set step size
99	Temperature Controller 1 – Manual setpoint shift (1 Byte)	1 Byte	Increase/decrease of the setpoint relative to the preset Comfort setpoint by the set step size
100	Temperature Controller 1 – Setpoint shift: Send status	2 Byte	Sending the current status of the setpoint shift

Table 142: Communication objects – Setpoint shift

4.13.1.6 Comfort extension with time

The comfort extension causes a temporary switch to the "Comfort" mode.

Important: The comfort extension only works for switching from "Night" to "Comfort" mode and back!

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Comfort extension with time	▪ **not active** ▪ active	Activation of the Comfort extension via time-dependent object.
Comfort extension time	**not active** 30 min … 4 h	Adjustable time for the Comfort extension.

Table 143: Settings – comfort extension with time

The comfort extension can be used, for example, to extend the “Comfort” mode for visits, parties, etc. If, for example, a timer switches the channel to “Night” mode at a certain time, it can be switched back to “Comfort” mode for a certain time by means of the Comfort extension. When a “1” is sent to the object “Comfort extension”, the channel switches from “Night” mode back to “Comfort” mode for the set “Comfort extension time”. After the “Comfort extension time” has elapsed, the channel automatically switches back to “Night” mode. If the “Comfort extension” is to be ended before the time has expired, this can be achieved by sending a “0” to the object.If a “1” is sent to the object again during the Comfort extension, the set time is restarted.If the mode is changed during the extension, the time is stopped.

If the comfort extension is activated, the following communication object appears:

No.	Name / Object function	Length	Usage
107	Temperature controller 1 – Comfort mode: Comfort extension	1 Bit	Temporary switching to Comfort mode for a specified period.

Table 144: Communication object – Comfort extension with time

4.13.1.7 Lock objects

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Lock object: Control value Heating	■ **not active** ■ active	Activates the lock object for the heating process.
Lock object: Control value Cooling	■ **not active** ■ active	Activates the lock object for the cooling process.

Table 145: Settings – Lock objects for control value

By activating the lock objects, depending on the controller type setting, one or two lock objects are available to the user for locking the control value. These lock objects are used to prevent the actuators (heating or cooling device) from starting unintentionally. If the heating should not start in certain situations, e.g. when a window is open, the lock object can be used. Another application would be manual locking. The control value is locked with a "1". The lock is released with a "0".

The following table shows the communication objects for the lock objects:

No.	Name / Object function	Length	Usage
119	Temperature Controller 1 – Lock object Heating: Lock control value	1 Bit	Locking the setpoint in heating mode
120	Temperature Controller 1 – Lock object Cooling: Lock control value	1 Bit	Locking the setpoint in cooling mode

Table 146: Communication object – Lock objects for control value

4.13.1.8 Object for Heating/Cooling request

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Object for “Heating” request	■ **not active** ■ active	Activates an object to indicate whether a heating request is pending or not.
Object for "Cooling" request	■ **not active** ■ active	Activates an object to indicate whether a cooling request is pending or not.

Table 147: Settings – Objects for Heating/Cooling request

This setting displays two objects that indicate an active heating or cooling process. These are status objects.
The objects can be used, for example, for visualisation. For instance, a red LED could indicate an ongoing heating process and a blue LED an ongoing cooling process. Another application is the central activation of a heating or cooling process. For example, an additional Logic Module can be used to ensure that all heaters in a building/area are switched on as soon as a controller issues the heating demand. The object outputs a "1" as long as the process continues. When the process is finished, a "0" is output.

The following table shows the communication objects for the lock objects:

No.	Name / Object function	Length	Usage
125	Temperature controller 1 – Send "Heating" request	1 Bit	Indicates an active/inactive heating process
126	Temperature controller 1 – Send "Cooling" request	1 Bit	Indicates an active/inactive cooling process

Table 148: Communication object – Objects for Heating/Cooling request

4.13.1.9 Reference control via outdoor temperature

Important: This parameter is only available in "Cooling" mode!

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Reference control via outdoor temperature	■ **not active** ■ active	Activation of the parameter. **Only available in Cooling mode!**
Reference variable minimum	10 … 60 °C **[28 °C]**	Lower response value of the reference control.
Reference variable maximum	10 … 60 °C **[38 °C]**	Upper response value of the reference control.
Setpoint change at maximum reference variable	1 … 10 K **[10 K]**	Change of the setpoint when the maximum reference variable is reached.

Table 149: Settings – Reference control via outdoor temperature

General description of the function of the "Reference control":

This parameter makes it possible to linearly track the setpoint as a function of any reference variable, which is recorded via an external sensor. With appropriate configuration, a continuous increase or decrease of the setpoint can be achieved.

To determine the extent to which reference control affects the setpoint, three settings must be made:

- Minimum reference variable (w_{min}),
- Maximum reference variable (w_{max})
- Setpoint change at maximum reference variable (△X).

The settings for the maximum (w_{max}) and minimum of the reference variable (w_{min}) describe the temperature range within which the reference variable starts and stops influencing the setpoint. The setpoint change at maximum reference variable ($\triangle X_{max}$) describes the ratio of how much an increase in the reference temperature affects the setpoint. The actual setpoint change results from the following relationship:

$$\triangle X = \triangle X_{max} * [(w - w_{min})/(w_{max} - w_{min})]$$

If the reference control is to be increased, a positive value must be set for the “setpoint change at maximum reference variable” (Cooling mode). If, on the other hand, a setpoint reduction is desired, the “setpoint change at maximum command value” must be set to a negative value (Heating mode). The setpoint change △X is then added to the basic comfort value.

A value above or below the reference variable has no effect on the setpoint change. As soon as the value is within the reference variable (i.e. between w_{max} & w_{min}), the setpoint is lowered or raised.

The following graphics are intended to illustrate the influence of the reference variable on the setpoint: (X_{soll} = new setpoint; X_{basis} = base setpoint)

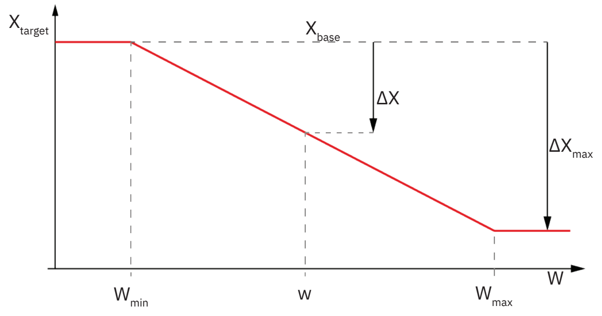


Figure 22: Diagram – Reference control / reduction

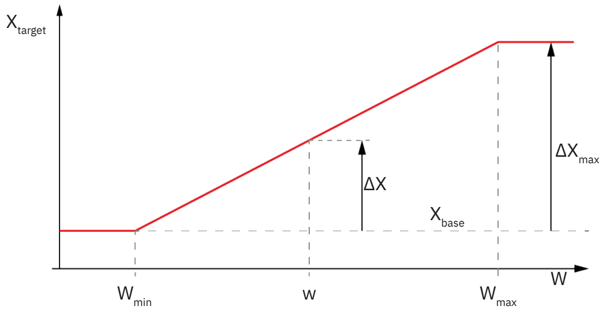


Figure 23: Diagram – Reference control / increase

With the communication object of the reference value, the current temperature of the external sensor can be read out. The communication object does not have to be linked with the communication object of the setpoints to activate the command but is only used to request the reference temperature.

Example of application (controlled via outdoor temperature):
For the temperature control of a room, the setpoint (22 °C) should be increased so that in an outdoor temperature range from 28 °C to 38 °C, the temperature difference between outside and inside does not exceed 6 K.

Settings to be made:

Basic comfort value: 22 °C	Reference control: active
Minimum reference variable: 28 °C	Maximum reference variable: 38 °C
Setpoint change at maximum reference variable: 10 °C	

If the outdoor temperature were now to rise to a value of 32 °C, the setpoint would be increased by the following value: $\triangle X$ = 10 °C * [(32 °C - 28 °C)/(38 °C - 28 °C)] = 4 °C
Consequently, a new setpoint of 22 °C + 4 °C = 26 °C would result.
If the outdoor temperature reaches the set maximum value of 38 °C, the setpoint would be 32 °C and would not increase further if the temperature continues to rise.

The following table shows the corresponding object:

No.	Name / Object function	Length	Usage
127	Temperature controller 1 – Receive outside temperature / reference value	2 Byte	Receiving an external measured value as a reference variable

Table 150: Communication object – Reference control via outdoor temperature

4.13.1.10 Flow temperature limitation

Important: This parameter is only available in the "Heating" operating mode!

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Flow temperature	■ **not active** ■ active	Activation of the flow temperature limitation.
Limit flow temperature to	10 … 60 °C **[40 °C]**	Setting the value to which the flow temperature should be limited.

Table 151: Settings – Flow temperature

This setting allows the current flow temperature to be limited. This enables a limitation of the heating temperature as required in certain situations. For example, if underfloor heating should not heat above a certain value to protect the floor coverings, the heating temperature can be limited by the flow temperature limitation.
The flow temperature limitation requires a second sensor on the flow itself. This sensor measures the current flow temperature. The object that records the flow temperature is then connected in a group address to the object for the flow temperature of the temperature controller. This then limits the flow temperature according to the set parameters.

The following communication object is available:

No.	Name / Object function	Length	Usage
115	Temperature controller 1 – Receive flow temperature Heating	2 Byte	Input of an external temperature

Table 152: Communication object – Flow temperature limitation

4.13.1.11 Alarms

The alarm function can be used to indicate the undershooting or exceeding of a set temperature via its associated communication objects.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Alarms	■ **not active** ■ active	Activation of the alarms for Frost or Heat.
Frost alarm if temperature is lower than	3 ... 10 °C **[7 °C]**	Setting the lower threshold value. **Only when "Alarms" → “active”.**
Heat alarm if temperature is greater than	25 ... 40 °C **[35 °C]**	Setting of the upper threshold value. **Only when "Alarms" → “active”.**

Table 153: Settings – Alarms

The alarm function reports the undershooting or exceeding of an adjustable temperature via the corresponding object with a logical “1”. The undershooting of the lower threshold value is reported via the Frost alarm object. The exceeding of the upper threshold value is reported via the Heat alarm object. Both alarm objects can be used for visualisation or to initiate countermeasures. If the lower threshold value is exceeded again or the upper threshold value is undershot again, a “0” is sent in each case and the alarm is thus cancelled.

The following table shows the corresponding objects:

No.	Name / Object function	Length	Usage
113	Temperature controller 1 – Send Frost alarm	1 Bit	Reports the undershooting of the lower threshold value
114	Temperature controller 1 – Send Heat alarm	1 Bit	Reports the exceeding of the upper threshold value

Table 154: Communication objects – Alarms

4.13.1.12 Window contact

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Window contact	▪ **not active** ▪ active	Setting for whether the window contact is monitored or not.
Window state	▪ **0 = closed / 1 = open (Standard DPT)** ▪ 1 = closed / 0 = open	Setting the polarity, which value indicates whether the window is open/ closed.
Delay time	00:02 ... 04:00 mm:ss **[5 s]**	Time by which the switchover is delayed after opening/closing.
Action when opening the window	force Frost/Heat protection	Fixed text. Cannot be changed.
Action when closing the window	▪ **HVAC Modus before locking** ▪ catch up on HVAC mode	Definition of the mode that is activated when the window is closed.
Release time	not active (not recommended) 1 h – 24 h **[12 h]**	Setting after which time it automatically switches back to the previous mode.

Table 155: Settings – Window contact

This function allows the control in a room to be forced into Frost or Heat protection after opening a window. The normal Heating/Cooling operation is interrupted for this period. This can, for example, prevent unnecessary energy consumption for heating after opening a window in winter. After closing the window, it can then be switched back to normal operation.

The "**Delay time"** ensures that the action to be performed after opening/closing the window only takes place after a configurable period. This allows a brief opening of the window without affecting the control

For "**Action when closing the window"**, it can be set whether, after closing, it returns to the mode before the lock or to a mode that, for example, was sent by a timer or a visualisation during the lock.

The "**Fallback time"** defines after what period the controller automatically returns to the previous operating mode after opening the window. This is useful, for example, if the window was forgotten to be closed. In this case, it would prevent the room from cooling down in winter or overheating in summer.

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
118	Temperature Controller 1 – Window contact: 0 = closed / 1 = open 1 = closed / 0 = open	1 Bit	Receiving the current window state. Polarity according to parameter setting.

Table 156: Communication object – Window contact

4.13.1.13 Diagnosis

The diagnosis function outputs the status of the controller in "plain text" and serves to allow the current status to be read quickly.

The communication object "**Diagnosis: Status**" is used for output. This is permanently displayed and sends automatically with every change.

