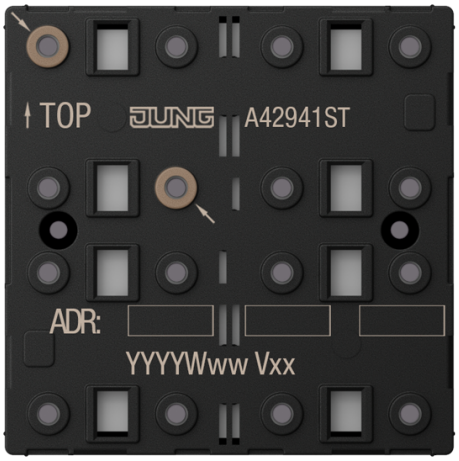
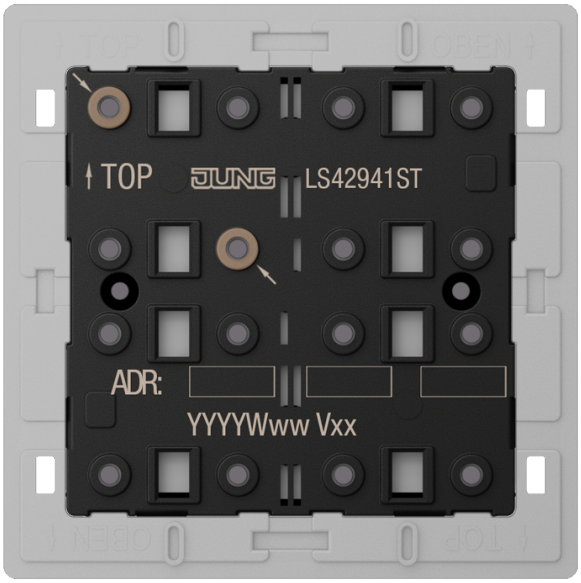
Product documentation

Universal push-button module
Art. no. xx 429x1 ST





ALBRECHT JUNG GMBH & CO. KG
Volmestraße 1
58579 Schalksmühle
GERMANY

Telefon: +49 2355 806-0
Telefax: +49 2355 806-204
kundencenter@jung.de
www.jung.de

Product image non-binding

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Table of contents

1 Information on the product

1.1 Product catalogue

Product name	Article number	Use	Design
Universal push-button module, 1-gang	xx 42911 ST	Sensor	FM (Flush-mounted)
Universal push-button module, 2-gang	xx 42921 ST	Sensor	FM (Flush-mounted)
Universal push-button module, 3-gang	xx 42931 ST	Sensor	FM (Flush-mounted)
Universal push-button module, 4-gang	xx 42941 ST	Sensor	FM (Flush-mounted)

1.2 Function

General

The device is KNX Data Secure compatible. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. Detailed technical knowledge is a prerequisite. A device certificate, which is attached to the device, is required for safe commissioning. During mounting, it is recommended to remove the certificate from the device and to store it securely.

The device can be updated. Firmware can be easily updated with the Jung ETS Service App (additional software).

Push-button sensor function

When its buttons are actuated, the device sends telegrams to the KNX, depending on the ETS parameter settings. These can be telegrams for switching, for dimming the brightness and colour temperature or for controlling the shading. Value transmitters and scene extension functions can also be programmed. The value transmitter functions include, for example, temperature and brightness value transmitters or even the colour value transmitter RGBW.

The device can be used as a room temperature control point, which means as an operation and display element of a room temperature controller.

All buttons or single buttons of the device can be disabled using the disabling function. During active disabling, the assigned buttons perform parameterised behaviour.

With the scene function, scene values can be sent to the bus via 8 scene outputs (from firmware version 1.0.2 and from version 2.2 of the ETS application program).

With the "dimming and colour temperature" and "short and long button actuation" rocker functions and with "Venetian blind / shutter / awning / skylight" --> "Venetian blind" --> "Step - Up/down or step", special functions can be actuated by operating the full surface of the rocker.

Push-button sensor operating concept

The push-button sensor consists of a number of operating areas that are designed as squares or rectangles, depending on the variant. The operating concept of an operating element can be configured in the ETS as a rocker function or as a button function. With the rocker function, an operating element is divided into two actuation pressure points with the same basic function. In the button function either an operating element is divided into 2 functionally separate actuation pressure points (2 buttons), or a operating area is evaluated as single-area operation (only one button).

With the rocker function and the dual area button function, the button arrangement can be set either as "left/right" or as "top/bottom" for each operating element.

Extension module push-button sensor

A push-button sensor extension module can be connected to the push-button sensor. Optionally, the number of operating areas can therefore be expanded to include up to four additional operating areas. The extension module is configured and commissioned in a simple and clearly structured manner with the application program of the push-button sensor.

Measurement of the room temperature

As a supplement to the room temperature control point, the device has an integrated temperature sensor that makes it possible to measure and forward the local room temperature. Optionally, the room temperature measurement performed by the internal temperature sensor can be supplemented by an external temperature value via the bus. This improves the measurement result.

LED function

The push-button sensor has two status LEDs per operating element. These status LEDs can either be switched on or off permanently, or can function as a status indicator for a button or rocker. As an alternative, the LEDs can also be activated via separate communication objects. The LEDs can either indicate the switching status of an object statically or by flashing, signal operating states of room temperature controllers or indicate results of logical value comparison operations.

All status LEDs can additionally be used to indicate an alarm.

The brightness of all status LEDs is adjustable in six stages using a common parameter. A separate communication object allows the brightness to be reduced, e.g. at night time.

Energy saving mode

The device has an energy-saving mode. Is this way, the device saves electrical energy during operation. Energy saving mode is activated either after a preset time without operation or controlled by a KNX telegram. In energy saving mode, the device deactivates the signalling functions. Energy saving mode can be deactivated by operation or by a KNX telegram. Afterwards, the device is fully functional again.

1.3 Device components

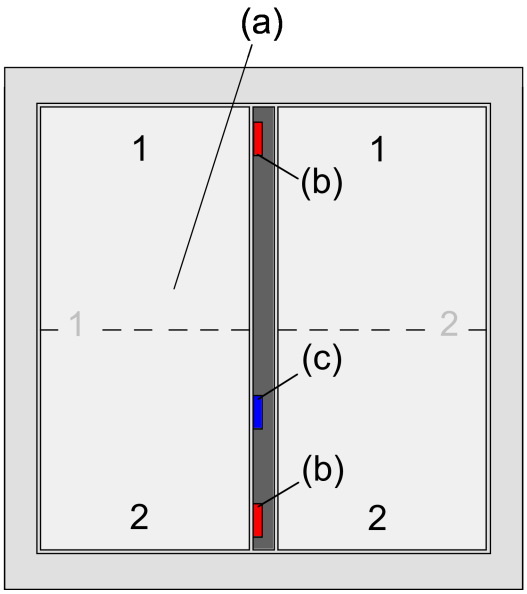

Figure 1: Device arrangement of 1-gang universal push-button sensor

(a) 1 operating element configurable as rocker 1 or buttons 1…2. The button arrangement for the rocker function and dual-area button function can be configured: "top/bottom" or "left/right".

(b) 2 status LEDs (red)

(c) 1 operation LED (blue)

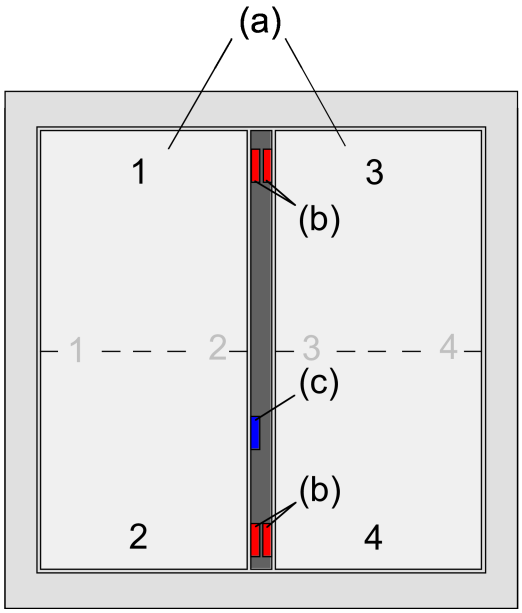

Figure 2: Device arrangement of 2-gang universal push-button sensor

(a) 2 operating areas configurable as rocker 1...2 or as buttons 1…4. The button arrangement for the rocker function and dual-area button function can be configured: "top/bottom" or "left/right".

(b) 4 status LEDs (red) / two per operating element.

(c) 1 operation LED (blue)

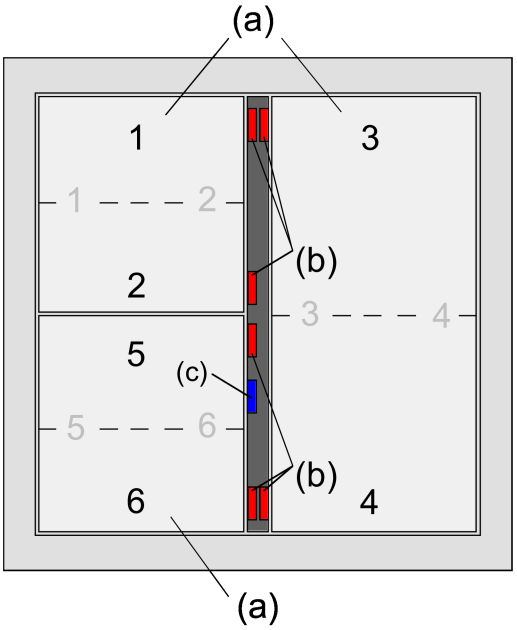

Figure 3: Device arrangement of 3-gang universal push-button sensor

(a) 3 operating areas configurable as rocker 1...3 or as buttons 1…6. The button arrangement for the rocker function and dual-area button function can be configured: "top/bottom" or "left/right".

(b) 6 status LEDs (red) / two per operating element.