The diagnosis function can send the following messages:

	Byte 0-1	Byte 3	Byte 5-11	Byte 13
Info		Heating/Cooling	Operating mode	Setpoint > 0%, if yes:Value 1
Possible messages		Heating: H	Comfort	Control value = 0%: 0
		Cooling: C	Standby	Control value > 0%: 1
			Night	
			Frost	
			Heat	
			ComfProl – Comfort prolongation active	
			Window – Window contact active	
			BIT – Channel operating mode switching 1 Bit	
			PWM BYTE – Channel operating mode continuous 1 Byte	
Special messages	Locked	Channel is locked		
	Contr Flowtemp	Control value reduced by flow temperature		
	Contr Dewpoint	Control value reduced by dew point		
	Setpoint Guide	Control value reduced by outdoor temperature/reference variable		
	Dew point alarm	The dew point alarm is active		

Table 157: Overview – Diagnosis texts

The following table shows the corresponding communication object:

No.	Name / Object function	Length	Usage
117	Temperature Controller 1 – Diagnosis: Status	14 Byte	Output of the status as text.

Table 158: Communication object – Diagnosis

4.13.2 Control parameters

By setting the **Control value**, the output of the control value is defined. Depending on this setting, further configuration options are displayed.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Control value	■ **PI control continuous** ■ PI control switching (PWM) ■ 2-step control (switching)	Definition of which control method the control value is output according to.

Table 159: Settings – Control value (Type of controller)

The controller has three different controller types which control the control value. The further configuration options depend on the controller type used. These are described in detail in the following chapters.

Depending on the selected controller type, the control variable controls the heating and/or cooling process. If the control variable is selected as a continuous PI control, the communication object for the control variable is a 1 Byte object, as the control variable can take on several states. If the control variable is selected as a 2-point control or as a PWM control, the communication object is a 1 Bit object, as the control variable can only take on 2 states (0; 1).

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
101	Temperature Controller 1 – Control value Heating: Send control value	1 Bit 1 Byte	Control of the actuator for the heating process. DPT according to parameter setting.
101	Temperature controller 1 – Control value Heating / Cooling: Send control value	1 Bit 1 Byte	Sending the control variable for the heating and cooling process. DPT according to parameter setting. **Available for system "2 pipe / 1 circuit".**
102	Temperature controller 1 – Control value Cooling: Send control value	1 Bit 1 Byte	Control of the actuator for the cooling process. DPT according to parameter setting.

Table 160: Communication object – Control value (Type of controller)

4.13.2.1 PI control continuous

The following table shows the configuration options for the continuous PI control:

ETS text	Value range **[Default value]**	Comment
Direction of action with rising temperature	■ **normal** ■ inverted	Indicates the control behaviour at rising temperatures.
Value: Maximum control value	100 % – 0 % **100 %]**	Indicates the output power of the control variable in maximum operation.
Heating system	■ **Water heating (4 K / 120 min)** ■ Underfloor heating (4 K /150 min) ■ Split unit (4 K / 60min) ■ adjustment via control parameter	Setting of the heating system used. Individual configuration possible via setting 4
Cooling system	■ **Split unit (4 K / 60 min)** ■ Cooling ceiling (4 K / 150 min) ■ adjustment via control parameter	Setting of the cooling system used. Individual configuration possible via setting 3.
Proportional range	1 K – 20 K **[4 K]**	The proportional component can be freely set here. **Only visible with the setting "adjustment via control parameter".**
Reset time	15 min – 240 min **[150 min]**	The integral range can be freely set here. **Only visible with the setting "adjustment via control parameter".**
Send control value cyclically	not active 1 min – 60 min **[5 min]**	Setting whether and at what interval the control value is sent cyclically.

Table 161: Settings – PI control continuous

The PI control is a continuous control with a proportional component, the P component, and an integral component, the I component. The size of the P component is specified in "K" (Kelvin). The I component is referred to as the reset time and is given in "min" (minutes). The control value in a continuous PI control is controlled in steps from 0 % up to the set maximum value of the control value.

Value: Maximum control value
With this setting, the control value to be output can be limited. To prevent switching operations with too high control values, the parameter can be set to a fixed value so that the actuator does not exceed this maximum value.

Heading / Cooling system
By setting the heating/cooling system used, the individual control parameters, P and I component, are set. It is possible to use preset values that match certain heating or cooling systems, or to freely adjust the shares of the P controller and the I controller. The preset values for the respective heating or cooling systems are based on practical experience and usually lead to good control results.

If a free "**adjustment via control parameters**" is selected, the proportional range and reset time can be individually set.

Important: This setting requires sufficient knowledge in the field of control engineering!

Proportional range
The proportional range represents the P component of a control. The P component of a control leads to a proportional increase of the control variable to the control difference.
A small proportional range leads to a rapid compensation of the control difference. The controller reacts almost immediately with a small proportional range and sets the control variable to almost the maximum value (100 %) even with small control differences. However, if the proportional range is chosen too small, there is a high risk of overshooting.
A proportional range of 4 K sets the setpoint to 100 % for a control deviation (difference between control value and current temperature) of 4 °C. Thus, with this setting, a control deviation of 1 °C would result in a control value of 25 %.

Reset time
The reset time represents the I component of a control. The I component of a control leads to an integral approximation of the actual value to the setpoint. A short reset time means that the controller has a strong I component.
A short reset time causes the control variable to quickly approach the value set according to the proportional range. In contrast, a long reset time results in a slow approach to this value.
When making the adjustment, it should be noted that a reset time set too short could cause overshooting.
As a general rule: The more sluggish the system, the greater the reset time.

Send control value cyclically
With the help of the parameter "Send control value cyclically", it can be set whether the channel should send its current status at certain time intervals. The intervals between two transmissions can also be configured.

4.13.2.2 PI control switching (PWM)

The PWM control is a further development of the PI control. All settings possible there can also be made here. In addition, the PWM cycle time is set here.
The following table shows the settings for the switching PI control:

ETS text	Value range **[Default value]**	Comment
Direction of action with rising temperature	▪ **normal** ▪ inverted	Indicates the control behaviour at rising temperatures.
Value: Maximum control value	100 % – 0 % **[100 %]**	Indicates the output power of the control variable in maximum operation.
Heating system	▪ **Water heating (4 K / 120 min)** ▪ Underfloor heating (4 K /150 min) ▪ Split unit (4 K / 60min) ▪ adjustment via control parameter	Setting of the heating system used. Individual configuration possible via setting 4
Cooling system	▪ **Split unit (4 K / 60 min)** ▪ Cooling ceiling (4 K / 150 min) ▪ adjustment via control parameter	Setting of the cooling system used. Individual configuration possible via setting 3.
Proportional range	1 K – 20 K **[4 K]**	The proportional component can be freely set here. **Only visible with the setting "adjustment via control parameter".**
Reset time	15 min – 240 min **[150 min]**	The integral range can be freely set here. **Only visible with the setting "adjustment via control parameter".**
PWM cycle	1 min – 30 min **[10 min]**	Setting the PWM cycle time.
Send control value cyclically	not active 1 min – 60 min **[5 min]**	Setting whether and at what interval the control value is sent cyclically.

Table 162: Settings – PI control switching (PWM)

With PWM control, the controller switches the control variable according to the value calculated by the PI control, taking the cycle time into account. The control variable is thus converted into a pulse-width modulation (PWM).

PWM cycle

The cycle time "PWM cycle" is used by the PWM control to calculate the on and off pulse of the control variable. This calculation is based on the calculated control variable. A PWM cycle comprises the total time from one switch-on point to the next.

Example:
If a control value of 75 % is calculated with a set cycle time of 10 min, the control variable will be switched on for 7.5 min and off for 2.5 min.

As a general rule for the cycle time: The more sluggish the overall system, the longer the cycle time can be set.

Important: For PWM (switching PI control), in addition to the control value, the status of the control value can also be output as a percentage value.

The following communication objects are available for this purpose:

No.	Name / Object function	Length	Usage
103	Temperature controller 1 – Control value Heating: Send status	1 Byte	Sends the status as a percent value
103	Temperature controller 1 – Control value Heating/Cooling: Send status	1 Byte	Sends the status as a percent value
104	Temperature controller 1 – Control value Cooling: Send status	1 Byte	Sends the status as a percent value

Table 163: Communication objects – Status control value

4.13.2.3 2-step control (switching)

The following table shows the setting options for the 2-step control:

ETS text	Value range **[Default value]**	Comment
Direction of action with rising temperature	▪ **normal** ▪ inverted	Indicates the control behaviour at rising temperatures. Adaptation to normally opened valves.
Switching hysteresis	0.5 K – 5.0 K **[2.0 K]**	Setting for upper and lower switch-on and switch-off points.
Send control value cyclically	not active 1 min – 60 min **[5 min]**	Setting whether and at what interval the control value is sent cyclically.

Table 164: Settings – 2-step control (switching)

The 2-step controller is the simplest type of control. Only the two states ON or OFF are sent to the control value. The controller switches the control variable (e.g. heating process) on when a certain reference temperature is undershot and off again when a certain reference temperature is exceeded. The switch-on and switch-off points, i.e. where the reference temperature lies, depend on the currently set setpoint and the set switching hysteresis. The 2-point controller is used when the control variable can only assume two states, such as an electrothermal valve.

Switching hysteresis
The setting of the switching hysteresis is used by the controller to calculate the switch-on and switch-off points. This is done taking into account the currently valid setpoint.

> Example:
> In the controller, for the controller type Heating, a basic Comfort value of 21 °C and a hysteresis of 2 K were set. In Comfort mode, this results in a switch-on temperature of 20 °C and a switch-off temperature of 22 °C.

When making the adjustment, it should be noted that a large hysteresis leads to a large fluctuation in the actual room temperature. However, a small hysteresis can cause the control variable to switch on and off permanently, as the switch-on and switch-off points are close together.

4.13.2.4 Direction of action with rising temperature

The action of the controller describes the behaviour of the control variable in response to a change in the control difference as the temperature rises. The control variable can exhibit normal control behaviour to a rising temperature or inverted control behaviour. The action is available for all settings of the control variable (PI control; PWM; 2-step). An inverted control variable is used in PWM and 2-step control to adapt to normally open valves.
For the individual controllers, an inverted control variable means the following, here using the example of the "Heating" operating mode:

- **PI controller** The control variable decreases as the control difference increases and increases as the control difference decreases.
- **PWM controller** The ratio of the on-time to the entire PWM cycle increases as the temperature rises and decreases as the temperature falls.
- **2-step controller** The controller switches on at the actual switch-off point and off at the actual switch-on point.

4.13.2.5 Additional settings for Heating und Cooling operation

The following table shows the additional settings in the "Heating and Cooling" operating mode:

ETS text	Value range **[Default value]**	Comment
System	▪ **2 pipe / 1 circuit (Heating or Cooling)** ▪ 4 pipe / 2 circuit (Heating and Cooling simultaneously)	Setting for separate or combined heating/ cooling circuits.
Control value Heating / Cooling	▪ **common object** ▪ separate objects	Setting whether one or two objects are available for the control value.
Switchover: Heating / Cooling	▪ **automatically** ▪ via object	Setting how the switchover is carried out. **Only with controller setting “Setpoints - depending on setpoint Comfort (Basic)”.**
Switchover: Heating / Cooling	via object	Fixed text, not changeable. **When "Independent setpoints" is selected.**

Table 165: Additional settings – Heating and Cooling

Using the parameter "**System**", the system used can be selected. If there is a common system for the cooling and heating process, the setting "2 pipe / 1 circuit" should be selected. If the cooling and heating processes are controlled by two individual devices, the setting "4 pipe / 2 circuit" should be selected. It is also possible, when "Setpoints: depending on setpoint Comfort (Basic)" is selected (in the "Temperature Controller" menu), to choose between manual switchover between heating and cooling and automatic switchover.

2 pipe / 1 circuit
With a common pipe system for the cooling and heating process, it can be selected whether a common object or separate objects for heating and cooling are displayed for controlling the manipulated variable. The change from "Heating" to "Cooling" or from "Cooling" to "Heating" is made by switchover. This can also be used simultaneously for switching between heating and cooling medium in the system. This ensures, for example, that in a heating/cooling ceiling, warm water flows during heating and cold water during cooling. In this case, only a common controller (PI, PWM or 2-step) can be selected for the control variable. The action can also only be set identically for both processes. However, the individual control parameters for the selected controller can be set independently of each other.

4 pipe / 2 circuit
If a separate pipe system is available for the heating and cooling process, both processes can also be configured independently of each other. Consequently, there are separate communication objects for both control variables. This makes it possible, for example, to control the heating process via a PI control and the cooling process via a 2-point control, since both processes can be controlled by different devices. For each of the two individual processes, completely individual settings for the control variable as well as the heating/cooling system are possible.

Switchover: Heating / Cooling
This setting allows you to define whether the controller automatically switches between "Heating" and "Cooling" or whether this process should be carried out manually via a communication object. In automatic switchover, the controller evaluates the setpoints and, based on the configured values and the current actual temperature, knows which mode it is currently in. For example, if "Heating" was previously active, the controller switches as soon as the setpoint for the cooling process is reached. As long as the controller is in the dead zone, it remains set to heating, but does not heat as long as the setpoint for the heating process is not undershot.
If the switchover "via object" is selected, an additional communication object is displayed, via which the switchover can be carried out. With this setting, the controller remains in the selected mode until it receives a signal via the object. For example, as long as the controller is in heating mode, only the setpoint for the heating process is considered, even if the controller is actually already in the cooling process according to the setpoints. The cooling process can only start when the controller receives a signal via the object to switch to the cooling process. If the controller receives a "1" via the communication object, the heating process is activated; with a "0", the cooling process.