(c) 1 operation LED (blue)

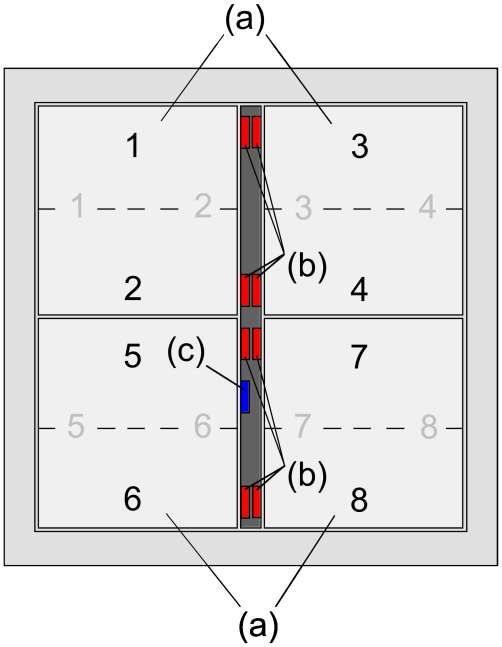

Figure 4: Device arrangement of 4-gang universal push-button sensor

(a) 4 operating areas configurable as rocker 1...4 or as buttons 1…8. The button arrangement for the rocker function and dual-area button function can be configured: "top/bottom" or "left/right".

(b) 8 status LEDs (red) / two per operating element.

(c) 1 operation LED (blue)

1.4 As-delivered state

Upon delivery, the blue operation LED flashes slowly (approx. 0.75 Hz). When any operating element is pressed, the corresponding status LED lights up briefly.

The as-delivered state persists until the application program is programmed.

1.5 Technical data

KNX

KNX medium	TP256
Safety	KNX Data Secure (X-mode)
Commissioning mode	S mode
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption KNX	
Without extension module	5 ... 8 mA
With extension module	5 ... 11 mA
Connection mode KNX	Device connection terminal
Connecting cable KNX	EIB-Y (St)Y 2x2x0.8
Protection class	III

Ambient conditions

Temperature measuring range	-5 ... +45 °C
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-20 ... +70 °C

1.6 Accessories

Cover kit 1-gang	Art. no. ..401 TSA..
Cover kit 2-gang	Art. no. ..402 TSA..
Cover kit 3-gang	Art. no. ..403 TSA..
Cover kit 4-gang	Art. no. ..404 TSA..
Push-button extension module, 1-gang	Art. no. 4091 TSEM
Push-button extension module, 2-gang	Art. no. 4092 TSEM
Push-button extension module, 3-gang	Art. no. 4093 TSEM
Push-button extension module, 4-gang	Art. no. 4094 TSEM
Screw assortment sensors	Art. no. S-BOXTSMRTZN
Screws sensor module	Art. no. S-NFBTSMRT
Screws supporting frame	Art. no. S-NFBTSMZN

2 Safety instructions

Electrical devices may be mounted and connected only by electrically skilled persons.

Serious injuries, fire or property damage are possible. Please read and follow the manual fully.

Use only the enclosed plastic screws for fastening to the supporting frame! Otherwise safe operation cannot be ensured. Electrostatic discharges can cause defects in the device.

3 Mounting and electrical connection

DANGER!

Electric shock when live parts are touched.

Electric shocks can be fatal.

Cover up live parts in the installation environment.

Snapping on the adapter frame

- With the adapter frame (3) in the correct orientation, snap it from the front onto the push-button sensor module (4) (see figure 5). Note the marking **TOP**.

Mounting and connecting the device

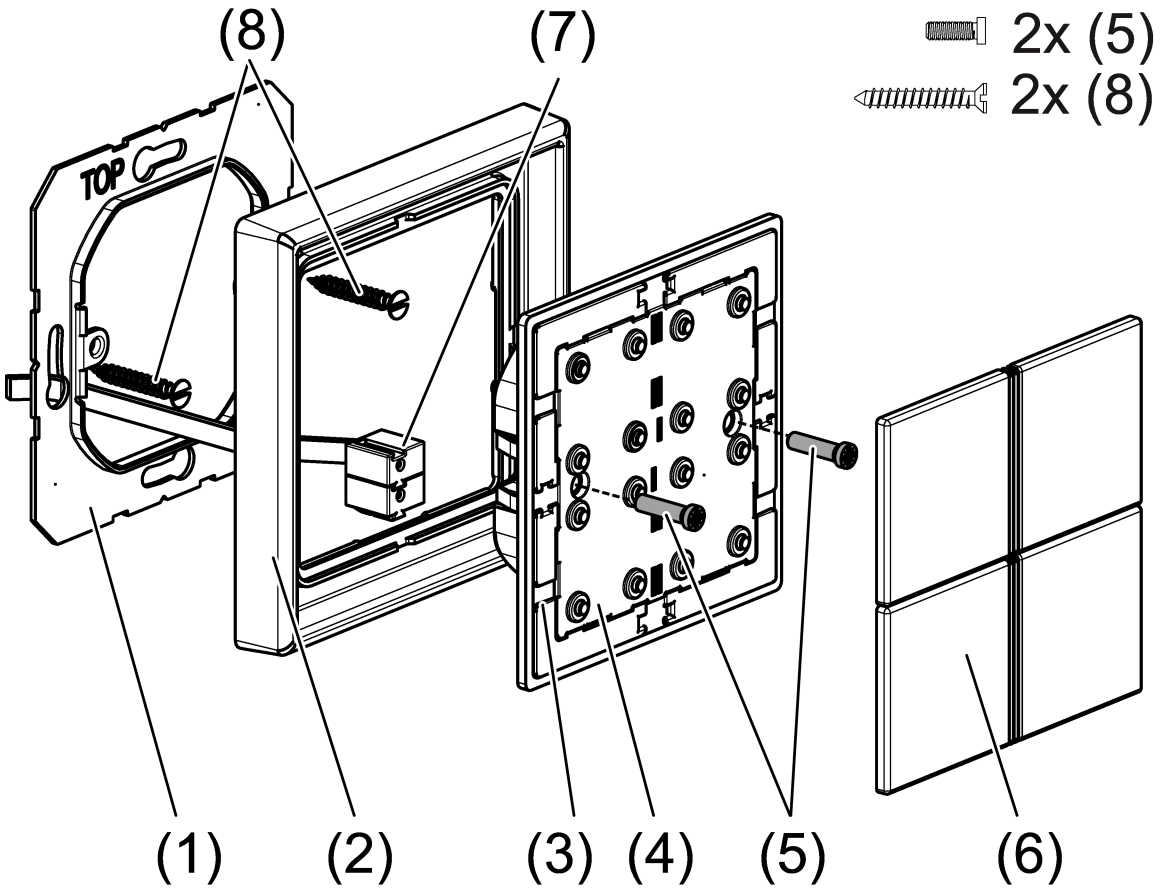

Figure 5: Mounting the push-button sensor module

(1) Supporting frame
(2) Design frame
(3) Adapter frame
(4) Push-button sensor module
(5) Fastening screws
(6) Buttons
(7) KNX device connection terminal

(8) Box screws

Supporting frame side **A** for A design ranges, CD design ranges and FD design. Supporting frame side **B** for LS design ranges.

When the push-button sensor extension module is used (see figure 6): preferably mounted vertically. Use large supporting frame (14). When mounting on only one appliance box, countersink the lower screws into the wall, e.g. with a ø 6 x10 mm hole. Use supporting frame as template.

DANGER!

When mounting with 230 V devices under a common cover, e.g. socket outlets, there is a danger of electrical shocks in the event of a fault!

Electric shocks can be fatal.

Do not install any 230 V devices in combination with a push-button sensor extension module under a common cover!

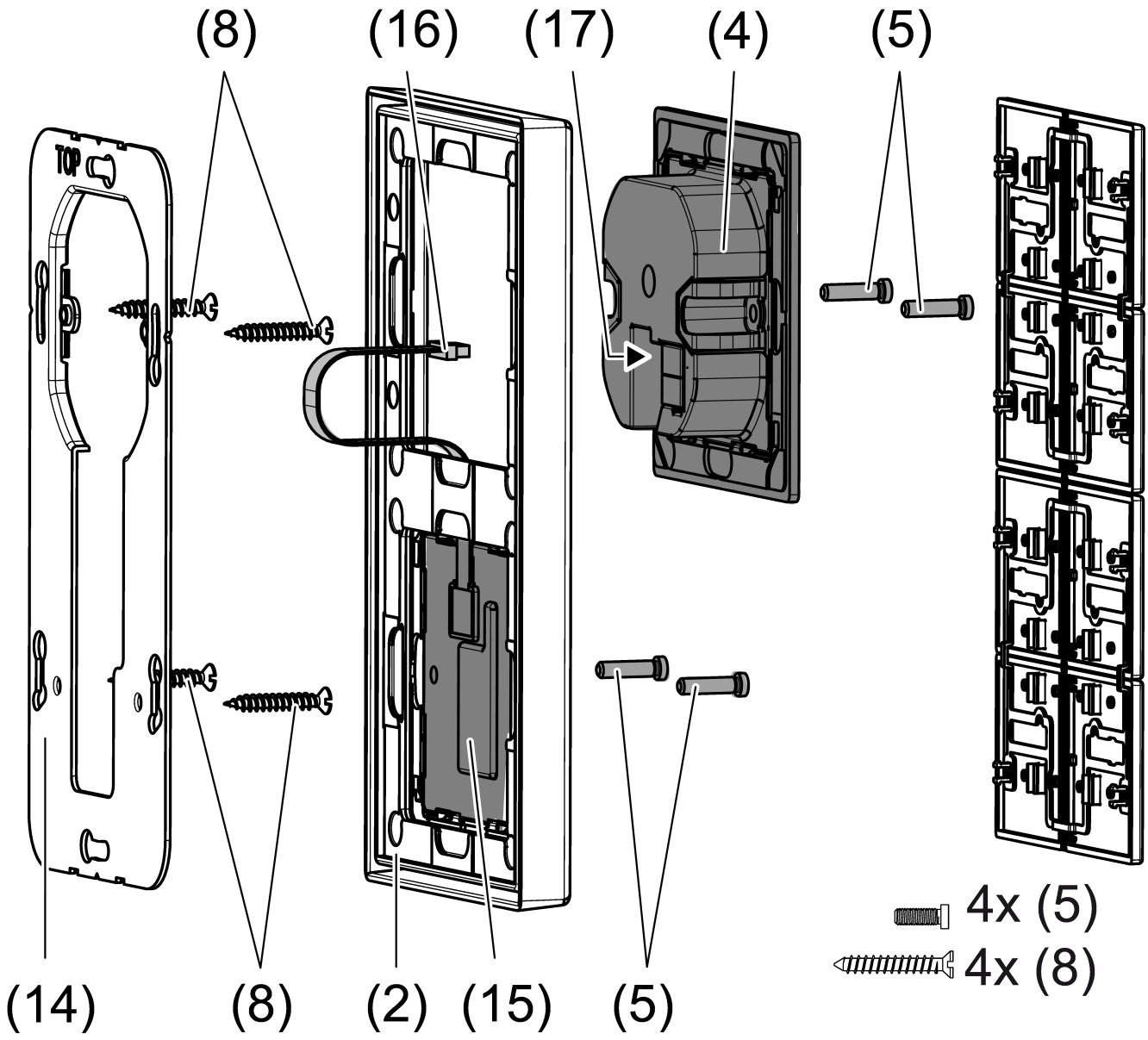

Figure 6: Mounting with push-button sensor extension module

- Mount supporting frame (1) or (14) in the correct position onto an appliance box. Note marking **TOP**=; marking A or B in front. Use box screws (8) (see accessories).
- Push frame (2) onto supporting frame.
- Mount the push-button sensor extension module (15) preferably below. Route connecting cable (16) between supporting frame and intermediate web.
- Push-button sensor extension module: Insert connecting cable (16) in the correct orientation into slot (17) in the push-button module. Do not crimp the connecting cable (see figure 6).
- Connect the push-button sensor module (4) to the KNX with the KNX device connection terminal (7) and push onto the supporting frame.
- Optionally fix the push-button sensor module(s) to supporting frame using plastic screws (5) (see accessories). Tighten the plastic screws only lightly.

- Before mounting the buttons (6), program the physical address into the device.

The device should be used in an air-tight appliance box. Drafts cause incorrect temperature values to be measured.

4 Commissioning

Preconditions in secure operation

- Secure commissioning has been activated in the ETS.
- Device certificate entered/scanned or added to the ETS project. A high resolution camera should be used to scan the QR code.
- Document all passwords and keep them safe.

Programming the physical address and application program

Project design and commissioning with ETS version 5.7.7 and higher or 6.0.5.

The device is connected and ready for operation.

The buttons are not mounted yet.

If the device contains no – or an incorrect – application program, the blue operation LED flashes slowly.

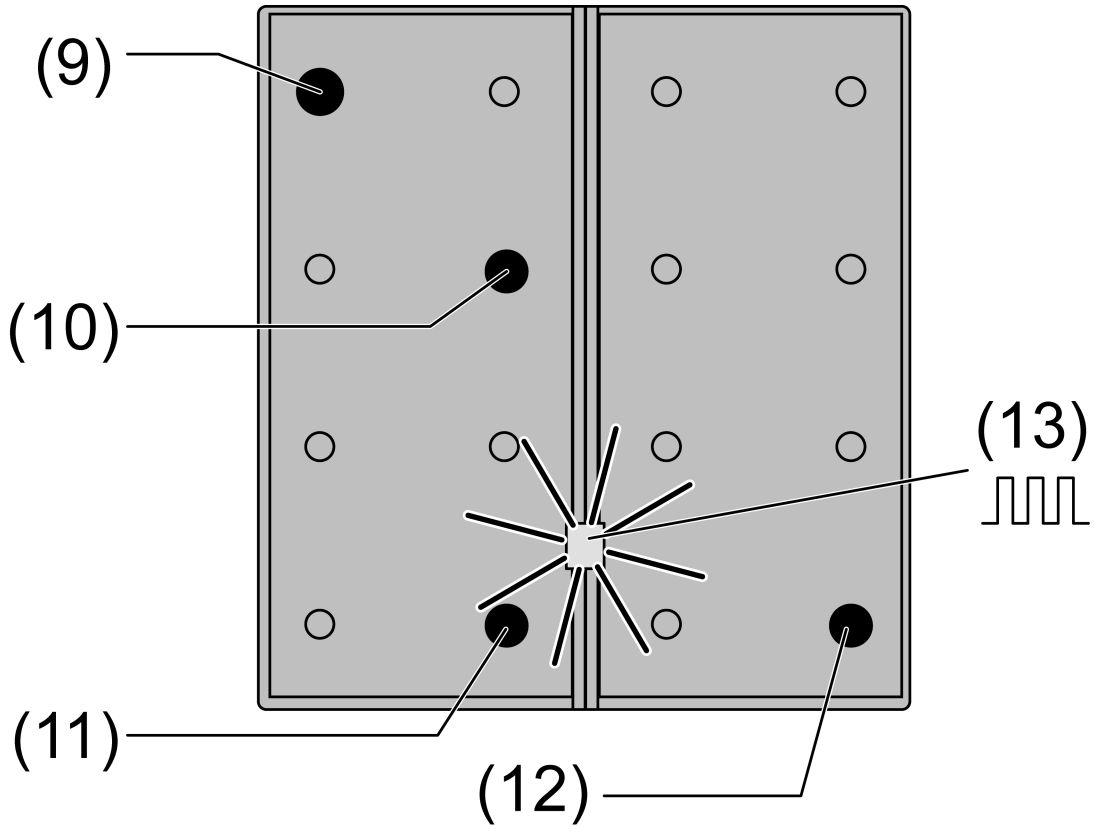

Figure 7: Activating programming mode

Push-button sensor module	Prog. push-button
– 4gang, 3gang	(9) + (10)
– 2gang	(9) + (11)
– 1gang	(9) + (12)

Table 1: Activating programming mode

- Press the push-button at the top left (9) and keep it pressed. Then press push-button at the lower right (10, 11 or 12):

  The operation LED (13) flashes quickly.

- Programming the physical address.

  The operation LED (13) returns to its previous state – off, on, or flashing slowly.

- Programming the application program.

  The operation LED flashes slowly (approx. 0.75 Hz) while the application program is programmed.

4.1 Safe-state mode

The safe-state mode stops the execution of the loaded application program.

If the device does not work properly - for instance as a result of errors in the project design or during commissioning - the execution of the loaded application program can be halted by activating the safe-state mode. The device remains passive in safe-state mode, since the application program is not being executed (state of execution: terminated).

Only the system software of the device is still functional. ETS diagnosis functions and programming of the device are possible.

Activating safe-state mode

- Switch off the bus voltage.
- Press and hold the button at the bottom left and the button at the bottom right (see figure 7), depending on the device version (1 … 4-gang).
- Switch on the bus voltage.

  Safe-state mode is activated. The operation LED flashes slowly (approx. 1 Hz).

i Do not release the buttons until the operation LED flashes.

Deactivating safe-state mode

- Switch off the voltage or carry out ETS programming.

4.2 Master reset

The master reset restores the basic device settings (physical address 15.15.255, firmware remains in place). The device must then be recommissioned with the ETS.

In secure operation: A master reset deactivates device security. The device can then be recommissioned with the device certificate.

If the device - for instance as a result of errors in the project design or during commissioning - does not work properly, the loaded application program can be deleted from the device by performing a master reset. The master reset resets the device to delivery state. Afterwards, the device can be put into operation again by programming the physical address and application program.

Performing a master reset

Prerequisite: The safe-state mode is activated.

- Press and hold the button at the top left and the button at the bottom right (see figure 7) for more than five seconds until the operation LED flashes quickly (approx. 4 Hz), depending on the device version (1 … 4-gang).
- Release the buttons.

  The device performs a master reset.

  The device restarts. The operation LED flashes slowly.

Resetting the device to its default settings

Devices can be reset to factory settings with the ETS Service App. This function uses the firmware contained in the device that was active at the time of delivery (delivered state). Restoring the factory settings causes the devices to lose their physical address and configuration.

5 Mounting operating areas, mounting buttons

The buttons are available as a complete set of buttons (see figure 8). Individual buttons or the complete set of buttons can be replaced by buttons with icons.

The physical address is programmed in the device.

- Place the buttons on the device in the correct orientation and snap in with a short push. Note the marking **TOP**.

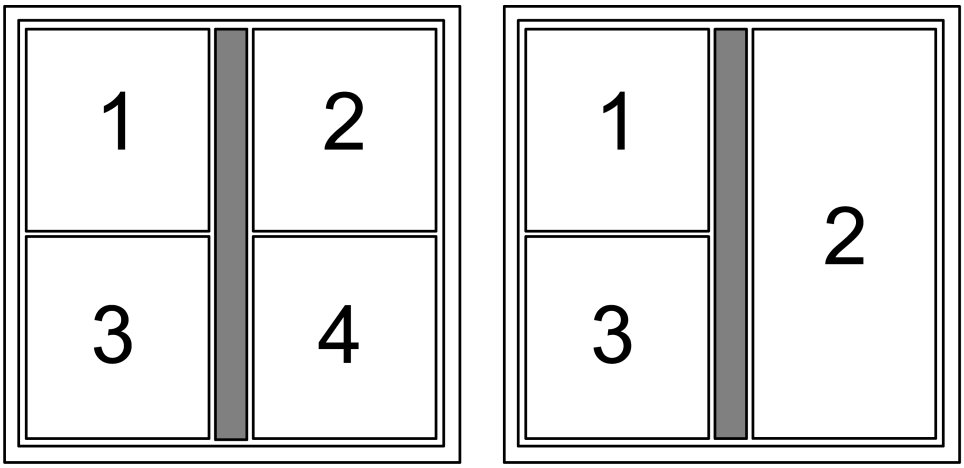

Figure 8: Button assignment

6 Operation

Operating areas

The Universal push-button module consists of a number of operating areas designed as squares or rectangles, depending on the variant. The operating concept of an operating element can be configured in the ETS either as a rocker function or alternatively as a button function. With the rocker function, one operating element is divided into two actuation pressure points with the same basic function. In the button function either an operating element is divided into 2 functionally separate actuation pressure points (2 buttons), or a operating area is evaluated as single-area operation (only one button).

If a operating element is used as a single rocker function, then depending on the configuration it is also possible to trigger special function using full-surface operation. With the rocker function and the double-surface button function, the button arrangement can be set either as "vertical" or as "horizontal" for each operating element.

The number of rockers depends on the push-button sensor variant used. Optionally, the number of operating areas of each Universal push-button module can be expanded to include up to four additional operating areas by connecting an extension module to the basic device. Configuration and commissioning of the extension module is clearly structured and easy to perform using the application program of the basic unit.

There are two red LEDs next to each operating element, which may be connected internally to the control function, depending on the function of the rocker or buttons. They may, however, also be used for signalling completely independent functions, while flashing or being permanently switched on or off.
The operation LED can signal the switching state of its own object, flash or be permanently switched on or off. Besides the functions that can be set with the ETS, the operation LED also indicates that the push-button sensor is in the programming mode for commissioning or diagnostic purposes.