The following communication objects are available for this purpose:

No.	Name / Object function	Length	Usage
123	Temperature controller 1 – Switchover: 1 = Heating / 0 = Cooling	1 Bit	Switching between heating and cooling operation
124	Temperature controller 1 – Status: 1 = Heating / 0 = Cooling	1 Bit	Sending the status of whether heating or cooling operation

Table 166: Communication objects – Switchover: Heating / Cooling

4.13.2.6 Additional level

Important: The additional level is only available in "Heating" mode.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Additional level	▪ **not active** ▪ active	Activation of an additional heating level.
Direction of action with rising temperature	▪ **normal** ▪ inverted	Indicates the control behaviour at rising temperatures.
Control value	▪ **2-step control (switching)** ▪ PI control switching (PWM)	Setting of the controller type used.
Distance	0.5 K – 5.0 K **[2.0 K]**	Definition of the setpoint for the additional level as a difference to the current setpoint.

Table 167: Additional settings – Additional level

The additional level can be used in sluggish systems to shorten the heating-up phase. For example, with underfloor heating (as the base level), a radiator or an electric heater could be used as an additional level to shorten a longer heating-up phase.

For the additional level, the "**Direction of action with rising temperature**" of the control variable can also be set to "normal" or "inverted" (see chapter 4.13.2.4 Direction of action with rising temperature).

For setting the controller type, the user can choose between 2-point control and PWM control. The communication object of the additional level is therefore always a 1 Bit object and only switches the control variable ON or OFF.

With the "**Distance**", the setpoint of the additional level is configured. The set distance is subtracted from the setpoint of the base level, resulting in the setpoint for the additional level.

Example:

The controller is in Comfort mode, for which a basic Comfort value of 21 °C has been set. The offset for the additional level has been set to 2.0 K. This results in the setpoint for the additional level: 21 °C - 2.0 K = 19 °C. The additional level therefore switches off when 19 °C is reached.

The table shows the communication object for the additional level:

No.	Name / Object function	Length	Usage
105	Temperature controller 1 – Additional level: Send control value Heating	1 Bit	Controlling the actuator for the additional level

Table 168: Communication object – Additional level

4.14 Temperature controller 2

The device has an almost identical second Temperature controller. The two controllers differ only in a few properties.

- The control for Temperature controller 2 is carried out by a measured value via the object "Receive external temperature"
- The communication objects are identical and are numbered upwards by "+ 39".
- There is a different, additional object for receiving the external temperature:

No.	Name / Object function	Length	Usage
160	Temperature controller 2: – Receive external temperature	2 Byte	Input of an external measured value.

Table 169: Communication object – Temperature controller 2: Receive external temperature

4.15 Time switch (only Glass Touch Smart Plus)

4.15.1 Settings page

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Preview	Displaying a graphic (template)	The image shows the presentation on the screen.

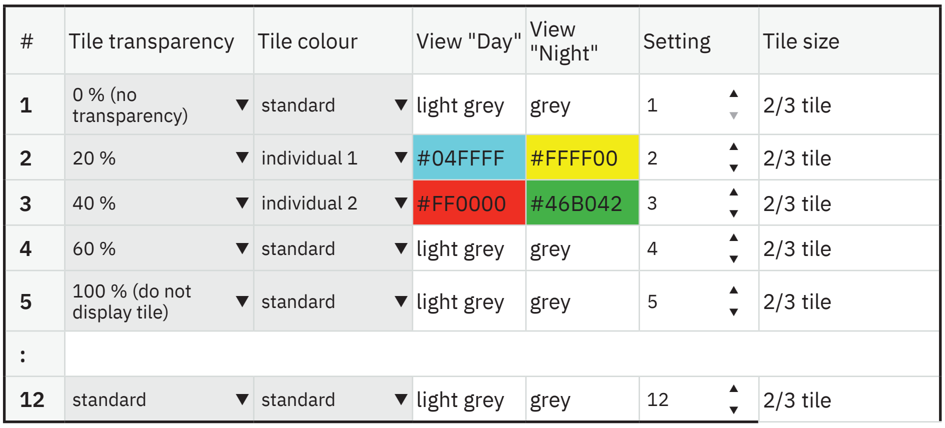
Table 170: Settings – Time switch: Settings page

A graphic is displayed as a preview template. This shows the presentation with the numbering of the tiles. In the following table, the tiles can be further configured. The settings described in the following chapter are available for selection. These can be assigned to a tile in the "Setting" column.

The "Setting 0" in the assignment means "not active". This leaves the tile empty.

Note: The standard values for the tiles (transparency, colour) are defined in the "Tile colours" menu.

The following table will be displayed:



#	Tile transparency	Tile colour	View "Day"	View "Night"	Setting	Tile size
1	0 % (no transparency)	standard	light grey	grey	1	2/3 tile
2	20 %	individual 1	#04FFFF	#FFFF00	2	2/3 tile
3	40 %	individual 2	#FF0000	#46B042	3	2/3 tile
4	60 %	standard	light grey	grey	4	2/3 tile
5	100 % (do not display tile)	standard	light grey	grey	5	2/3 tile
:						
12	standard	standard	light grey	grey	12	2/3 tile

Table 171: Time switch: Configuration of the settings page

Tile size
A "single tile" divides the entire display area into 8 sub-areas. This tile is the reference size for the other tiles. A "2/3 tile" means 2/3 of a single tile. With this size, a maximum of 12 tiles is possible.

4.15.2 Time and Astro settings

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Operating mode	■ **Slave** ■ Master ■ Slave (Master in case of failure)	Setting that determines the operating mode of the timer.
Send time cyclically every ...	not active 1 min – 24 h **[1h]**	Defines the sending intervals of the time. **Only in operating mode "Master".**
Automatic activation of summer time	■ **not active** ■ active	Defines whether the clock should automatically switch between summer and winter time.
Location determination by	■ coordinates ■ **place**	Setting how the location should be calculated.
Location determination via place		
Country	Any country **Germany**	Setting the country.
Town	Any town **Engelskirchen**	Setting the town.
Location determination via coordinates		
Latitude	■ **North** ■ South	Definition of whether northern or southern latitude should be counted.
Latitude in degrees [0° - 90°]	0° ... 90° **[50°]**	Definition of the latitude.
Latitude in minutes [0' - 59']	0' ... 59' **[56']**	Definition of the minutes.
Length	■ **East** ■ West	Definition of whether eastern or western longitude is counted.
Longitude in degrees [0° - 180°]	0° ... 180° **[6°]**	Definition of the longitude.
Longitude in minutes [0' - 59']	0' ... 59' **[57']**	Definition of the minutes.
Time difference from Universal Time	Any time zone **[UTC+01:00 Amsterdam, Berlin]**	Setting the time zone for calculating the position of the sun.

ETS text	Value range **[Default value]**	Comment
Object for sunrise	■ not active ■ **send value "1"** ■ send value "0"	Setting whether and with which value the object should be sent.
Offset to sunrise	-120 ... 120 **[0]**	Definition of the offset value.
Object for sunset	■ not active ■ **send value "1"** ■ send value "0"	Setting whether and with which value the object should be sent.
Offset to sunset	-120 ... 120 **[0]**	Definition of the offset value.
Object for dusk	■ not active ■ **send value "1"** ■ send value "0"	Setting whether and with which value the object should be sent.
Offset to dusk	-120 ... 120 **[0]**	Definition of the offset value.
Start of “Day” with	■ fixed time ■ sunrise ■ sunrise or at the latest at ... ■ sunrise but at the earliest at ...	Setting how the start for "Day" mode is determined.
Hours	0 – 23 [0]	Setting the time for "Hours".
Minutes	0 – 59 [0]	Setting the time for "Minutes".
Start of “Night” with	■ fixed time ■ sunset ■ sunset or at the latest at ... ■ sunset but at the earliest at ... ■ dusk ■ dusk or at the latest at ... ■ dusk but at the earliest at ...	Setting how the start for "Night" mode is determined.
Hours	0 – 23 [0]	Setting the time for "Hours".
Minutes	0 – 59 [0]	Setting the time for "Minutes".

Table 172: Settings – Time switch: Time and Astro settings

Operating mode
When operating as **"Master"**, the system time is actively sent from the device to the bus.
If **"Slave"** is selected, the device receives the system time from another device on the bus, for example via an IP Interface/Router.
With the setting **"Slave (Master in case of failure)"**, the device is set as a slave. If the system time is not received from the external time source within a certain period, the device becomes the "Master" and cyclically sends the current time to the bus.

Automatic activation of summer time
With the **"active"** setting, the switchover takes place automatically at the specified times in spring and autumn.

The following communication objects are available for this purpose:

No.	Name / Object function	Length	Usage
945	Time switch – Sunrise – Output	1 Bit	Sending the current status.
946	Time switch – Sunset – Output	1 Bit	Sending the current status.
947	Time switch – Dusk – Output	1 Bit	Sending the current status.

Table 173: Communication objects – Time switch: Time and Astro settings

4.15.3 Basic settings

The following table shows the possible settings:

ETS text	Value range **[Default value]**	Comment
Switching times in the device	▪ **are transmitted** ▪ remain unchanged	Setting whether the parameter block for the switching times is transmitted:
Setting the time switch	▪ database (not changeable on the device) ▪ **manual input and database (database overwrites all switching times)** ▪ Manual input and database (transmission aborted if switching times are changed on the device)	Setting for the behaviour of configured (via ETS) and manually changed switching times.
Global settings		
Catch up on switching times after restart	▪ **not active** ▪ active	Setting whether the device will catch up (send) all currently valid switching states after a restart.
Catch up on switching times after time change	▪ **not active** ▪ active	Setting whether the device will catch up (send) the skipped switching states after a clock adjustment forwards.
Catch up on switching times after unlocking	▪ **not active** ▪ active	Setting whether the device will catch up (send) all missed switching states after an unlocking process.
Holiday		
Activation via object "Holiday"	▪ **not active** ▪ 1 Bit - Switch ▪ 1 Byte - Number of days	Setting whether and how the holiday function is activated via the bus.
Status output	▪ **not active** ▪ holiday active/not active ▪ remaining holiday in days (1 Byte)	Setting for the status output of the holiday on the bus.
Public holidays	▪ **not active** ▪ active	Activation of the public holidays function.
Automatic calculation of public holidays	▪ not active ▪ **active**	Activation of the function. **When activated, a new submenu appears in the menu tree: Automatic calculation of public holidays.**

ETS text	Value range **[Default value]**	Comment
Manual control via object	■ **not active** ■ active, reset after the 1st change of day ■ active, reset after the 2nd change of day ■ active	Setting whether and when manual control via an object is active.
Free text for weekdays when displayed in pop-up window		
Monday ... Sunday	A text field appears for each day of the week	Text field for free naming (up to 28 bytes each allowed).
Colour: Active weekday for "Day" / "Night"	■ from “Standard values” menu ■ **any colour according to the list in the dropdown** **[Blue]** **[Blue]**	Setting the colour. First [default value] for "Day" Second [default value] for "Night"

Table 174: Settings – Time switch: General settings

Switching times in the device

- **“are transmitted”**: The parameter block is transferred depending on the parameter “Setting the time switch”.
- "**remain unchanged"**: The memory block for the switching times is not written by the ETS and the parameter “Setting the time switch” is hidden.

Setting the time switch

- **Database (not changeable on the device)**: The switching times can only be set in the database and cannot be changed on the device.
- **Manual input and database (database overwrites all switching times)**: The switching times can be set in both the database and the device. With each transfer, the complete values from the database are written to the device.
- **Manual input and database (transmission aborted if switching times are changed on the device)**: Before the transfer, the ETS compares the switching times set in the database with those in the device. If these are not equal, the download is cancelled.

Catch up on switching times

Catching up on switching times makes it possible to set whether switching states that were missed due to unscheduled events are caught up.

- **Catch up switching times after restart** After a restart, the last switching states are caught up, i.e. the Time Switch restores the state that should be valid at that time.
- **Catch up on switching times after time change** In the event of a time jump, i.e. a time adjustment of +..min/h, the switching operations that were missed due to the time jump are caught up. For a time jump of up to +90 min, all switching events are caught up. From a time jump of 90 min, only the last one per function.
- **Catch up on switching times after unlocking** After unlocking, the switching states that were missed during the locked state are caught up. This ensures that all trades are in the “correct” state after unlocking.

Public holidays function
The device has comprehensive logic integrated to be able to calculate public holidays. This calculation can be activated via the parameter “Automatic calculation of public holidays”. A new menu then appears, see 4.15.4 Automatic calculation of public holidays.

Additionally, public holidays can be manually activated via the object "Public holiday: Activation (for external logic)" if the parameter “**Manual control via object”** is set to active. For this parameter, there is also the function of automatic reset. If the public holiday is deleted, for example, at the first day change, the function can be used for the current day, as the public holiday then ends for the device at 00:00.
If, for example, the morning raising of the blinds is to be prevented the next day, the reset must not take place until the second day change, as in this case a “Public holiday” is sent to the object the evening before. The automatic reset then takes place the following day at 00:00.