Moreover, the universal TSM push-button sensor has functions that are not immediately linked to the rockers or buttons and must therefore be additionally enabled by the corresponding parameters. This includes the room temperature control point, pushbutton function disabling and the indication of alarm signals.

The configuration of the operating areas (button or rocker function and button arrangement) is described in detail in the chapter "Software description".

6.1 Flashing frequencies of the LEDs

State of operation	Operation LED	Status LED
Application discharged	Approx. 0.75 Hz	With On button pressed
Safe-state mode	Approx. 1 Hz	---
Flashing status	Approx. 2 Hz	Approx. 2 Hz
Alarm signal	Approx. 2 Hz	Approx. 2 Hz
Master reset	Approx. 4 Hz	---
Programming mode	Approx. 8 Hz	---
Full-surface operation	Approx. 8 Hz	Approx. 8 Hz

7 Application programs

ETS search paths:	Push-button / push-button, 1-gang / Universal push-button module, 1-gang
	Push-button / push-button, 2-gang / Universal push-button module, 2-gang
	Push-button / push-button, 3-gang / Universal push-button module, 3-gang
	Push-button / push-button, 4-gang / Universal push-button module, 4-gang
Configuration:	S-mode standard

Available application programs for Universal push-button module, 1-gang

Name	Universal push-button module, 1-gang D13121
Version	2.1 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Multifunctional application universal push-button sensor TSM 1-gang.
	1 operating element on push-button sensor basic module.
	Can be extended to up to 5 operating areas by the push-button sensor extension module.

Name	Universal push-button module, 1-gang D13122
Version	2.2 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Compared to version 2.1, the application programme has been expanded to include the scene function. The "Scene extension" button and rocker function has been expanded to include the "Call up internal scene" selection option for the "Short button press" parameter.

Available application programs for Universal push-button module, 2-gang

Name	Universal push-button module, 2-gang D13221
Version	2.1 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Multifunctional application universal push-button sensor TSM 2-gang.
	2 operating areas on push-button sensor basic module.
	Can be extended to up to 6 operating areas by the push-button sensor extension module.

Name	Universal push-button module, 2-gang D13222
Version	2.2 for ETS from version 5.7.7 or 6.0.5

from mask version	07B0
Summarized description	Compared to version 2.1, the application programme has been expanded to include the scene function. The "Scene extension" button and rocker function has been expanded to include the "Call up internal scene" selection option for the "Short button press" parameter.

Available application programs for Universal push-button module, 3-gang

Name	Universal push-button module, 3-gang D13321
Version	2.1 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Multifunctional application universal push-button sensor TSM 3-gang. 3 operating areas on push-button sensor basic module. Can be extended to up to 7 operating areas by the push-button sensor extension module.

Name	Universal push-button module, 3-gang D13322
Version	2.2 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Compared to version 2.1, the application programme has been expanded to include the scene function. The "Scene extension" button and rocker function has been expanded to include the "Call up internal scene" selection option for the "Short button press" parameter.

Available application programs for Universal push-button module, 4-gang

Name	Universal push-button module, 4-gang D13421
Version	2.1 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Multifunctional application universal push-button sensor TSM 4-gang. 4 operating areas on push-button sensor basic module. Can be extended to up to 8 operating areas by the push-button sensor extension module.

Name	Universal push-button module, 4-gang D13422
Version	2.2 for ETS from version 5.7.7 or 6.0.5
from mask version	07B0
Summarized description	Compared to version 2.1, the application programme has been expanded to include the scene function. The "Scene extension" button and rocker function has been expanded to include the "Call up internal scene" selection option for the "Short button press" parameter.

8 Device generations and ETS application programs

There are different device generations and application programs available. It is possible to distinguish between the application programs and device generations by means of the version designation.

Application programs with the version 2.1 or higher can be programmed in devices with device generation V01 or higher.

The parameter settings and group address connections are adopted using the ETS function "Update application programme version".

The designation of the device generation is attached on the device.

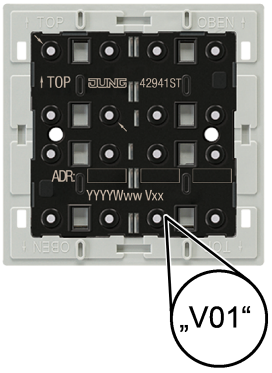

Figure 9: Designation of the device generation on the device

Compatibility

The following table shows the compatibility of the devices with the available versions of the firmware and the ETS application programs.

Firmware version	Version of the ETS application program	Devices with device generation V01 or higher
0.1.14	2.1	compatible First release for market launch
1.0.2	2.2	compatible Second release after market launch

Firmware update

The firmware of the device can be updated by programming the device with a more recent application than version 2.1. The update can eliminate errors contained in the firmware. As soon as new firmware is available for the devices, it is displayed in the service app.

9 Scope of functions

General

- KNX Data Secure compatible
- Firmware updates are possible
- The number of buttons can be expanded using Push-button extension.
- Integrated scene control (from firmware version 1.0.2 and from version 2.2 of the ETS application program). Internal storage of up to eight scenes with eight output channels, recall of internal scenes by means of a presettable scene number, selection of object types for the output channels; for each scene, the storage of the individual output values and the transmission of the output values can be permitted or inhibited; the individual channels can be delayed during scene recall; as scene extension, 64 scenes can be recalled and stored.

Push-button sensor functions

- The operating concept can be configured
- The button evaluation for the button function can be configured
- The operating areas can be subdivided either horizontally or vertically for the rocker or button function (dual-area operation)
- The button function can be configured
- The rocker function can be configured

  Switching: The command on pressing and/or releasing is adjustable (no reaction, switch on, switch off, toggle).

  Dimming the brightness and colour temperature: The command on pressing, the time between switching and dimming, the dimming in different levels, the telegram repetition on long press and the transmission of a stop telegram at the end of the press is adjustable.

  Venetian blind / shutter / awning / skylight: The command, when pressed, and the operating concept can be set.

  Value transmitter: The data point type | value range and the value can be set. The value adjustment can optionally be activated by long button-actuation.

  Scene extension: The scene number can be called up or switched over by briefly pressing the button. Optionally, the storage function is executed by pressing the button longer.

  Short and long button actuation: Up to two telegrams can be transmitted to the KNX by pressing the button. The operating concept can be adjusted and the time for short and long actuation adapted. The function of the channels is adjustable separately.

  Room temperature control point: The function (operating mode switch-over, forced operating mode switch-over, presence function and target temperature shift) can be set.
- Full-surface operation can be configured (only for the dimming and colour temperature rocker functions, venetian blinds (in the "Step – Up/down or step" operating sequence) and for short and long button actuation")

With full-surface operation, switching telegrams and scene recall requests can be triggered on the KNX in addition to and independently of the configured rocker function.

– Disabling function can be activated

  The rockers or buttons can be disabled via a 1-bit object. The following settings are possible: polarity of the disabling object, behaviour at the beginning and at the end of disabling. During an active disable, all or some of the rockers/buttons can have no function, can perform the function of a selected button or execute one of two presettable disabling functions.

Status LED

– Function can be configured

  When selecting the function for each status LED, the following functions can be configured: always OFF, always ON, actuation indication, telegram acknowledgment, status indication, control via separate LED object, operating mode indication, controller status indication, presence status indication, target temperature shift display, comparator without/with sign, logic link, bit-coded evaluation

– Brightness can be configured

  The brightness of the status LED can be set to five levels.

  With brightness reduction, the brightness of the status LED can be reduced at night time using a communication object.

– Alarm signal can be activated

  All status LEDs of the device can flash simultaneously in the event of an alarm. The following settings are possible: Value of alarm signalling object for the states alarm / no alarm, alarm acknowledge by actuation of a button, transmission of the acknowledge signal to other devices.

– Energy saving mode can be activated

  If the energy-saving mode is activated, all status LEDs are switched off. The following settings are possible: activate energy saving mode, deactivate energy saving mode, polarity of the object.

Room temperature control point

– The room temperature control point can be configured as a rocker or button function

  Full control of a room temperature controller (operating modes, presence functions and target temperature shift).

– The room temperature control point indicators can be configured as a function of the status LED

  Full indication of the controller status by the status LED of the extension (heating/cooling signal, target temperature shift, room temperature, setpoint temperature and current operating mode).

– Temperature measurement can be activated

Measurement of the room temperature with an internal sensor or optionally by determining the measured value of the internally measured temperature with an external temperature.

10 General settings

The "Information" parameter page provides information about ETS compatibility and KNX Secure. No parameterisation is performed on this parameter page.

General settings of the push-button sensor are configured and general functions enabled on the "General" parameter page.

The operating concept of each button of the push-button sensor basic module and the push-button sensor extension module are selected and the button arrangement defined on the "Operating concept" parameter page.

10.1 Configuration

Whether a push-button sensor extension module is present in addition to the push-button sensor basic module can be entered under “Button configuration“ on the “General“ parameter page.

The function (switched on, switched off, control via object or actuation indication) can be configured in the brightness (5 levels) of the operation LED under "Operation LED".

The light duration for actuation indication (up to 5 s) and the brightness at the push-button sensor basic module (6 levels) can be set for the status LED under “Status LED“. The brightness of the status LED on the push-button sensor extension module cannot be changed.
A note appears here on whether the brightness of the status LED of the basic and extension module is the same or different.

Furthermore, the cross-channel device functions can be enabled on the “General“ parameter page:

- Temperature measurement
- LED alarm signalling
- Brightness reduction
- Disabling function
- Energy saving mode

These functions are configured on separate parameter pages.

Rocker and button function

All buttons of the push-button sensor basic module and push-button sensor extension module are configured on the "Operating concept" parameter page.

With the rocker function set, the left/right or top/bottom button arrangement can be selected.

With the button function set, single-area operation or dual-area operation of the buttons can be selected. If dual-area operation is selected, the left/right or top/bottom button arrangement it can also be selected.

10.1.1 Rocker and button operating concept

The button configuration defines whether an extension module is connected to the push-button sensor basic module. A push-button sensor extension module expands the number of operating areas in addition to the operating areas of the basic device, so that up to four rockers or eight buttons are additionally available. For example, a 1-gang push-button sensor as basic device can be supplemented with a 4-gang extension module, adding four to five operating areas. In the same way, a 2-gang basic device can be expanded with a 4-gang extension module to six operating areas etc.