The interaction between automatic public holiday calculation and manual activation via object 1043 "Public holiday: Activation (for external logic)" is described in the following table:

Public holiday calculated	Value of object 1043	Action on object 1043	Result: Public holiday active / not active
No	Value "0"	Send a "0"	No action
No	Value "0"	Send a "1"	Public holiday active until the set return, automatic mode becomes active again from the next day.
No	Value “1”	Send a "0"	Manual deactivation, automatic mode becomes active again from the next day.
No	Value “1”	Send a "1"	Public holiday active until the set return, automatic mode becomes active again from the next day.
Yes	Value "0"	Send a "0"	Manual deactivation, automatic mode becomes active again from the next day.
Yes	Value "0"	Send a "1"	Holiday active until the set reset, automatic mode will be active again from the next day.
Yes	Value “1”	Send a "0"	Manual deactivation, automatic mode becomes active again from the next day.
Yes	Value “1”	Send a "1"	Holiday active until the set reset. Automatic mode will be active again from the next day.

Table 175: Time switch: Public holiday calculation and manual activation

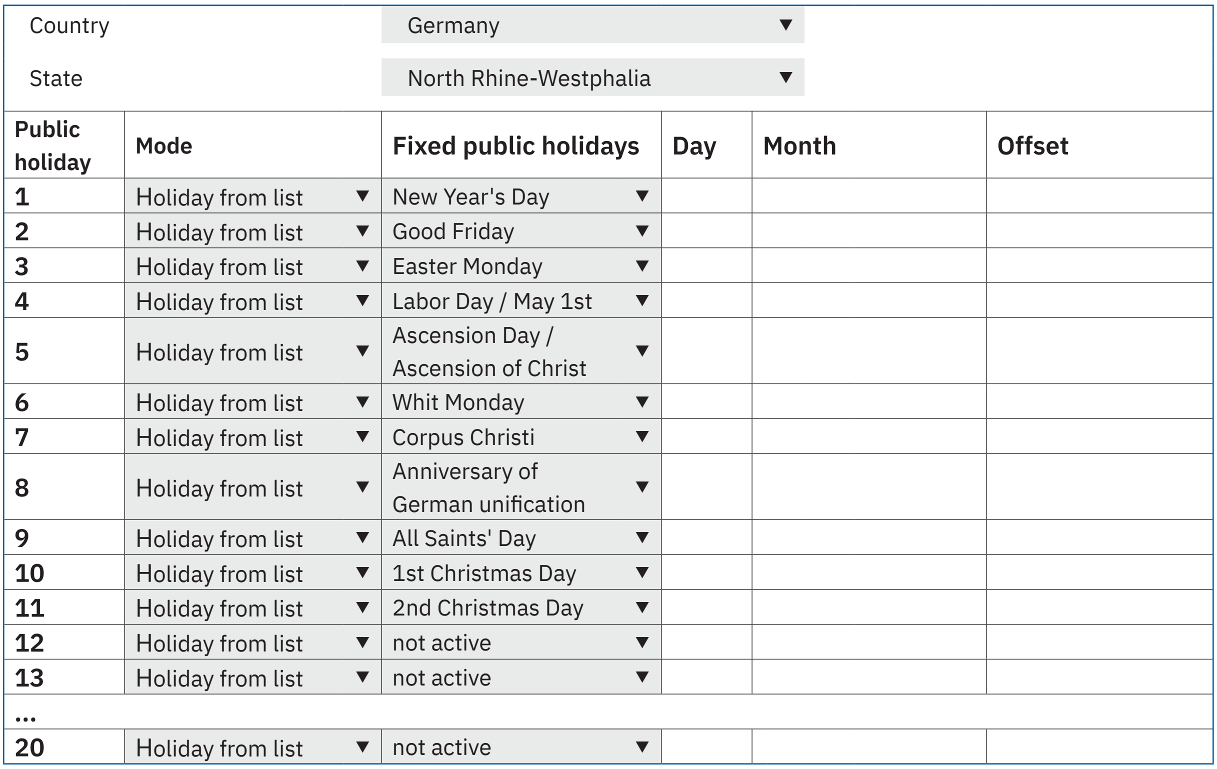
The following communication objects are available for this purpose:

No.	Name / Object function	Length	Usage
948	Time switch – Day/Night - Output	1 Bit	Sending the current status.
1039	Time switch – Central lock	1 Bit	Locking/unlocking the Time switch.
1040	Time switch – Status: Central lock	1 Bit	Sending the current status.
1041	Time switch – Holiday: Switch	1 Bit	Activation/deactivation of the holiday function.
1041	Time switch – Holiday: Number of days	1 Byte	Activation of the holiday function by sending the number of days the Time switch should remain in holiday mode.
1042	Time switch – Holiday: Status	1 Bit	Status display indicating whether the holiday function is active or not.
1042	Time switch – Holiday: Status (duration in days)	1 Byte	Display of the remaining days the holiday function is still active.
1043	Time switch – Public holiday: Activation (for external logic)	1 Bit	Activation of the public holiday function via bus.
1044	Time switch – Holiday: Status	1 Bit	Display whether the device is in public holiday mode. Sends its status when changed and always at 00:00.
1046	VisuControl Easy II Interface – Input / Output	14 Byte	Interface to the MDT object server VisuControl Easy II.

Table 176: Communication objects – Time switch: General settings

4.15.4 Automatic calculation of public holidays

The following figure shows the menu for automatic public holiday calculation:



Country: Germany ▼

State: North Rhine-Westphalia ▼

Public holiday	Mode	Fixed public holidays	Day	Month	Offset
1	Holiday from list ▼	New Year's Day ▼			
2	Holiday from list ▼	Good Friday ▼			
3	Holiday from list ▼	Easter Monday ▼			
4	Holiday from list ▼	Labor Day / May 1st ▼			
5	Holiday from list ▼	Ascension Day / Ascension of Christ ▼			
6	Holiday from list ▼	Whit Monday ▼			
7	Holiday from list ▼	Corpus Christi ▼			
8	Holiday from list ▼	Anniversary of German unification ▼			
9	Holiday from list ▼	All Saints' Day ▼			
10	Holiday from list ▼	1st Christmas Day ▼			
11	Holiday from list ▼	2nd Christmas Day ▼			
12	Holiday from list ▼	not active ▼			
13	Holiday from list ▼	not active ▼			
...					
20	Holiday from list ▼	not active ▼			

Figure 24: Time switch: Automatic calculation of public holidays

For all federal states in Germany as well as in Austria, the statutory public holidays are already predefined and are calculated each year using an integrated logic. Numerous public holidays are also predefined for other EU countries. In addition, further public holidays can be added using the following rules: The rule **"fixed date"** defines public holidays which take place on the same day every year. Common examples are New Year's Day on 1 January or Labour Day on 1 May.

Since in Christian-influenced regions many public holidays are based on Easter, public holidays "**relative to Easter Sunday"** can be defined. Afterwards, an offset of -100 to +100 days to Easter Sunday must be defined. The simplest example is that Easter Monday is always exactly one day after Easter Sunday. Furthermore, rules can also be created **"individually"**, allowing "custom public holidays" to be calculated. If this rule is selected, a date can be chosen and the public holiday will be calculated depending on this date. The calculated public holiday can be up to 1 week before or 1 week after this date.

4.15.5 Selection of functions

The following parameter is available:

ETS text	Value range **[Default value]**	Comment
Number: Functions	0 … 12 **[1]**	Setting for how many functions can be activated.

Table 177: Settings – Time switch: Selection of functions

Depending on the number of functions, a separate submenu appears for each, which can be configured individually.

4.15.6 Function 1 … 12

When the corresponding function is activated, further parameters are displayed.

4.15.6.1 Identical parameters

Some parameters are identical for all functions. These are described below.
The table shows the identical settings:

ETS text	Value range **[Default value]**	Comment
Function / Object description (in ETS)	Any text [up to 30 bytes allowed]	Text for the description of the function and the communication objects.
	Copy text	When clicked, the text of the "Function description" is transferred to the field for "Function name …".
Function name (displayed on screen)	Any text [up to 20 bytes allowed]	Text for the description of the function. Displayed only on the display.
Colour: Function name	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the text colour for the name.
Symbol	Any symbol, selectable in the dropdown list	Selection of a symbol for the Time switch.
Colour: Symbol	■ **from "Standard values" menu** ■ any colour according to the list in the dropdown	Definition of the colour for the symbol.

ETS text	Value range **[Default value]**	Comment
Activate lock for time switch	▪ **via object** ▪ via long keypress	Setting for how the lock for the Time switch can be activated.
Settings can be changed on the device	▪ not active ▪ **active**	Setting for whether a change to the device should be possible.

Table 178: Settings – Time switch: Identical parameters

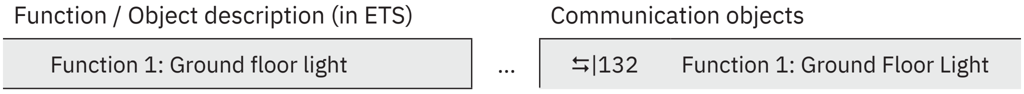
For each function, 2 text fields are available for free labelling.

Function / Object description (in ETS)	Ground floor light
Function name (displayed on screen)	Kitchen light

Figure 25: Text field – Function / Object description

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

The text for the "**Function / Object description**" appears both in the menu behind the corresponding function and for the communication objects of the function (here using function 1 as an example):



Function / Object description (in ETS)		Communication objects
Function 1: Ground floor light	...	⇆|132 Function 1: Ground Floor Light

Figure 26: Display – Function / Object Description

The text (up to 20 characters) under "**Function name (displayed on screen)**" appears only on the display.

Settings can be changed on the device
This allows you to define whether this function should be displayed on the device or not. If the parameter is set to "not active", the function is not active on the device, but the Time switch can still be executed. With the "active" setting, further parameters appear. These depend on the selected function and are explained in the respective chapters on the functions.

4.15.7 Function types

The following function types are available for selection:

ETS text	Value range **[Default value]**	Comment
Function type	▪ **Switch** ▪ Send values ▪ Temperatur shift ▪ Mode selection ▪ Blinds ▪ Shutter ▪ Dimming	Setting of the function.

Table 179: Settings – Time switch: Function types

4.15.7.1 Function type: Switch

The following settings are available:

ETS text	Value range **[Default value]**	Comment
The following parameters are displayed when **“Settings can be changed on the device”** => **active**		
Symbol for "Off" / "On"	Any symbol, selectable in the dropdown list	Setting of the symbol for the corresponding switch command.
Colour: Symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour for the respective symbol.
Visualiszation: Text for "OFF" / "ON"	Any text [up to 6 bytes allowed]	Entering a text.

Table 180: Settings – Time switch function: Switch

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
956	Time switch F1: – Switch	1 Bit	Sending the switch command.
957	Time switch F1: – Status for display	1 Bit	Receiving the status from the switched actuator.

Table 181: Communication objects – Time switch function: Switch

4.15.7.2 Function type: Send values

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Datapoint type	■ 2 Bit DPT 2.001 Switch control ■ **1 Byte DPT 5.001 Percent value (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 (K) ■ 2 Byte DPT 9.001 Temperature (°C) ■ 2 Byte DPT 9.004 Brightness (Lux)	Setting of the datapoint type to be sent.
Unit	Unit according to the set datapoint type (no unit, K, °C, Lux)	Setting of the unit. **For datapoint types 2 Byte**.
The following parameters are displayed when **“Settings can be changed on the device”** => **active**		
Limit value range	■ **not active** ■ active	When activated, the value range can be limited.
Lower / Upper limit	Any values according to the set datapoint type	Setting of the value range. **For datapoint types 1 / 2 Byte.**
Symbol	Any symbol, selectable in the dropdown list	Setting of the symbols for the corresponding priority. **For datapoint type 2 Bit**.
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 182: Settings – Time switch function: Send values

With the parameter **“Limit value range”** it can be set whether a minimum or maximum limitation of the values is active. The values are defined in the parameters **“Lower limit”** and **“Upper limit”**. This means that the values on the device can only be changed within these limits.
Important: The limitation only applies to the setting on the device itself. If, for example, values outside the limitation have been set in the ETS in the “Time switch” menu, these are valid. If these values are now changed on the device, the values will automatically jump to the maximum or minimum values when entered manually and can then only be changed within the limits.

For the datapoint type "2 Bit - Forcible control", a separate symbol including colour can be assigned for each of the 4 possible states (00, 01, 10, 11).