The rockers or buttons of the extension module are evaluated by the application program of the basic unit. In addition, each operating element of the extension module has two status LEDs that are also controlled by the application program of the basic unit. Consequently, an extension module does not have any application or bus coupling module of its own, and is configured and put into operation in the ETS by the application program of the basic device. Each basic device can have one extension module connected to it.
Together, the basic device and extension module form a "push-button sensor unit".

The operating areas of the connected extension module are configured in "Button configuration" on the "General" parameter page in the ETS.
The button configuration of the push-button sensor basic module is permanently specified by the application program used in the ETS project and cannot be changed (e. g. 4-gang (buttons 1 to 8 present)).

If a push-button sensor extension module is connected, its button pairs must be enabled separately in the ETS. In the ETS parameter view the button pairs of the extension module are then to be configured as "present".

The module operating areas enabled in the described manner are displayed and configured on their own parameter pages in the ETS in the same way as the rockers or buttons of the basic module.

The button numbers of the extension module depend on the button numbers and therefore the variant of the basic module. In the case of a 4-gang push-button sensor as basic device, for example, module buttons 9...16 are created for a 4-gang extension module. In the case of a 2-gang basic unit, on the other hand, the module buttons 5...12 are created for a 4-gang extension module, etc.

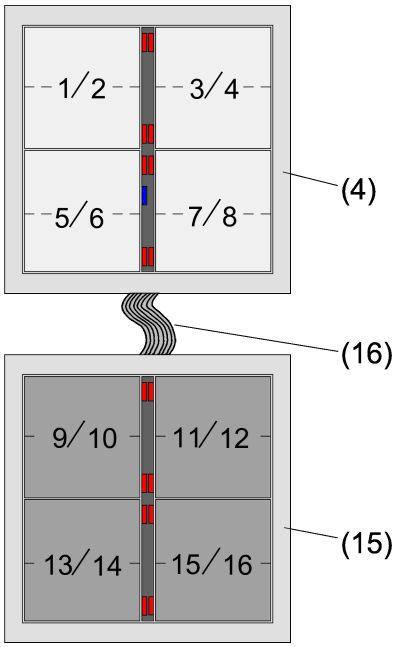

Figure 10: Example of button pair/operating area numbering in connection with a 4-gang

(4) Push-button sensor basic module (here: 4-gang)
(16) Module connecting cable
(15) Push-button sensor extension module (here: 4-gang)

Operating concept and button evaluation

The changeover between rocker and button operation of an operating element of the basic or extension module is made on the "Operating concept" parameter pages. The "Operating concept" parameters define for each operating element whether the button pair in question is to be combined to form a common rocker function or is to be divided alternatively into two separate button functions.
The additional parameter pages and the communication objects of the rockers or buttons are then also created and adapted depending on the setting parameterised here.

Pressing several rockers or buttons at the same time will be considered as a wrong operation. The special rocker function "Full-surface operation" is an exception to the above rule. In this case, the parameterisation of the rocker decides whether the operation is a wrong operation or not.

Button pair as rocker function

If an operating element is used as a rocker, both actuation points jointly affect the communication objects that are assigned to the rocker. The actuation of the two actuation points then usually results in directly opposite information (e.g. switching: ON - OFF / venetian blind: UP - DOWN). Generally the commands should be made independently when a button is actuated.

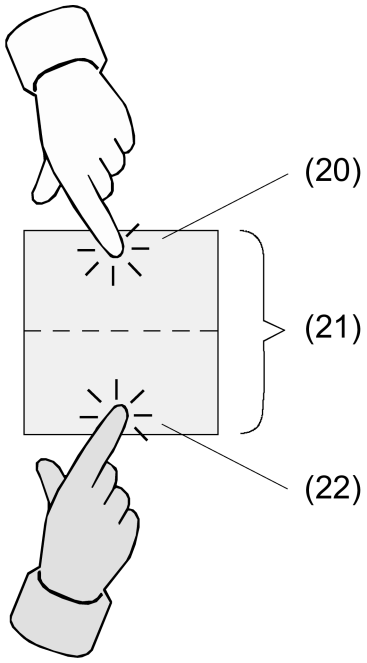

Figure 11: Example of rocker actuation

(20) Operating element as rocker with two actuation points
(21) Actuation point X.1
(22) Actuation point X.2

Depending on the button arrangement configured in the ETS, the actuation points of an operating element can be arranged either top/bottom or left/right. The example illustration shows a top/bottom button arrangement.

Full-surface operation with rocker function

Depending on the basic function of a rocker, it is also possible with some settings to use a press on the full surface with a separate function.

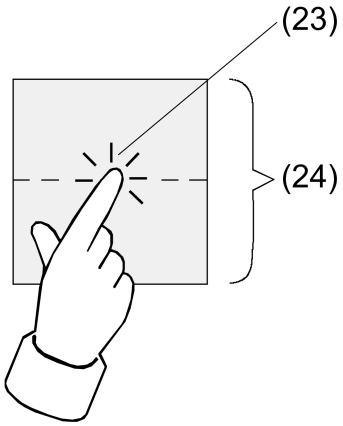

Figure 12: Example of full-surface actuation

(23) Operating element as rocker with full-surface operation
(24) Actuation point for full-surface operation

Button pair as button function

In button operation, a distinction is made whether the operating element is divided into two separate and functionally independent buttons (dual-area operation), or whether an operating element functions as a single "large" button (single-area operation). The "Button evaluation" parameter on the "Operating concept" parameter page configures either dual-area or single-area operation for each button pair.

In dual-area operation the buttons are configured independently of each other, and can fulfil completely different functions (e.g. switching: TOGGLE – thermostat operating mode: Comfort). Full-surface actuation of an operating element is not possible as a button function.

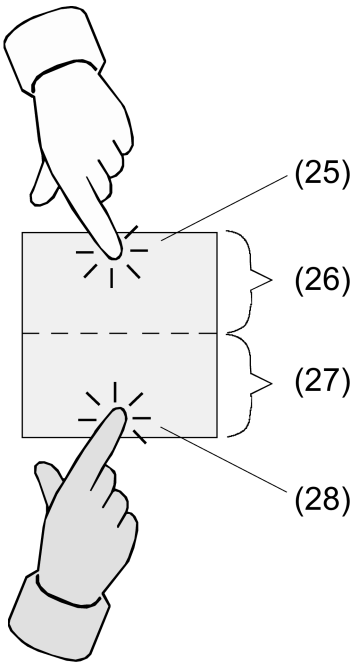

Figure 13: Example of button actuation with dual-area operation

(25) First part of the operating element as button with a single actuation point

(26) Second part of the operating element as button with a single actuation point

(27) Actuation point for button X (X = 1, 3, 5, ...)

(28) Actuation point for button Y (Y = 2, 4, 6, ...)

Depending on the button arrangement configured in the ETS, the buttons and thus the actuation points of an operating element can be arranged either top/bottom or left/right for dual-area operation of the buttons. The example illustration shows a top/bottom button arrangement. With single-area operation the button arrangement cannot be adjusted, because there is only one button per operating element.

In single-area operation, the entire operating element is evaluated only as a single "large" button. This button is configured independently of the other buttons or rockers of the push-button sensor and can fulfil various functions (e.g. switching: TOGGLE).

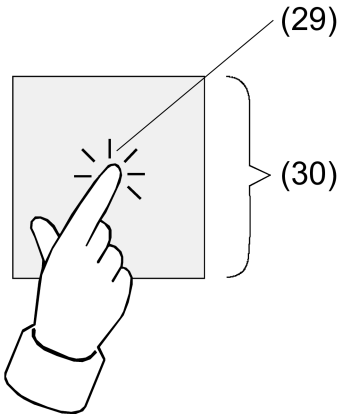

Figure 14: Example of button actuation in single-area operation

(29) Entire operating element as button with a single actuation point

(30) Actuation point for button X (X = 1, 3, 5, ...)

An operating element is always created in the ETS as a button pair. However, because in single-area operation only one button functionally exists, the second button of the button pair has no function and is physically not present. During project design in the ETS it is shown as a "not present" button without any further button parameters. Only the status LED of this button which is physically not used can be configured separately and if needed also activated via its own communication object.

The physically present button which is to be evaluated in single-area operation is always created as a button with an uneven button number. If, for example, the first operating element of a push-button sensor is configured to single-area operation, then button 1 can be configured in the ETS. Button 2 is then the physically not present button without parameters.

Button arrangement

On the "Operating concept" parameter page, it is possible to set how the buttons are to be arranged on the surface, meaning where the actuation points are located, separately for each button pair of an operating element configured as a rocker function or dual-area button function in the ETS.
Here the parameter "Button arrangement" specifies the actuation point evaluation.

In the default setting the two actuation points of a operating element are arranged vertically (top/bottom) (see figure 15). Alternatively the actuation points can be arranged horizontally (left/right) (see figure 16).
The figures show examples of the button arrangement on a 4-gang universal push-button sensor. The button arrangements on other basic unit variants or on a connected extension module are similar.

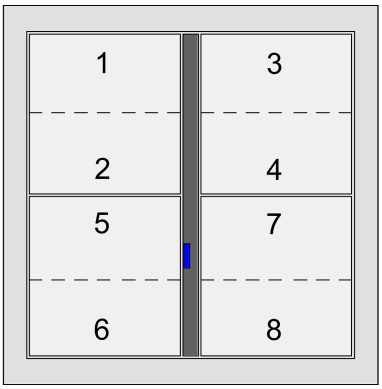

Figure 15: Button arrangement "top/bottom"

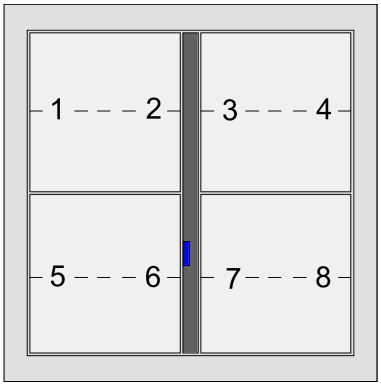

Figure 16: Button arrangement "left/right"

It is also possible to combine different button arrangement in the same push-button sensor (see figure 17).

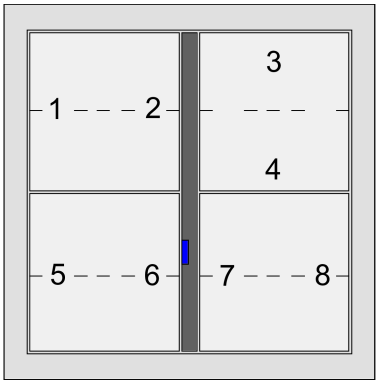

Figure 17: Different button configurations in the same push-button sensor

The configuration can still be changed later on. Assigned group addresses or parameter settings remain unaffected by such changes.