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
956	Time switch F1: – Forcible control, Percent value, Decimal value…		Sending the value. DPT according to parameter setting.
957	Time switch F1: – Status for display		Receiving the status. DPT according to parameter setting. **Status for "scene" not possible.**

Table 183: Communication objects – Time switch function: Send values

4.15.7.3 Function type: Temperature shift

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	▪ shift via 1 Byte ▪ **shift via 2 Byte** ▪ shift via 2 Byte “Basic Comfort Setpoint”	Setting how the shifting should be carried out.
Step width	0.1 K – 1.0 K **[0.5 K]**	Setting of the step size between two send commands. **For "shift via 1 Byte".**
The following parameters are displayed when **“Settings can be changed on the device”** => **active**		
Limit value range	▪ **not active** ▪ active	When activated, the value range can be limited.
Lower limit	-200 ... 1000 K **[-5 K]**	Setting of the lower or upper limit value. **For "shift via 1 / 2 Byte".**
Upper limit	-200 ... 1000 K **[5 K]**	
Lower limit	-200 ... 1000 °C **[15 °C]**	Setting of the lower or upper limit value. **For shift via 2 Byte “Basic Comfort Setpoint”.**
Upper limit	-200 ... 1000 °C **[25 °C]**	

Table 184: Settings – Time switch function: Temperature shift

The temperature shift can be carried out in 3 different ways:

- **1 Byte temperature shift**: With this type of shift, the time switch sends a temperature shift in "K" (Kelvin) to a temperature controller, which is also set to the 1 Byte shift, at the defined times (in the "Time switch" submenu). The step size should be set the same in both the controller and the time switch. The current setpoint sent by the controller can be displayed via the status object on the display.
- **2 Byte temperature shift:** With this type of shift, the time switch sends a temperature shift in "K" (Kelvin) to a temperature controller, which is also set to the 2 Byte shift, at the defined times (in the "Time switch" submenu). The current setpoint sent by the controller can be displayed via the status object on the display.
- **2 Byte shift of the "Basic Comfort Setpoint"** With this type of shift, the time switch sends a new, absolute basic Comfort setpoint in "°C" to the controller to be controlled. This must also be set to 2 Byte shift of the basic Comfort setpoint. The current setpoint sent by the controller can be displayed via the status object on the display.

With the parameter **"Limit value range"**, you can set whether a minimum or maximum limit for the values is active. The values are defined in the parameters **"Lower limit"** and **"Upper limit"**. This means that the values on the device can only be changed within these limits.

Important: The limitation only applies to the setting on the device itself. If, for example, values outside the limit have been set in the ETS in the "Time switch" menu, these are valid. If these values are now changed on the device, the values will automatically jump to the maximum or minimum values when entered manually and can then only be changed within the limits.

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
956	Time switch F1: – Setpoint shift	1 Byte 2 Byte	Sending the setpoint shift. DPT according to parameter setting.
957	Time switch F1: – Status for display	2 Byte	Receiving the current setpoint of the controller.

Table 185: Communication objects – Time switch function: Temperature shift

4.15.7.4 Function type: Mode selection

This function allows the operating mode to be switched in Heating actuators or Temperature controllers.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
The following parameters are displayed when **“Settings can be changed on the device”** => **active**		
Limit value range	▪ **not active** ▪ active	When activated, the value range can be limited.
Operating modes	▪ **Comfort, Standby, Eco (Night), Frost protection** ▪ Comfort, Standby, Eco (Night) ▪ Comfort, Standby	Setting of the value range. **Only when "Limit value range" is active.**
Symbol: "Comfort" / "Standby" / "Eco (Night)" / "Frost protection"	Any symbol, selectable in the dropdown list	Setting the symbols for the corresponding operating mode.
Colour: Symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 186: Settings – Time switch function: Mode selection

With the parameter **"Limit value range"**, the selection of operating modes to be switched can be restricted. These are defined in the parameter "**Operating modes**". This means that only the selected operating modes can be set on the device. The "Eco" operating mode corresponds to the "Night" operating mode.

Important: The limitation only applies to the setting on the device itself. If, for example, operating modes outside the limit have been set in the ETS in the "Time switch" menu, these are valid. If the operating modes are now changed on the device, the values will automatically jump to the possible values when entered manually and only operating modes within the limited range can be selected.

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
956	Time switch F1: – Mode election (HVAC Mode)	1 Byte	Sending the operating mode.
957	Time switch F1: – Status for display	1 Byte	Reception of the status from the controller.

Table 187: Communication objects – Time switch function: Mode selection

4.15.7.5 Function type: Blinds

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
The following parameters are displayed when **“Settings can be changed on the device”** => **active**		
Symbol: "Up" / "Down" / "Slats open" / "Slats closed"	Any symbol, selectable in the dropdown list	Setting the symbols for the corresponding function.
Colour: Symbol	■ **from “Standard values” menu** ■ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 188: Settings – Time switch function: Blinds

The blinds function (up/down movement and slats adjustment) is used to control Shutter actuators.

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
955	Time switch F1: – Blinds Up/Down	1 Bit	Up/Down command for the actuator.
956	Time switch F1: – Absolute height position	1 Byte	Sending an absolute height position.
957	Time switch F1: – Status: Absolute height position	1 Byte	Receiving the status of the current height position.
958	Time switch F1: – Absolute position of slats	1 Byte	Sending an absolute slats position.
959	Time switch F1: – Status: Absolute position of slats	1 Byte	Receiving the status of the current slats position.

Table 189: Communication objects – Time switch function: Blinds

4.15.7.6 Function type: Shutter

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
The following parameters are displayed when **“Settings can be changed on the device”** => **active**		
Symbol: "Up" / "Down"	Any symbol, selectable in the dropdown list	Setting the symbols for the corresponding function.
Colour: Symbol	▪ **from “Standard values” menu** ▪ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 190: Settings – Time switch function: Shutter

The Shutter function (only up/down movement) is used to control Shutter actuators.

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
955	Time switch F1: – Shutter Up/Down	1 Bit	Up/Down command for the actuator.
956	Time switch F1: – Absolute height position	1 Byte	Sending an absolute height position.
957	Time switch F1: – Status: Absolute height position	1 Byte	Receiving the status of the current height position.

Table 191: Communication objects – Time switch function: Shutter

4.15.7.7 Function type: Dimming

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
The following parameters are displayed when **"Settings can be changed on the device"** => **active**		
Symbol for "Off" / "On"	Any symbol, selectable in the dropdown list	Setting the symbols for the corresponding function.
Colour: Symbol	▪ **from "Standard values" menu** ▪ any colour according to the list in the dropdown	Setting the colour for the respective symbol.

Table 192: Settings – Time switch function: Dimming

The dimming function is used to control Dimming actuators.

The further parameters are described in more detail under 4.15.6.1 Identical parameters

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
955	Time switch F1: – Dimming On/Off	1 Bit	Switching command for the dimming function.
956	Time switch F1: – Dimming absolute	1 Byte	Sending an absolute dimming value.
957	Time switch F1: – Status: Dimming value	1 Byte	Receiving the status with the current dimming value.

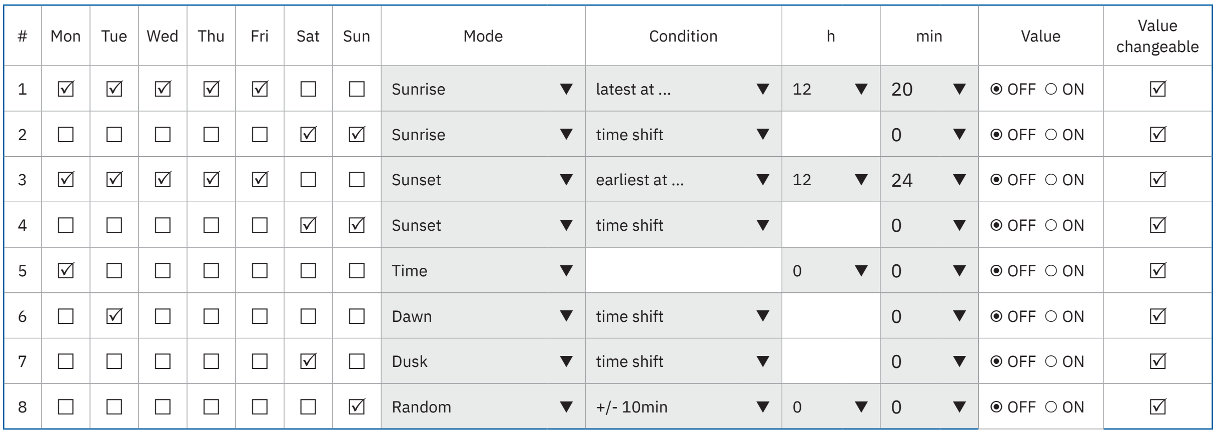
Table 193: Communication objects – Time switch function: Dimming

4.15.8 Time Switch

For each activated function, a submenu "Timer" appears. Each timer can be configured individually there.

4.15.8.1 Switching times

For each function, 8 switching times can be set via a table format (here as an example: Function - Switch):



#	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mode	Condition	h	min	Value	Value changeable
1	☑	☑	☑	☑	☑	☐	☐	Sunrise ▼	latest at ... ▼	12 ▼	20 ▼	● OFF ○ ON	☑
2	☐	☐	☐	☐	☐	☑	☑	Sunrise ▼	time shift ▼		0 ▼	● OFF ○ ON	☑
3	☑	☑	☑	☑	☑	☐	☐	Sunset ▼	earliest at ... ▼	12 ▼	24 ▼	● OFF ○ ON	☑
4	☐	☐	☐	☐	☐	☑	☑	Sunset ▼	time shift ▼		0 ▼	● OFF ○ ON	☑
5	☑	☐	☐	☐	☐	☐	☐	Time ▼		0 ▼	0 ▼	● OFF ○ ON	☑
6	☐	☑	☐	☐	☐	☐	☐	Dawn ▼	time shift ▼		0 ▼	● OFF ○ ON	☑
7	☐	☐	☐	☐	☐	☑	☐	Dusk ▼	time shift ▼		0 ▼	● OFF ○ ON	☑
8	☐	☐	☐	☐	☐	☐	☑	Random ▼	+/- 10min ▼	0 ▼	0 ▼	● OFF ○ ON	☑

Figure 27: Setting – Switching times 1-8

For each of the 8 switching times, you can set on which weekdays they should be active. In the column "**Mode**" the following settings are available:

- **Time:** The action for this timer is executed at a fixed time.
- **Sunrise/Sunset/Dawn/Dusk:** The action for this timer is executed at the corresponding event. Additionally, conditions can be defined in this mode. The time can be shifted forwards/backwards by a fixed period using **"time shift"**. With the condition **"latest at ..."** or **"earliest at ..."**, the action of the timer can be restricted.
- **Random:** The action for this timer is executed within a period around a specified time. The randomness is specified as a **condition** (e.g. +/- 60 min) around this time.

In the column **"Value"** the value to be sent is set.

In the column **"Value changeable"** it is defined whether individual switching times are allowed to be changed by the user or are locked.

Note: If the parameter"Settings changeable on the device" is activated in the function, it is still possible to individually determine in the table which switching times may be excluded from changes. For example, an important switching time that affects other functions can be deactivated and thus cannot be changed on the device.

4.15.8.2 Lock object type

The priority of the locks is defined as follows:

- Priority 1: Manual operation
- Priority 2: Lock
- Priority 3: Lock via holiday
- Priority 4: Behaviour like Sunday (due to holiday or public holiday)

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Lock object type	▪ not active ▪ **lock object** ▪ release object ▪ threshold comparator	Setting for how the object is used.
Datapoint type: Threshold	▪ **DPT 5.001 Percent 0...100 %** ▪ DPT 5.005 Value 0...255 ▪ DPT 7.012 Current [mA] ▪ DPT 7.013 Brightness [Lux] ▪ DPT 9.001 Temperature [°C] ▪ DPT 9.004 Brightness [Lux] ▪ DPT 9.005 Wind speed [m/s] ▪ DPT 9.007 Humidity [%] ▪ DPT 9.008 Air quality [ppm] ▪ DPT 9.021 Current [mA] ▪ DPT 12.1201 Volume [m^3] ▪ DPT 14.019 Current [A]	Selection of the datapoint type by which the threshold value is determined. **Only for "threshold comparator".**
Lock active when	▪ **input value greater than comparative value** ▪ input value smaller than comparative value ▪ input value equal to comparative value ▪ input value not equal to comparative value	Condition under which the lock becomes active. **Only for "threshold comparator".**
Comparative value	Adjustable value range according to the selected datapoint type	Setting the value from which the lock becomes active. **Only for "threshold comparator".**

ETS text	Value range **[Default value]**	Comment
Hysteresis	not active, 1 %, 2 %, 5 %, 10 %, 20 %, 30 %, 40 %, 50 % **[1 %]** not active, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20 **[1]**	Setting the hysteresis for the release of the lock. Scaling according to DPT. **Only for "threshold comparator" and there only for "greater" or "smaller" than comparative value.**
Behaviour on lock	▪ **lock** ▪ lock and send fixed value ▪ lock and send fixed value cyclically	Setting the behaviour to be executed during a lock.
Value for lock	Adjustable value range according to the selected function	The set value is sent when a lock is activated. **Only if "Behaviour on lock" is set to "fixed value...".**
Selection	Icons are available for "height only", "slats only" or "height + slats" to choose from	Depending on the selection, parameters for height and/or slats will appear. **Only for the "Blinds" function.**
Height: Value on lock	0 % – 100 % **[0 %]**	Setting the absolute position. **Only for the "Blinds" function.**
Slats: Value on lock	0 % – 100 % **[0 %]**	Setting the absolute position. **Only for the "Blinds" function.**
Central lock of time switch	▪ not active ▪ **active**	Setting whether the central lock is active for this function.

Table 194: Settings – Time switch: Lock object type

Lock object type
A lock can be triggered or released in three different ways:

- **Lock object :** Lock with "1", release with "0"
- **Release object :** Release with "1", lock with "0"
- **Threshold comparator :** By specifying the condition **"Lock active when"** and a comparative value – according to the "datapoint type" – a threshold is defined at which object value the lock is triggered and, according to the set hysteresis, released

Important: The hysteresis only affects the release of the lock.

Example:

Lock active when:	input value greater than comparative value
Brightness threshold:	10000 Lux
Hysteresis:	2 %

Object value => 10001 Lux => lock active.
The lock is only released at an input value of 10000 Lux – 2 % (= 9800 Lux).

Behaviour on lock
Defines the behaviour of the lock function.

- **Lock:** The Time switch is locked and remains locked as long as "Holiday" is active.
- **Lock and send fixed value:** The Time switch is locked and a fixed value is sent once upon activation.
- **Lock, send fixed value cyclically:** The Time switch is locked and a fixed value is sent cyclically. The cycle time is set via a common parameter for "Lock/Release" as well as "Holiday".
  See also 4.15.8.4 Send values cyclically.

Value on lock:
The value to be sent depends on the selected function. For example, with "Switch" only ON or OFF can be sent. With "Dimming", ON/OFF or a fixed dimming value from 0 % - 100 % can be sent.

There is a special feature with the "Blinds" function. An additional parameter "**Selection**" is available here. With the icons ≣ and ⍀ the height position and/or the slat position can be defined.

Central lock of time switch
A lock object is available for a central lock. This affects all functions in which the parameter "Central lock of time switch" has been activated. If the function should not respond to the lock, "not active" must be selected.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
960	Time switch F1: – Lock	1 Bit	Locking / Releasing the timer. **For lock object type "Lock object"**.
960	Time switch F1: – Release	1 Bit	Releasing / Locking the timer. **For lock object type "Release object"**.
960	Time switch F1: – Input for threshold comparator	1 Byte 2 Byte 4 Byte	Receiving an external value to lock/release the timer. **For type "threshold comparator".**
961	Time switch F1: – Status: Lock	1 Bit	Sending the current status.
1039	Time switch – Central lock	1 Bit	Locking/unlocking the time switch.
1040	Time switch – Status: Central lock	1 Bit	Sending the current status.

Table 195: Communication objects – Time switch: Lock object type

4.15.8.3 Holiday

For each function, a behaviour can be defined during an active holiday function.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Holiday	▪ **not active** ▪ active	Activation/deactivation of the holiday function.
Behaviour when "Holiday" is active	▪ **lock time switch** ▪ execute time switch ▪ behaviour like Sunday	Setting of the action while "Holiday" is active.
Behaviour when "Holiday" not active	lock time switch execute time switch	These settings cannot be selected but result from the setting "Behaviour when Holiday is active".
Behaviour on lock by "Holiday"	▪ lock ▪ **lock and send fixed value** ▪ lock and send fixed value cyclically	Setting of the action when the lock is set by "Holiday".
Value on lock by "Holiday"	The adjustable value range depends on the selected function	The set value is sent when locked by "Holiday". **If "Behaviour when on by Holiday" is set to "fixed value...".**
Selection	Icons are available for "height only", "slats only" or "height + slats" to choose from	Depending on the selection, parameters for height and/or slats will appear. **Only for the "Blinds" function.**
Height: Value on lock	0 % – 100 % **[0 %]**	Setting the absolute position. **Only for the "Blinds" function.**
Slats: Value on lock	0 % – 100 % **[0 %]**	Setting the absolute position. **Only for the "Blinds" function.**

Table 196: Settings – Time switch: Holiday

Behaviour when Holiday is active
By activating the holiday function, the following scenarios can be realised:

- **Lock time switch:** The holiday function acts as a locking function and locks this timer. When "Holiday" is not active, the timer operates normally.
- **Execute time switch:** The timer is only executed when "Holiday" is active and is locked when "Holiday" is not active.
- **Behaviour like Sunday:** The Time Switch only executes the switching times that are active exclusively for "Sunday".

Behaviour on lock by "Holiday"
Defines the behaviour that is executed when the timer is locked by "Holiday".

- **lock:** The timer is locked as long as "Holiday" is active.
- **lock and send fixed value:** The timer is locked and a fixed value is sent once upon activation.
- **lock and send fixed value cyclically:** The timer is locked and a fixed value is sent cyclically. The setting of the sending intervals is made via a common parameter for "Lock/Release" as well as "Holiday". See also 4.15.8.4 Send values cyclically

There is a special feature for the "Blinds" function. With the setting "lock and send fixed value (cyclically)", an additional parameter "**Selection**" is available.
Here, a fixed height position and/or a fixed position of slats can be defined using the icons ≣ and ⍀.

4.15.8.4 Send values cyclically

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Send values cyclically	■ **not active** ■ active	Activation of a "send cyclically" function.
Send cyclically every…	1 min – 24 h **[10 min]**	Displayed text depends on the configuration.
Send value cyclically during "Holiday" every …		
Send value cyclically during "Lock" every …		
Send values during "Lock" + "Holiday" cyclically every…		
Behaviour on unlocking / reset "Holiday"	■ **execute basic settings** ■ catch up on switching times ■ send fixed value ■ no action	Setting for how the timer behaves after the end of "lock" or "holiday"'.
Value on unlock	0 – 100 % **[0 %]**	Value to be sent when lock / holiday is cancelled. **Only for "send fixed value".**
Selection	Icons are available for "height only", "slats only" or "height + slats" to choose from	Depending on the selection, parameters for height and/or slats appear. **Only for the "Blinds" function.**
Height: Value on unlock	0 % – 100 % **[0 %]**	Setting the absolute position. **Only for the "Blinds" function.**
Slats: Value on unlock	0 % – 100 % **[0 %]**	Setting the absolute position. **Only for the "Blinds" function.**

Table 197: Settings – Time switch: Send values cyclically

Important: In this parameter, the time for cyclic sending is centrally defined for all values to be sent.

If the parameter "**Send values cyclically**" is active, then only "Send cyclically every …" appears. The set time then applies to any value that is currently being sent cyclically. This can be the value according to the time switch, the value when the lock is active (if the behaviour for the lock is set to "Lock and send fixed value cyclically") or also the value for Holiday (if "Behaviour when locked by Holiday" is set to "Lock and send fixed value cyclically"). If for example all settings are active, the order of priorities applies, see 4.15.8.2 Lock object type

If the parameter "**Send values cyclically" is not active,** the text displayed depends on the settings for Lock or Holiday. For example, if only a lock (lock object type) is active and the behaviour for the lock is set to "Lock and send fixed value cyclically", the text "Send value cyclically during lock every ..." appears. If only Holiday is active and "Lock and send fixed value cyclically" is selected, the text "Send value cyclically during Holiday every ..." appears. If both lock and Holiday are active and both are set to "Lock and send fixed value cyclically", the text "Send value cyclically during Lock + Holiday every ..." appears.

Behaviour on unlocking / reset "Holiday"
Defines the behaviour for resetting the lock function and ending the holiday function.

- **Execute basic setting:** The setting as in the "Basic settings" menu is executed for the parameter "Catch up on switching times after unlocking".
- **Catch up on switching times:** After unlocking, the switching states that were missed during the lock are caught up. This ensures that all trades are in the "correct" state after unlocking.
- **Send fixed value:** After unlocking/end of holiday, the set value under "Value for unlocking" is sent.
- **no action:** After unlocking/end of holiday, no action is performed and the timer remains in its current state.

There is a special feature with the "Blinds" function. An additional parameter "**Selection"** is available here. With the icons ☰ and ⍀ the height position and/or the slat position can be defined.

4.15.8.5 Other behaviour

The following parameters are available:

ETS text	Value range **[Default value]**	Comment
Behaviour on bus power return	▪ **lock and manual operation not active** ▪ lock active and manual operation not active ▪ restore lock and manual operation not active ▪ restore lock and manual operation	Setting for how a lock and manual operation on the device behave after bus voltage returns.
Behaviour on public holiday	▪ public holiday like Sunday ▪ **no action**	Setting the behaviour on a public holiday.
Catch up on switching times after restart	▪ not active ▪ active ▪ **global settings**	Setting how switching times behave when the device is restarted.

Table 198: Settings – Time switch: Other behaviours

With **"Behaviour on bus power return"**, it is defined how the device should behave afterwards. Lock and manual operation can assume fixed states or restore the behaviour prior to a bus voltage failure.

The parameter **"Behaviour on public holiday"** defines the corresponding behaviour. With the setting "public holiday like Sunday", the timer only executes the switching times that are activated exclusively for Sunday. With "no action", the timer is locked when the public holiday is active.

With the parameter **"Catch up on switching times after restart"**, it is possible to set individually for each function whether the switching times should be caught up after device restart or not. Alternatively, the settings in the "Basic settings" – "global settings" menu can be adopted.

4.16 External inputs (only Glass Touch Smart Plus)

Important: The external inputs are only available on the Glass Button Smart Plus.

4.16.1 Measurement: PT1000

An additional sensor – for example, a PT1000 floor sensor – is connected directly to the device via the analogue inputs and can be configured completely independently.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Temperature measurement	■ **not active** ■ active	Activation of temperature measurement.
Send measured value on change of ...	not active, 0.1 K – 5.0 K **[0.2 K]**	Setting for which change the measured value should be sent.
Send measured value cyclically	■ **not active** ■ active	Setting whether the measured value should be sent cyclically.
Cycle time	00:01 ... 04:00 hh:mm **[00:20]**	Setting the interval at which the measured value is sent cyclically.
From PT1000 and external sensor	■ **calculate average** ■ output maximum value ■ output minimum value	Setting whether the measured value should be sent cyclically.
Sensor PT1000 / external	■ **100 % PT1000** ■ 90 % PT1000 / 10 % external ■ 80 % PT1000 / 20 % external ... ■ 10 % PT1000 / 90 % external ■ 100 % external	Setting the weighting between PT1000 and external sensor. An additional object is displayed for the external measured value. **When "calculate average" is selected.**
Calibration value for PT1000	-50 ... 50 x 0.1 K **[0]**	Raising/lowering the measured value to correct the measured temperature.
Temperature: Upper message value	**not active** 20 °C – 45 °C	Setting of the upper threshold value.
Hysteresis	0 ... 10 % **[5]**	Setting the hysteresis for the upper threshold value.
Temperature: Lower message value	**not active** 3 °C – 30 °C	Setting the lower threshold value.
Hysteresis	0 ... 10 % **[5]**	Setting the hysteresis for the lower threshold value.

ETS text	Value range **[Default value]**	Comment
Monitor sensor	▪ **not active** ▪ active	Setting whether monitoring should be active for the sensor.
Minimum value	-20 ... 60 °C **[-5 °C]**	Lower temperature value for monitoring.
Maximum value	-20 ... 60 °C **[45 °C]**	Upper temperature value for monitoring.

Table 199: Settings – Temperature measurement: PT1000

With the setting “**Send measured value on change of ...**”, you can specify at what change the current measured value should be sent. With the setting “not active”, the sensor does not send any value, regardless of how large the change is.
The parameter “**Send measured value cyclically**” allows you to set the intervals at which the current measured value should be sent. The cyclic sending function can be activated or deactivated independently of the “Send measured value on change of ...” setting. Measured values are also sent if the sensor has not detected any change. If both parameters are deactivated, no value is ever sent.

With "**From PT1000 and external sensor**", it can be set whether only the maximum/minimum value of the PT1000 sensor is output. When "calculate average" is selected, another parameter "Sensor PT1000 / external" appears. This allows an averaged value from PT1000 and external sensor to be sent.
Via the weighting "**Sensor PT1000 / external**", another external sensor (via object) can be activated or deactivated. If the weighting is set to "100 % PT1000", no further external sensor is activated and no communication object appears for it. For any other setting, an external sensor is activated and the corresponding object is displayed. The "mixed" value is sent to the bus via the "Send measured value" object.

Note: As long as the external sensor does not receive a value via the object, only the PT1000 sensor is used! A "mixed" value (according to the set weighting) is always calculated and output when a new external value is received.
External values outside the range "-9.9 ... +50 °C" are invalid. In this case, only the internal value is used.

With the parameter "**Calibration value for PT1000**", a correction value can be entered. This serves to raise/lower the actually measured value. This setting makes sense if the sensor has been installed in an unfavourable location, e.g. above a radiator or in a draughty area. When this function is activated, the sensor sends the corrected temperature value.

Via "**Temperature: Upper message value**" and "**Temperature: Lower message value**", two messages can be output when activated. In addition, a separate **Hysteresis** can be set for each message value. Both functions each have a separate communication object.

Principle:
If the upper threshold value is exceeded, a “1” is sent. If it is undershot again, a “0” is sent. For undershooting, the following applies: threshold value minus hysteresis.

Example:
Upper threshold value = 25 °C; Hysteresis = 10 %
When 25 °C is exceeded, a “1” is sent; at 22.5 °C, a “0” is sent to reset.

If the lower threshold value is undershot, a “1” is sent. If it is exceeded again, a “0” is sent. For exceeding, the following applies: threshold value plus hysteresis.

Example:
Lower threshold value = 10 °C; Hysteresis = 10 %
When 10 °C is undershot, a “1” is sent; at 11 °C, a “0” is sent to reset.