10.1.2 Table of parameters

The following parameters are available under the "Button configuration" header on the "General" parameter page.

Extension module push-button sensor	**not present** 1-gang (buttons n and m present) 2-gang (buttons n to m present) 3-gang (buttons n to m present) 4-gang (buttons n to m present)
Whether a push-button sensor extension module is present is set here. If a push-button sensor extension module (1-gang, 2-gang, 3-gang or 4-gang) is selected, the button numbers are displayed and new parameter pages are created according to the number of buttons. The push-button sensor basic module is automatically detected and created with its existing buttons.	

The following parameters are available under the "Operation LED" header on the "General" parameter page.

Function	switched-off **switched-on** Control via object Button-actuation indication
How the operation LED works is set here.	

Brightness	Level 0 (OFF) Level 1 (dark) **Level 2** Level 3 Level 4 Level 5 (bright)
The brightness level for all status LEDs is defined at this point.	

Object polarity	1 = ON / 0 = OFF 0 = ON / 1 = OFF 1 = flashing / 0 = OFF 0 = flashing / 1 = OFF
The object polarity is visible only if the "function" = "control via object" was selected.	

Operation LED light duration	1 s 2 s **3 s** 4 s 5 s
This parameter defines the switch-on time the status LED is lit up to indicate actuation. The setting concerns all status LEDs whose function is set to "Button-actuation display".	

The following parameters are available on the "General" parameter page under the "Status LED" header.

Light duration of status LED for button-actuation display	1 s 2 s **3 s** 4 s 5 s
This parameter defines the switch-on time the status LED is lit up to indicate actuation. The setting concerns all status LEDs whose function is set to "Button-actuation display".	

Brightness at basic module push-button sensor	Level 0 (OFF) Level 1 (dark) Level 2 Level 3 Level 4 **Level 5 (bright)**
The brightness of all status LEDs on the push-button sensor basic module is defined here. The brightness of the status LED on the push-button sensor extension module cannot be set and corresponds to level 5.	

The following parameter is available on the "Operating concept" parameter page.

Operating concept of buttons *n* and *m*	**Rocker function** Button function
For each operating element, the user can specify independently whether it is to be used as a rocker with a common basic function or as two different buttons with completely independent functions. Depending on this setting, the ETS displays different communication objects and parameter pages.	

Button evaluation	Single-area operation **Dual-area operation**
Single-area operation or dual-area operation of the buttons can be selected if the button function is activated in the operating concept for the buttons.	

Button arrangement	**left / right** top / bottom
With the rocker or button function set for dual-area operation, operation of the top/ button or left/right buttons can be selected.	

The following parameter is available on the "Rocker *n*" or "Button *m*" parameter page.

Function	**Switching** Dimming and colour temperature Venetian blind / shutter / awning / roof window Value transmitter Scene extension Short and long button operation Room temperature control point
Each rocker or button can perform one of these functions. Corresponding to this selection, the ETS compiles the appropriate parameters and objects for the function.	

11 Channel-oriented device functions

The following subchapters provide a description of the device functions. Each subchapter consists of the following sections:

- Functional description
- Table of parameters
- Object list

Functional description

The functional description explains the function and provides helpful tips on project design and usage of the function. Cross references support you in your search for further information.

Table of parameters

The table of parameters lists all parameters associated with the function. Each parameter is documented in a table as follows.

Name of the parameter	Parameter values
Parameter description	

Object list

The object list specifies and describes all communication objects associated with the function. Each communication object is documented in a table.

Object no.	This column contains the object number of the communication object.
Function	This column contains the function of the communication object.
Name	This column contains the name of the communication object.
Type	This column contains the length of the communication object.
DPT	This column assigns a datapoint type to a communication object. Datapoint types are standardized in order to ensure interoperability of KNX devices.
Flag	This column assigns the communication flags in accordance with the KNX specification.
C-Flag	activates / deactivates the communication of the communication object
R-Flag	enables externally triggered reading of the value from the communication object
W-Flag	enables externally triggered writing of the value to the communication object
T-Flag	enables transfer of a value
U-Flag	enables updating of an object value in case of feedback
I-Flag	enforces updating of the communication object value when the devices is switched on (reading at init)

11.1 Switching

For each rocker or button whose function is set to "switching", the ETS shows up to two 1-bit communication objects. The parameters permit fixing the value the "switching" object is to assume on pressing and/or releasing (ON, OFF, TOGGLE – toggling of the object value). No distinction is made between a brief or long press.

11.1.1 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

When pressed	No reaction ON OFF **TOGGLE**
This parameter defines the reaction when the button is pressed.	

When released	**No reaction** ON OFF TOGGLE
This parameter defines the reaction when the button is released.	

11.1.2 Object list

The following communication objects are available for the individual rockers or buttons, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
49, 53, ..., 109	Switching	Button/rocker *n* - output	1-bit	1.001	C, R, -, T, A
1-bit object for transmission of switching telegrams (ON, OFF).					

Object no.	Function	Name	Type	DPT	Flag
50, 54, ..., 110	Switching - Status	Button/rocker *n* - input	1-bit	1.001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF). This object is visible if the "When pressed" parameter or "When released" parameter is configured to "TOGGLE".					

11.2 Dimming and colour temperature

For each rocker or button whose function is set to "dimming and colour temperature", the ETS shows up to two 1-bit objects and one 4-bit or 3-byte object. Generally, the device transmits a switching telegram after a brief actuation and a dimming telegram after a long actuation. In the standard parameterisation the device transmits a telegram for stopping the dimming action after a long actuation. The time required by the device to detect the actuation as long actuation can be set in the advanced parameters. The brightness or the colour temperature can be dimmed.

Status

If an actuator is controlled by multiple control points, the actuator must report its switching status to the 1-bit object "switching status" of the button or rocker. Due to the feedback, the device detects that the actuator has changed its switching status by input from another element and adjusts the dimming direction accordingly. The status is visible only if switchover commands are set.

The dimming direction is always only evaluated and switched locally, unless the actuator changes its switching status due to input from multiple elements (e.g. lighting ON / change of brightness value only). The 4-bit dimming objects and the 3-byte combi object are not tracked via the bus.

Advanced configuration options

The device has advanced parameters for the dimming function. If necessary, these advanced parameters can be activated and thus be made visible.

The configurable “time between switching and dimming“ is used to set how long the button must be pressed until dimming telegrams are sent out.

The advanced parameters can be used to determine whether the device is to cover the full adjusting range of the actuator with one dimming telegram continuously ("Increase brightness / colour temperature by 100%", "Reduce brightness / colour temperature by 100%") or whether the dimming range is to be divided into several small levels (50%, 25%, 12.5%, 6%, 3%, 1.5%).

In the continuous dimming mode (100%), the device transmits a telegram only at the beginning of the long press to start the dimming process and generally a stop telegram after the end of the press. For dimming in small levels it may be useful if the device repeats the dimming telegram in case of a sustained press for a presettable time (parameter "Telegram repetition"). The stop telegram after the end of the press is then not needed.

i When the parameters are hidden ("Advanced parameters = deactivated"), the dimming range is set to 100%, the stop telegram is activated and the telegram repetition is deactivated.

11.2.1 Brightness

The brightness is dimmed in the default configuration.

The control of the brightness in the "Dimming and colour temperature" function distinguishes between dual-area operation and single-area operation. The parameter "Brightness on pressing" defines the single-area or dual-area dimming function.

Dual-area operation	Single-area operation
Brighter (ON)	Brighter/darker (TOGGLE)
Darker (OFF)	Brighter (TOGGLE)
	Darker (TOGGLE)

With dual-area operation, the device transmits a telegram for switching on or off after a brief actuation, and a telegram for increasing the brightness ("Brighter") or dimming ("Darker") after a long actuation.

With single-area operation, the device transmits ON and OFF telegrams in an alternating pattern ("TOGGLE") for each brief actuation, and the "brighter" and "darker" telegrams in an alternating pattern for long actuation of the respective button.

11.2.2 Colour temperature

The "Dimming and colour temperature" function with the control of the colour temperature distinguishes between dual-area operation and single-area operation. The parameter "Colour temperature on pressing" defines the single-surface or double-surface dimming function.

Dual-area operation	Single-area operation
Colder (ON)	Colder / warmer (TOGGLE)
Warmer (OFF)	Colder (TOGGLE)
	Warmer (TOGGLE)

With dual-area operation, the device sends a telegram for switching on or off after short actuation and a telegram for dimming the telegram to a colder or warmer colour temperature.

With single-area operation, the device sends switch-on and switch-off telegrams alternately ("TOGGLE") each time the respective button is pressed briefly and "colder colour temperature" and "warmer colour temperature" telegrams alternately in the event of long actuation.

11.2.3 Brightness and colour temperature

The dimming process can only adjust either the brightness or the colour temperature via individual objects.

Optionally, the brightness and the colour temperature can also be adjusted together via a combi object.

The "Dimming and colour temperature" function with the control of the brightness and colour temperature distinguishes between dual-area operation and single-area operation. The parameter "Brightness + colour temperature on pressing" defines the single-area or dual-area dimming function.

Dual-area operation	Single-area operation
Brighter + colder (ON)	Brighter + colder / darker + warmer (TOGGLE)
Darker + warmer (OFF)	Brighter + colder (TOGGLE)
	Darker + warmer (TOGGLE)

In dual-area operation, the device sends a telegram for switching on or off in the event of brief actuation and a telegram for brighter/colder or darker/warmer dimming in the event of long actuation.

In single-area operation, the device sends switch-on and switch-off telegrams alternately ("TOGGLE") in the event of brief actuation and the "brighter + colder" and "darker + warmer" telegrams alternately in the event of long actuation of the respective button.