Monitor sensor
With the additional sensor, monitoring is possible. Temperature values for the lower and upper limits can be specified. If the received measured value is outside these limits or if no value is received for a set period of 30 minutes, a "1" is sent to the bus. As soon as a value within the limits is received, the device sends a "0" for reset. The function is effective, for example, in the event of a cable break or a defect.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
169	Temperature measurement: PT1000 – Send measured value	2 Byte	Sends the current temperature
170	Temperature measurement: PT1000 – External sensor - Input	2 Byte	Receipt of an externally measured temperature.
171	Temperature measurement: PT1000 – Maximum value exceeded	1 Bit	Sends a message when the upper threshold value is exceeded.
172	Temperature measurement: PT1000 – Minimum value fallen below	1 Bit	Sends a message when the lower threshold value is undershot.
173	Temperature measurement: PT1000 – Sensor error	1 Bit	Sending an error message.

Table 200: Communication objects – Temperature measurement: PT1000

4.16.2 Binary inputs – Basic settings

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Inputs 1 / 2	▪ not active ▪ **single** ▪ grouped	Definition of the operating mode of the inputs.
Debouncing time	10 … 150 ms **[30 ms]**	Setting the time for debouncing the external button.

Table 201: Settings – Binary inputs: Basic settings

Channel selection
The device has 2 external button inputs, which can be configured individually or grouped. Depending on the selection, 2 individual channels (Input 1 and Input 2) or a grouped channel (Inputs 1 / 2) are displayed in the menu tree for free configuration.

Debouncing time
With electromechanical buttons, actuating the switch briefly causes multiple closing and opening of the contact ("bouncing"). The cause of this is elastic rebounding against the spring. By setting a debounce time, this effect is compensated for and the signal is sent only slightly delayed. If multiple ON/OFF telegrams are still sent to the bus, the time must be increased.

4.16.3 Functions of the inputs

4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Input / Object description (in ETS)	Any text [up to 40 bytes allowed]	Text for describing the input and the communication objects.
Lock object	▪ **not active** ▪ active	Activation of a lock object for the function.

Table 202: Settings – Inputs: Identical parameters

For each function, a **text field** is available for free labelling.

Input / Object description (in ETS) Hallway light

Figure 28: Text field – Input / Object description

A text of up to 40 characters can be stored in the field.

The text for the "**Input / Object description**" appears both in the menu behind the corresponding input and with the communication objects of the function (here using function 1 as an example):

Input / Object description (in ETS)

Input 1: Corridor light

...

Communication objects

⇆|840 Input 1: Corridor light

Figure 29: Display – Input / Object description

Lock object
A lock object can be activated for both grouped inputs and for the respective individual input. If the lock object is active, the communication object for the respective input or input pair appears.

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
849	Input 1: – Lock object	1 Bit	Locking/unlocking the channel.
849	Inputs 1 / 2: – Lock object	1 Bit	Locking/unlocking the channel pair.
859	Input 2: – Lock object	1 Bit	Locking/unlocking the channel.

Table 203: Communication objects – Inputs: Lock object

4.16.3.2 Function types

Different function types can be selected for single or grouped inputs. These are described below.
The following table shows the available function types:

ETS text	Value range **[Default value]**	Comment
Function type	▪ **not active** ▪ Switch ▪ Send contact state ▪ Send values ▪ Switch/Send values short/long ▪ Scenes ▪ Blinds / Shutter ▪ Dimming	Setting the function type for single inputs
Function type	▪ **not active** ▪ Switch ▪ Send values ▪ Switch/Send values short/long ▪ Blinds / Shutter ▪ Dimming	Setting the function type for grouped inputs.

Table 204: Settings – Inputs: Function types

4.16.4 Function type: Switch

☑ Single channels
☑ Grouped channels

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ Switch ■ **Toggle**	Setting of the function. **Only for single channels.**
Value: Contact closed	■ OFF ■ **ON**	Setting the value to be sent. **Only for single channels → "Switch"**
Value: Input 1 / Input 2	■ **ON / OFF** ■ OFF / ON	Setting the values to be sent. **Only for grouped channels → "Switch"**
Innovative group control		
Group long keypress	■ **not active** ■ active	Activation of the group.
"Group long" sends	■ **ON and OFF** ■ only ON ■ only OFF	Defines the sending behaviour for a long keypress. **Only for grouped channels, and when "Group long keypress" is active**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Definition of the time for detecting a long keypress. **Basic setting refers to the time in "General Settings".**
Group extra long keypress	■ **not active** ■ active	Activation of the group.
"Group extra long" sends	■ **ON and OFF** ■ only ON ■ only OFF	Defines the sending behaviour for an extra long keypress. **For grouped channels, when "Group long keypress" and "Group extra long keypress" are active**.
Time for extra long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **Basic setting refers to the time in "General Settings".**

Table 205: Settings – Inputs: Function type - Switch

The subfunctions for single inputs are explained as follows:

- **Switch**: The channel always sends the defined value (ON/OFF) when the contact is closed.
- **Toggle**: The channel sends the respective inverted value in relation to the last received status value. For this, the object “Status” is connected to the status object of the actuator to be controlled. If, for example, a “1” signal was last received, the channel will send a “0” telegram the next time it is operated. If the channel receives no feedback, it alternately sends "1" and "0" values.

With grouped inputs, each channel always sends the configured value (ON/OFF).

With the "**Innovative group control**", it is possible to send to up to three different group addresses by pressing a button for a longer period. The time for the long and extra long keypress can be set individually.

- **Single inputs**: The defined value is always sent for the long and extra-long group as well.
- **Grouped inputs**: The sending behaviour for the long and extra-long group can be set individually in each case.

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

Example:

Time for long keypress:	2 s
Time for extra long keypress:	4 s

If the button is now pressed for at least 4 seconds, the first value is sent immediately, after 2 seconds the value for the "Group long", and after 4 seconds the value for the "Group extra long".

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: Inputs 1 / 2: – Switch	1 Bit	Switch function for the button(s).
841	Input 1: – Status	1 Bit	Receiving the status from the switched actuator.
842	Input 1: Inputs 1 / 2: – Group long: Switch	1 Bit	Switch function for the long button.
843	Input 1: Inputs 1 / 2: – Group extra long: Switch	1 Bit	Switch function for the extra long button.
+10	**Input 2**		

Table 206: Communication objects – Inputs: Function type - Switch

4.16.5 Function type: Send contact state

☑ Single channels

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Value: Contact closed	■ **OFF** ■ ON ■ not active	Setting the value to be sent.
Send delay	00:00 ... 99:59 mm:ss **[00:00]**	Time by which the sending of the value is delayed.
Value: Contact open	■ OFF ■ **ON** ■ not active	Setting the value to be sent.
Send delay	00:00 ... 99:59 mm:ss **[00:00]**	Time by which the sending of the value is delayed.
Send cyclically	■ **not active** ■ active	Activation of the function
Send every ...	00:00:01 ... 06:00:00 hh:mm:ss **[00:05:00]**	Setting the cycle time.
Behaviour on bus voltage return	■ no action ■ **Send state**	Setting for what should happen after KNX voltage returns.
Additional object		
Value: Contact closed	■ **OFF** ■ ON ■ not active	Setting the value to be sent.
Value: Contact open	■ OFF ■ **ON** ■ not active	Setting the value to be sent.

Table 207: Settings – Inputs: Function type - Send contact state

“Value: Contact closed” or “Value: Contact open”:
This function allows fixed values to be set and sent for a closed contact (rising edge) or open contact (falling edge). This makes it possible to implement "send binary state" functions such as reed contacts on windows.

Send delay
Both values can be sent with a delay. The time for this can be set individually for each value. With this function, the current state of the input is always sent. If the state is changed again before the time has expired, e.g. in the case of the switch-on delay the input is switched off again before it was even switched on, the delay is cancelled.

Send cyclically
The set time applies to the current switching state in each case.

Additional object
Both states (closed / open) can be sent via an additional object. It is possible to configure the values independently of the previous values.

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: – Send state	1 Bit	Switch function for the button(s).
842	Input 1: – 2. Object: Send state	1 Bit	Switch function for the long button.
+10	**Input 2**		

Table 208: Communication objects – Inputs: Function type - Send contact state

4.16.6 Function type: Send values

☑ Single channels
☑ Grouped channels

Various sub-functions are available for this function type:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **Send values** ■ Toggle values ■ Shift values	Setting of the subfunction. **"Shift values" only for grouped channels.**

Table 209: Settings – Inputs: Function type - Send values

The subfunctions are described in the following individual chapters.

4.16.6.1 Subfunction: Send values

☑ Single channels
☑ Grouped channels

This function allows various values of a datapoint type to be sent.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Datapoint type	■ **DPT 1.001 Switch** ■ DPT 2.001 Forcible control ■ DPT 5.001 Percent 0...100 % ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 1 Byte Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value ■ DPT 16.000 String	Setting of the datapoint type to be sent.
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for single channels.**
Value / Scene number / RGB value / White value / HSV value / Text: Input 1 / Input 2	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for grouped channels.**
Special function	■ **innovative group control** ■ additional object	Selecting a special function.
Special function "**innovative group control**" The setting options for the values are identical for "group long" and "group extra long".		
Group long keypress	■ **not active** ■ active	Activation of the group.
Group extra long keypress	■ **not active** ■ active	Activation of the group. **"Group long keypress" → active.**
Input 1	■ **not active** ■ active	Activation of the input. **Only for grouped channels.**
Input 2	■ **not active** ■ active	Activation of the input. **Only for grouped channels.**

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for single channels.**
Value / Scene number / RGB value / White value / HSV value / Text: Input 1 / Input 2	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for grouped channels.**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting a long keypress. **Basic setting refers to the time in "General Settings".**
Time for extra long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **Basic setting refers to the time in "General Settings".**
Special function "additional object"		
Datapoint type (2. Object)	■ **DPT 1.001 Switch** ■ DPT 2.001 Forcible control ■ DPT 5.001 Percent 0...100 % ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value ■ DPT 16.000 String	Setting of the datapoint type to be sent.
Input 1	■ **not active** ■ active	Activation of the input. **Only for grouped channels.**
Input 2	■ **not active** ■ active	Activation of the input. **Only for grouped channels.**
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for single channels.**

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text: Input 1 / Input 2	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for grouped channels.**

Table 210: Settings – Inputs: Subfunction - Send values

Innovative group control
Here, additional values can be sent via your own objects using long and extra-long keypress. The durations for the keypress can be set individually. The datapoint type selected for the function always applies.

Note: "Group extra long" can only be activated if "group long" is active.

Additional object
A second object appears, which is also triggered by a simple keypress. The datapoint type of the value to be sent for this can be set individually.

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: Inputs 1 / 2: – Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the inputs. DPT according to parameter setting.
842	Input 1: Inputs 1 / 2:: – Group long: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the inputs with long keypress. DPT according to parameter setting.
843	Input 1: Inputs 1 / 2:: – Group extra long: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the inputs with extra long keypress. DPT according to parameter setting.
844	Input 1: Inputs 1 / 2: – 2. Object: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function for the 2. Object. DPT according to parameter setting.
+10	**Input 2**		

Table 211: Communication objects – Inputs: Subfunction - Send values

4.16.6.2 Subfunction: Toggle values

☑ Single channels
☑ Grouped channels

This function allows you to switch between up to 4 different values of a datapoint type.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Datapoint type	▪ DPT 2.001 Forcible control ▪ **DPT 5.001 Percent 0...100 %** ▪ DPT 5.005 Decimal value 0..255 ▪ DPT 17.001 1 Byte Scene number ▪ DPT 7.600 Colour temperature [K] ▪ DPT 9.001 Temperature [°C] ▪ DPT 9.004 Brightness [Lux] ▪ DPT 232.600 RGB value 3x(0...255) ▪ DPT 251.600 RGBW value 4x(0...255) ▪ Non standard DPT HSV value	Setting of the datapoint type to be sent.
Number: Values	2 ... 4 **[2]**	Setting for how many values should be switched between.
1.-4. Toggle value / Toggle value RGB/ White/HSV, Toggle scene number	Any value according to the set datapoint type	Setting of the respective value or the scene number.
Inputs 1 / 2 toggle	▪ **next / previous** ▪ previous / next	Setting for the direction in which the values / scenes should be toggled when the inputs are operated. **Only for grouped channels.**
Long keypress	▪ **not active** ▪ active	Activation of the function.
The following parameters apply when "Long keypress" → "active"		
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting a long keypress. **Basic setting refers to the time in "General Settings".**

ETS text	Value range **[Default value]**	Comment
Datapoint type	▪ DPT 1.001 Switch ▪ **DPT 2.001 Forcible control** ▪ DPT 5.001 Percent value 0...100% ▪ DPT 5.005 Decimal value 0..255 ▪ DPT 17.001 1 Byte Scene number ▪ DPT 7.600 Colour temperature [K] ▪ DPT 9.001 Temperature [°C] ▪ DPT 9.004 Brightness [Lux] ▪ DPT 232.600 RGB value 3x(0...255) ▪ DPT 251.600 RGBW value 4x(0...255) ▪ Non standard DPT HSV value	Setting of the datapoint type to be sent for the long keypress.
Input 1	▪ **not active** ▪ active	Activation of the input. **Only for grouped channels.**
Input 2	▪ **not active** ▪ active	Activation of the input. **Only for grouped channels.**
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for single channels.**
Value / Scene number / RGB value / White value / HSV value / Text: Input 1 / Input 2	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for grouped channels.**
Switching type	▪ **limit stop (after the last value, this is repeated)** ▪ overrun (after the last value, the first value is sent again)	Setting for what should happen when the last switching value is reached. **Only for grouped channels.**

Table 212: Settings – Inputs: Subfunction - Toggle values

Operating 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. The datapoint type for the value to be sent can be set individually.