11.2.4 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Dimming control	**Single object: brightness** **Single object: colour temperature** Combi object: brightness + colour temperature
With this parameter, either the brightness or the colour temperature can be dimmed by means of an individual object, or the brightness and colour temperature can be controlled together by means of a combination object	

Brightness on pressing	No reaction **Brighter (ON)** Darker (OFF) Brighter/darker (TOGGLE) Brighter (TOGGLE) Darker (TOGGLE)
This parameter defines the reaction when a button is pressed. If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked. This parameter is visible only if: dimming control = individual object: brightness	

Colour temperature on pressing	No reaction **Colder (ON)** Warmer (OFF) Colder / warmer (TOGGLE) Colder (TOGGLE) Warmer (TOGGLE)
This parameter defines the reaction when a button is pressed. If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked. This parameter is visible only if: dimming control = individual object: colour temperature	

Brightness + colour temperature on pressing	No reaction **Brighter + colder (ON)** Darker + warmer (OFF) Brighter + colder / darker + warmer (TOGGLE) Brighter + colder (TOGGLE) Darker + warmer (TOGGLE)
This parameter defines the reaction when a button is pressed. If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked. This parameter is visible only if: dimming control = combination object: brightness + colour temperature	

Extended settings	Active **Inactive**
When the advanced parameters are activated, the ETS shows the following parameters.	

Time between switching and dimming	**0** ... 50 s | 100 ... **400** ... 990 ms
This parameter defines how long the button must be pressed for a dimming telegram to be transmitted.	

Dim brightness by	1.5 % 3 % 6 % 12.5 % 25 % 50 % **100 %**
This parameter sets the relative dimming level when the brightness is increased. On each button actuation, the brightness is changed at maximum by the configured step width. It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").	

Dimming darker by	1.5 % 3 % 6 % 12.5 % 25 % 50 % **100 %**
This parameter sets the relative dimming level when the brightness is reduced. On each button actuation, the brightness is changed at maximum by the configured step width. It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").	

Colour temperature colder by	1.5 % 3 % 6 % 12.5 % 25 % 50 % **100 %**
This parameter sets the relative dimming level when the colour temperature is increased. On each button actuation, the brightness is changed at maximum by the configured step width. It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").	

Colour temperature warmer by	1.5 % 3 % 6 % 12.5 % 25 % 50 % **100 %**
This parameter sets the relative dimming level when the colour temperature is reduced. On each button actuation, the brightness is changed at maximum by the configured step width. It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").	

Stop telegram	**Active** Inactive
On "Active" the device transmits a telegram for stopping the dimming process when the button is released. When the device transmits telegrams for dimming in smaller levels, the stop telegram is generally not needed.	

Telegram repetition	Active **Inactive**
This parameter can be used to activate telegram repetition for dimming. With telegram repetition activated, the device cyclically sends relative dimming telegrams (in the parameterised step width) to the bus if the button is pressed long.	

Time between two telegrams	**200 ms** 300 ms 400 ms 500 ms 750 ms 1000 ms 2000 ms
This parameter defines the interval at which the dimming telegrams are automatically repeated in the telegram repetition mode. This parameter is only visible if "Telegram repetition = active"!	

11.2.5 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
153, 159, ..., 243	Dimming - Switching	Button/rocker *n* - output	1-bit	1.001	C, R, -, T, A
1-bit object for transmission of switching telegrams (ON, OFF).					

Object no.	Function	Name	Type	DPT	Flag
154, 160..., 244	Dimming	Button/rocker *n* - output	4-bit	3.007	C, R, -, T, A
4-bit object for sending relative dimming telegrams to adjust the brightness.					

Object no.	Function	Name	Type	DPT	Flag
154, 160..., 244	Dimming - Brightness and colour temperature	Button/rocker *n* - output	3-byte	250.600	C, R, -, T, A
3-byte object for sending dimming telegrams for adjusting the brightness and the colour temperature in combination.					

Object no.	Function	Name	Type	DPT	Flag
155, 161, ..., 245	Dimming - Switching - Status	Button/rocker *n* - input	1-bit	1.001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF). Visible only for switchover commands (TOGGLE).					

Object no.	Function	Name	Type	DPT	Flag
156, 162, ..., 246	Dimming - Colour temperature fading	Button/rocker *n* - output	4-bit	3.007	C, R, -, T, A
4-bit object for sending relative dimming telegrams to adjust the colour temperature.					

11.3 Venetian blind / shutter / awning / roof window

For each rocker or button whose function is set to "venetian blind / shutter / awning / skylight" the ETS shows the two 1-bit objects "short time operation" and "long time operation".

The “Type of blind/shutter“ parameter can be used to select whether “Venetian blind“ or “shutter / awning / skylight“ are to be controlled. The “command sequence“ parameters are changed, depending on the setting.

The "Venetian blind / shutter / awning / skylight" function distinguishes between dual-area operation (UP, DOWN) and single-area operation (TOGGLE). The "Command on pressing" parameter defines the single-area or double-area blind function.

Dual-area operation	Single-area operation
UP	TOGGLE
DOWN	

With an operating element as a rocker, the double-surface Venetian blind function is preset. This means that the device e.g. with a press of the top button, transmits a telegram for an upward movement and, after a press of the bottom button, transmits a telegram for a downward movement.

In the case of an operating element as buttons, the single-area Venetian blind principle is preset. In this case, the device alternates between the directions of the long time telegram (TOGGLE) on each long actuation of the sensor. Several short time telegrams in succession have the same direction.

Status

If the actuator can be controlled from several sensors, a faultless single-area operation requires that the long time objects of the control elements are interlinked. The device would otherwise not be able to detect that the actuator has been addressed from another sensor, in which case it would have to be actuated twice during the next use in order to produce the desired reaction.

Operating concept for the venetian blind function

For the control of Venetian blind, roller shutter, awning or similar drives, the device supports four operating concepts in which the telegrams are transmitted in different time sequences. The device can therefore be used to operate a wide variety of drive configurations.

"Step - Up/down - Step" operating concept:
When selecting the operating concept "Step – Up/down – Step", the device behaves as follows:

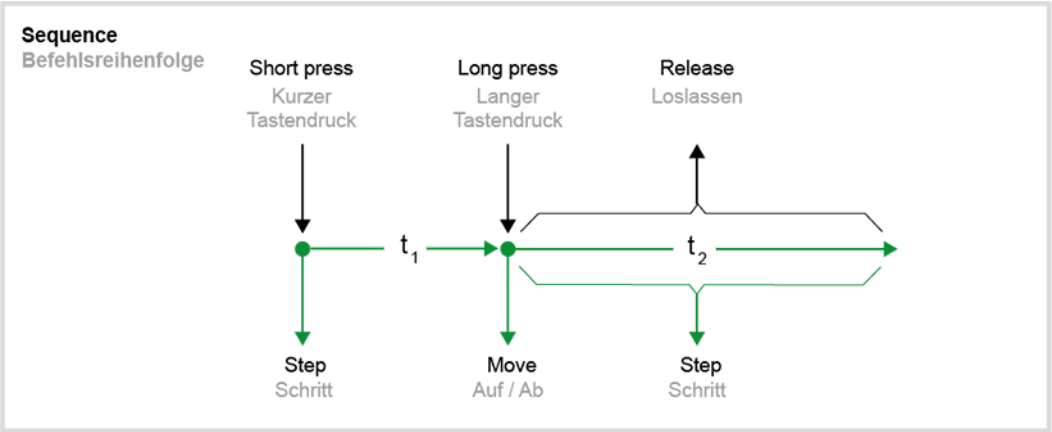

Figure 18: "Step - Up/down - Step" operating concept

– Immediately on pressing the button, the device transmits a short time telegram. This stops a running drive and starts the time t1 ("long button actuation"). No other telegram will be sent if the button is released within t1. This short time serves the purpose of stopping a continuous movement.
The time "long button actuation from" selected in the device should be shorter than the short time operation of the actuator to prevent jerky motion of the Venetian blind.
– If the button is kept depressed for longer than t1, the push-button will send a long-time telegram at the end of t1 to move the drive, and the time t2 ("slat adjustment time window") will be started.
– If the button is released within the time window, the device will send another short-time telegram. This function is used for adjusting the slats of a Venetian blind. The function permits stopping the slats in any position during their rotation.
The "slat adjustment time window" should be chosen as required by the drive to completely rotate the slats. If the selected "slat adjustment time window" is longer than the complete running time of the drive, a pushbutton function is possible as well. This means that the drive is active only when the button is kept depressed.
– If the button is kept depressed for longer than t2, the device will not send another telegram. The drive remains on until the end position is reached.

"Up/down - Step" operating concept:
If the operating concept "Up/down – Step" is selected, the device behaves as follows:

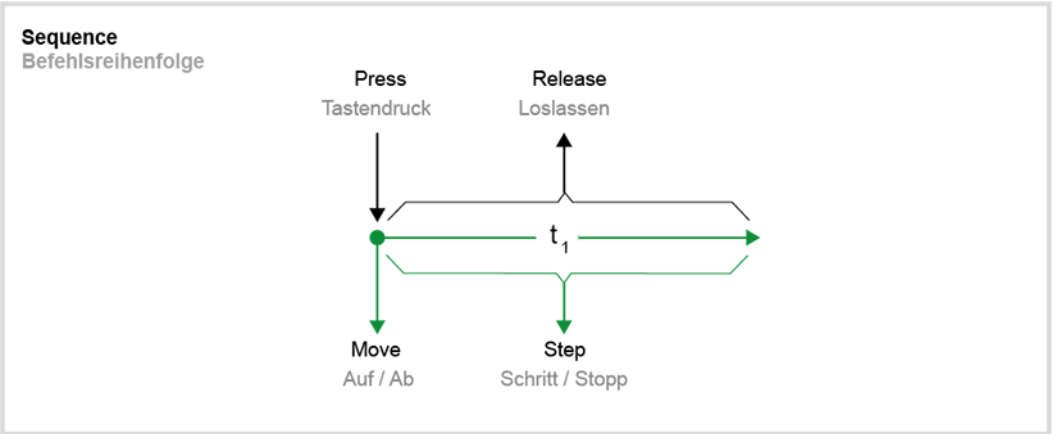

Figure 19: "Up/down - Step" operating concept

– Immediately on pressing the button, the device transmits a long time telegram. The drive begins to move and the time t1 ("slat adjustment time window") is started.
– If the button is released within the slat adjustment time window, the device will send a short-time telegram. This function is used for adjusting the slats of a Venetian blind. The function permits stopping the slats in any position during their rotation.
  The "slat adjustment time window" should be chosen as required by the drive to completely rotate the slats. If the selected "slat adjustment time window" is longer than the complete running time of the drive, a pushbutton function is possible as well. This means that the drive is active only when the button is kept depressed.
– If the button is kept depressed for longer than t1, the device will not send another telegram. The drive remains on until the end position is reached.