Parameter "**Switching type" (only for grouped channels)**:

- **Limit**: After sending the 4th toggle value, the 4th toggle value is sent again.
- **Overrun**: After the 4th toggle value, the 1st toggle value is sent again.

For single channels, this parameter is fixed to "overrun".

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: Inputs 1 / 2: – Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the inputs. DPT according to parameter setting.
842	Input 1: Inputs 1 / 2:: – Long button: Switch, Forcible control, Percent value, Decimal value, RGB value ...		Switch function of the inputs with long keypress. DPT according to parameter setting.
+10	**Input 2**		

Table 213: Communication objects – Inputs: Subfunction - Toggle values

4.16.6.3 Subfunction: Shift values

☑ Grouped channels

This allows values to be shifted up or down within the set limits.
The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Datapoint type	■ **DPT 5.001 Percent (0...100 %)** ■ DPT 5.005 Decimal value 0..255 ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux]	Setting of the datapoint type to be sent.
Lower limit	Any value according to the selected datapoint type	Setting of the lower limit value.
Upper limit	Any value according to the selected datapoint type	Setting of the upper limit value.
Step width	Any value according to the selected datapoint type	Setting of the step width.
Inputs 1 / 2 shift	■ **Down / Up** ■ Up / Down	Setting of the direction for value shifting.
Repeated sending on pressed key	■ **not active** ■ active	Activation of send repetition when the button is pressed.
Repetition time	0.1 – 30 s **[1.0 s]**	Repeat time between two telegrams when the button is pressed.

Table 214: Settings – Inputs: Subfunction - Shift values

Functional principle
The function shifts the set datapoint type within the set limits. When the "down" button is pressed, the set step size is subtracted from the last value and sent, and when the "up" button is pressed, the set step size is added to the last value and sent.

Lower/Upper limit
Within these limits, the value can be adjusted. The value will neither fall below the lower limit nor exceed the upper limit.

Step width
The step width indicates the distance between values when shifting values. If the value 10 % was sent previously, then with the next "up" command, with a set step width of 10 %, the value 20 % will be sent.

Repeated sending on pressed key
This function allows the value to be increased or decreased as long as the respective button is pressed or until the upper/lower limit value is reached.

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Inputs 1 / 2: – Percent value, Decimal value, Colour temperature, Temperature value, Brightness value		Sending the corresponding value. DPT according to parameter setting.
+10	**Input 2**		

Table 215: Communication objects – Inputs: Subfunction - Shift values

4.16.7 Function type: Switch/Send values short/long

☑ Single channels
☑ Grouped channels

This function allows two different values to be sent for the short and long button. The short and long button can have different datapoint types. The settings (actions) for the short and long keypress are the same.

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Action: Short / Long keypress	■ not active ■ **OFF** ■ ON ■ Toggle ■ Send values	Setting the action for short or long keypress. **Only for single channels.**
Action: Short / Long keypress	■ not active ■ **Switch** ■ Toggle ■ Send values	Setting the action for short or long keypress. **Only for grouped channels.**
Only grouped channels: "Action short / long keypress" ➝ "Switch"		
Value: Input 1	■ **OFF** ■ ON	Setting the value to be sent.
Value: Input 2	■ OFF ■ **ON**	Setting the value to be sent.
"Action short / long keypress" ➝ "Send values"		
Datapoint type	■ DPT 2.001 Forcible control ■ **DPT 5.001 Percent value 0...100%** ■ DPT 5.005 Decimal value 0..255 ■ DPT 17.001 Scene number ■ DPT 7.600 Colour temperature [K] ■ DPT 9.001 Temperature [°C] ■ DPT 9.004 Brightness [Lux] ■ DPT 232.600 RGB value 3x(0...255) ■ DPT 251.600 RGBW value 4x(0...255) ■ Non standard DPT HSV value ■ DPT 16.000 String	Setting of the datapoint type to be sent for the long keypress.
Value / Scene number / RGB value / White value / HSV value / Text	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for single channels.**

ETS text	Value range **[Default value]**	Comment
Value / Scene number / RGB value / White value / HSV value / Text: Input 1 / Input 2	Any value/text according to the selected datapoint type	Setting of the value, scene number or text to be sent. **Only for grouped channels.**
With a long keypress, also send the value for a short keypress	■ **not active** ■ active	Setting whether the value for "short button" is also sent.
Time for long keypress	**Default setting** 0.1 s – 30.0 s	Setting for when a long keypress is recognised. **Basic setting refers to the time in "General Settings".**
Sending condition for long keypress	■ **Input 1 and Input 2 may send** ■ only Input 1 may send ■ only Input 2 may send	Setting the sending condition for the long button. **Only for grouped channels.**

Table 216: Settings – Inputs: Function type - Switch/Send values short/long

Functional principle

- **Individual channels:** Only one value can be sent for the short and one value for the long keypress respectively. The datapoint type can be set separately in each case.
- **Grouped channels:** It is possible to send different values for Input 1 and Input 2 for both the short and the long keypress. Additionally, a send filter (condition) can be defined here for the two buttons.

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: Inputs 1 / 2: – Short button: Switch, Forcible control, Percent value, Decimal value, Scene ...		Value / Scene / Text to be sent for the short button. DPT according to parameter setting.
841	Input 1: Inputs 1 / 2: – Short button: Status	1 Bit	Receiving the status from the switched actuator.
842	Input 1: Inputs 1 / 2: – Long button: Switch, Forcible control, Percent value, Decimal value, Scene ...		Value / Scene / Text to be sent for the long button. DPT according to parameter setting.
843	Input 1: Inputs 1 / 2: – Long button: Status	1 Bit	Receiving the status from the switched actuator.
+10	**Input 2**		

Table 217: Communication objects – Inputs: Function type - Switch/Send values short/long

4.16.8 Function type: Blinds / Shutter

☑ Single channels
☑ Grouped channels

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Operating 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)	Setting the concept for how to operate with long/short button. **Only for grouped channels.**
Subfunction	■ **Up/Down** ■ only Up and Stop ■ only Down and Stop	Setting whether movement is allowed in both directions or only one direction. **Only for single channels.**
Operating function	■ **Long = Up/Down / Short = Stop / Slats Open/Close** ■ Short = Up/Down / Long = Stop / Slats Open/Close	Setting the concept for how to operate with long/short button. **Only for single channels.**
Function: Input 1 / Input 2	■ **Down / Up** ■ Down / Up	Assignment of the inputs for the function. **Only for grouped channels.**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **The basic setting applies to the time in "General settings".**
Innovative group control Only with the setting "Long = Up/Down / Short = Stop / Slats Open/Close"		
Group control extra long	■ **not active** ■ active	Activation of the group for extra long key press.
Time for extra long keypress	**Default setting** 0.1 s – 30.0 s	Setting for when an extra long keypress is recognised. **Basic setting refers to the time in "General Settings".**

Table 218: Settings – Inputs: Function type - Blinds / Shutter

For the blinds function, 2 communication objects appear: one for the stop/step object "Stop / Slats Open/ Close" and the other for the movement object "Blinds / Shutter Up/Down".
The moveing object is used for upward and downward movement. The stop/step object has two functions: firstly, it stops the upward or downward movement if the end position has not yet been reached, and secondly, it is used for adjusting the slats.

With the **two-button function** , the button assignment can be set. The following table shows the relationships:

	Function Up/Down		**Function Down/Up**	
Input	Left button	Right button	Left button	Right button
Moving object	Up	Down	Down	Up
Stop/Step object	Stop / Slats Open	Stop / Slats Close	Stop / Slats Close	Stop / Slats Open

Table 219: Two-button function – Blinds function

With the **one-button function**, each keypress toggles between upward and downward travel.
Since Shutter actuators always use a "1" signal for downward travel and a "0" signal for upward travel, the button outputs accordingly. It is also possible to swap the action for the long and short keypress. This allows you to select whether to operate with a long or short keypress. The stop/step object then adopts the respective alternative operating concept.
Note: Via the parameter "**Sub-function**", in addition to the normal selection "Up and Down", it is possible to restrict the direction of travel. This means that with a keypress, either only up or only down can be operated.

Innovative group control
By activating "**group control extra long**", it is possible to execute an additional function with an extra long keypress. When the "extra long button" is pressed, the individual shutter starts moving after 0.5 s. After a further 1.5 s, the group starts with the same movement.
This activates the group function: If "Stop" is then pressed briefly, all stop. If the slats are briefly adjusted, the group also adjusts the slats. After approx. 90 s, the group function is internally deactivated again and a "Stop" only affects the single channel.

MDT Single Object Control
☑ Two buttons

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

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

It is now possible to start the upward/downward movement with a short keypress and also to stop an active upward/downward movement with a short keypress.

Via the setting "**Short = Up/Down/Stop / Long = Central object (Single Object Control)** ", an additional object is displayed, which can start the upward/downward travel with a long keypress and can also stop an active upward/downward travel with a long keypress. This function can be used, for example, to move a single roller shutter in a room with a short keypress and to move the whole room with a long keypress.

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: Inputs 1 / 2: – Blinds / Shutter Up/Down	1 Bit	Up/Down command for the Shutter actuator.
840	Inputs 1 / 2: – Short: Shutter Up/Down/Stop	1 Bit	MDT Single Object Control: Up/Down/Stop function. **Only for grouped channels and for shutter.**
841	Input 1: Inputs 1 / 2: – Stop / Slats Open/Close	1 Bit	Open/close slats and stop command.
841	Inputs 1 / 2: – Long: Central Shutter Up/Down/Stop	1 Bit	MDT Single Object Control: Central object for Up/Down/Stop function. **Only for grouped channels and for shutter.**
842	Input 1: – Status for change of direction	1 Bit	Reception of the status with current information about the direction of the Shutter actuator. **Only for single channel function**.
844	Input 1: Inputs 1 / 2: – Extra long: Blinds/Shutter Up/Down	1 Byte	Up/Down command for the Shutter actuator.
845	Input 1: Inputs 1 / 2: – Extra long: Stop / Slats Open/Close	1 Bit	Open/close slats and stop command.
+10	**Input 2**		

Table 220: Communication objects – Inputs: Subfunction - Blinds / Shutter

4.16.9 Function type: Dimming

☑ Single channels
☑ Grouped channels

The following table shows the available settings:

ETS text	Value range **[Default value]**	Comment
Subfunction	■ **Dimming** ■ ON and brighter ■ OFF and darker	Setting whether dimming is allowed in both directions or only one direction. **Only for single channels.**
Function: Input 1 / Input 2	■ **brighter / darker** ■ darker / brighter	Assignment of the inputs for the function. **Only for grouped channels.**
Time for long keypress	**Basic setting** 0.1 s - 30.0 s	Setting the time for detecting an extra long keypress. **The basic setting applies to the time in "General settings".**

Table 221: Settings – Inputs: Function type - Dimming

For this function, 2 communication objects appear: firstly, the function for a short keypress, the switch object "Dimming On/Off", and secondly, the function for a long keypress, the dimming object "relative dimming". The dimming function is a start-stop dimming. This means that as soon as the dimming function is activated, the button sends a "brighter" or "darker" command as long as the button is pressed. After releasing the button, a "Stop" telegram is sent, which ends the dimming process.

The **two-button function** "Dimming" can be configured either as "brighter / darker" or as "darker / brighter". The following table shows the relationships:

	Button assignment: brighter/darker		**Button assignment: darker/brighter**	
Input	Button 1	Button 2	Button 1	Button 2
Dimming function	brighter	darker	darker	brighter
Switch function	ON	OFF	OFF	ON

Table 222: Two-button function – Dimming

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

For details on "Text field" and "Lock object",
see 4.16.3.1 Identical parameters - Text field and Lock object

The following table shows the associated communication objects:

No.	Name / Object function	Length	Usage
840	Input 1: Inputs 1 / 2: – Dimming On/Off	1 Bit	Switch function for the inputs.
841	Input 1: Inputs 1 / 2: – Dimming relative	4 Bit	Command for relative dimming.
843	Input 1: – Status for toggle	1 Bit	Reception of the status with current information about the status of the actuator to be controlled.
+10	**Input 2**		

Table 223: Communication objects – Inputs: Function type - Dimming

5 Index

5.1 List of illustrations

5.2 List of tables

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!

All work on the device may only be carried out by qualified electricians. Country-specific regulations as well as the applicable KNX guidelines must be observed.

The devices are approved for operation in the European Union and the United Kingdom. The products are respectively marked with the CE and UKCA symbols.

Use in the USA and Canada is prohibited!

6.4 History

V1.0	First version of the manual	DB V2.2 12/2025