"Step - Up/down" operating concept:
If the operating concept "Step – Up/down" is selected, the device will behave as follows:

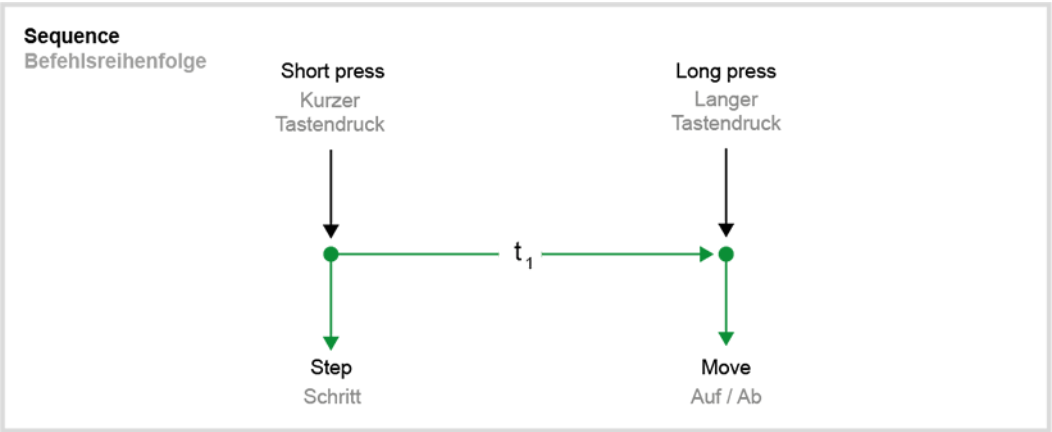

Figure 20: "Step - Up/down" operating concept

– Immediately on pressing the button, the device transmits a short time telegram. This stops a running drive and starts the time t1 ("long button actuation"). No other telegram will be sent if the button is released within t1. This

short time serves the purpose of stopping a continuous movement.
The time "long button actuation from" selected in the device should be shorter than the short time operation of the actuator to prevent jerky motion of the Venetian blind.

– If the button is kept depressed for longer than t1, the push-button will transmit a long-time telegram to start the drive at the end of t1.
– No further telegram is transmitted when the push-button is released. The drive remains on until the end position is reached.

"Up/down - Step or step" operating concept:
If the operating concept "Up/down – Step or step" is selected, the device will behave as follows:

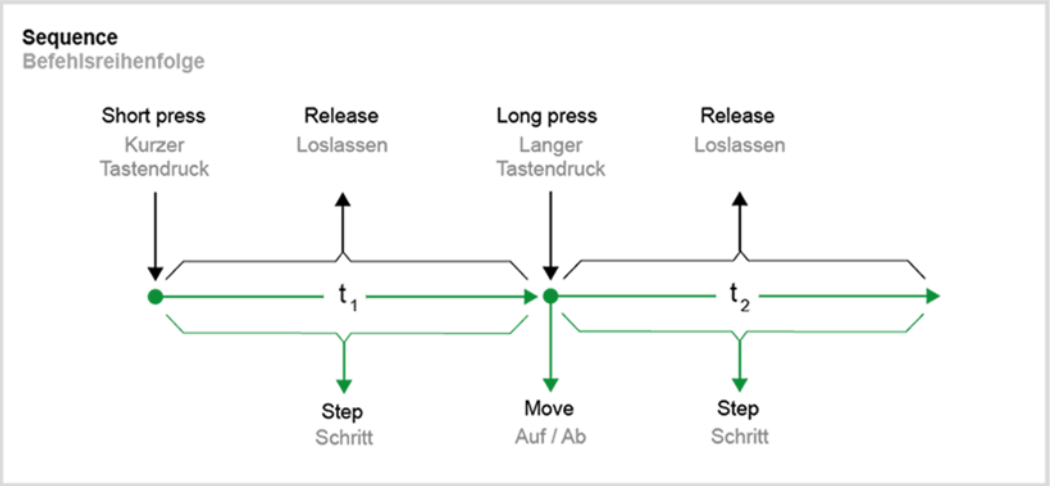

Figure 21: "Up/down – Step or step" operating concept

– Immediately after pressing the button, the device starts the time t1 ("long button actuation") and waits. If the button is released again before t1 expires, the device will send a short-time telegram. This telegram can be used to stop a running drive. A stationary drive rotates the slats by one level.
– If the button is kept depressed after t1 expires, the device will send a long-time telegram and start the time t2 ("slat adjustment time window").
– If the button is released within t2, the device will send another short-time telegram. This function is used for adjusting the slats of a Venetian blind. The function permits stopping the slats in any position during their rotation.
The "slat adjustment time window" should be chosen as required by the drive to completely rotate the slats. If the selected "slat adjustment time window" is longer than the complete running time of the drive, a pushbutton function is possible as well. This means that the drive is active only when the button is kept depressed.
– If the button is kept depressed for longer than t2, the device will not send another telegram. The drive remains on until the end position is reached.

In this operating concept, the device will not transmit a telegram immediately after depressing one button of the rocker. This principle permits detecting a full-surface operation when the sensor is configured as a rocker.

Full-surface operation with venetian blind function

If a rocker is configured for venetian blind / shutter / awning / skylight operation and the operating concept "Step - Up/down or step" is used, the device will need some time at the beginning of each operation to distinguish between short and long operation. When full-surface operation is enabled, the device can make use of this time span to evaluate the otherwise invalid simultaneous actuation of both buttons of a rocker.

Full-surface operation of a rocker is detected by the device when both buttons are pressed at the same time. When the device has detected a valid full-surface operation, the status LED flashes quickly at a rate of about 8 Hz for the duration of the actuation. Full-surface operation must have been detected before the first telegram has been transmitted by the venetian blind function (short time or long time). If this is not so (e.g. one of the two buttons is pressed too late), the full-surface operation will not be correctly executed.

Full-surface operation is independent. It has up to two communication objects and can optionally be used for switching (ON, OFF, TOGGLE – toggling of the object value) or for scene recall or switchover between two scene numbers. This can be done without or with the storage function. In the last case, the full-surface actuation on causes a scene to be recalled in less than a second. If the device is to send the telegram for storing a scene, full-surface actuation must be maintained for more than five seconds. If full-surface actuation ends between the first and the fifth second, the device will not send any telegrams.

11.3.1 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Command on pressing	UP DOWN **TOGGLE**
This parameter defines the running direction of the drive on pressing the button. If the setting is "TOGGLE", the direction is changed after each long time command. If several devices are to control the same drive, the long time objects of the devices must be interlinked to ensure that the running direction can be changed correctly.	

Command sequence	**Step - Up/down - Step** Up/down - Step Step - Up/down Step - Up/down or step
For Venetian blind control, four different operating concepts can be selected. For these concepts, the ETS shows further parameters.	

Long button actuation from (t1)	**0** ... 59 s | 100 ... **400** ... 990 ms
This parameter sets the time after which the long-time operation will be evaluated on pressing the button. This parameter is not visible for the "command sequence = Up/down - Step"	

Time window for slat adjustment (t2)	**0** ... 59 s | 0 ... **500** ... 990 ms
The time during which a transmitted MOVE telegram can be terminated by releasing the button (STEP) is set here. This function serves to adjust the slats of a venetian blind. This parameter is not visible for the "command sequence = Step - Up/down"	

Show info graphic	**Active** Inactive
With activated info graphic, the graphic diagram of the command sequence and related text information are displayed.	

Full-surface operation	Active **Inactive**
When the full-surface operation is activated, the ETS shows the following parameters. Full-surface operation can be configured only if operating concept = "rocker function" and command sequence = "Step - Up/down or step"!	

Function	**Switching** Scene extension
In case of full-surface operation, this parameter defines the function that is to be used. The ETS shows the corresponding communication object and the other parameters. This parameter is only visible if "Full-surface actuation = Active"!	

Command	ON OFF **TOGGLE**
This parameter defines the value of the transmitted telegram when a full-surface operation has been sensed. "TOGGLE" changes over the current object value. This parameter is only visible if "function for full-surface operation = Switching"!	

Short button actuation for scene extension	**Recall scene** Switch over scene
Whether a scene is called up or two scenes are switched to and fro when the full surface of the button is pressed is set here. This parameter is visible only if "function in the event of full-surface operation = scene extension"!	

Scene number	**1**, 2 ... 64
This parameter defines the scene number, which is to be transmitted to the bus after a scene recall or during storage of a scene. If switching a scene is configured, you can switch between two scene numbers each time you press the full surface of the button. This parameter is visible only with "function in the event of full-surface operation = scene extension" and the "Recall scene" setting!	

First scene number	**1**, 2 ... 64
The first of two scene numbers that you can switch between when pressing the full surface of the button is selected here. This parameter is visible only with "function in the event of full-surface operation = scene extension" and the "Switch over scenes" setting.	

Second scene number	1, **2** ... 64
The second of two scene numbers that you can switch between when pressing the full surface of the button is selected here. This parameter is visible only with "function in the event of full-surface operation = scene extension" and the "Switch over scenes" setting.	

Long button operation	**No reaction** Memory function
Storage function: sends a request to the receiver to store his current state in this scene if the button is pressed and held (5 s). This parameter is visible only if "function in the event of full-surface operation = scene extension"!	

11.3.2 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
261, 265, ..., 321	Venetian blind - Short time operation	Button/rocker *n* - output	1-bit	1.007	C, R, -, T, A
1-bit object for the transmission of telegrams with which a venetian blind or shutter drive motor can be stopped or with which the blind slats can be adjusted by short time operation.					

Object no.	Function	Name	Type	DPT	Flag
262, 266, ..., 322	Venetian blind - Long time operation	Button/rocker *n* - output	1-bit	1.008	C, R, -, T, A
1-bit object for the transmission of telegrams with which a venetian blind or shutter drive motor can be can be moved upwards or downwards.					

Object no.	Function	Name	Type	DPT	Flag
121, 125, ..., 149	Switching	Rocker *n* - Full-surface operation - Output	1-bit	1.001	C, R, -, T, A
1-bit object for the transmission of switching telegrams (ON, OFF) when there is full-surface operation.					

Object no.	Function	Name	Type	DPT	Flag
122, 126, ..., 150	Switching - Status	Rocker *n* - Full-surface operation - Input	1-bit	1.001	C, -, W, -, U
1-bit object for receiving status telegrams (ON, OFF) with full-surface operation.					

Object no.	Function	Name	Type	DPT	Flag
622, 627, ..., 650	Scene extension - Scene number	Rocker *n* - Full-surface operation - Output	1-byte	18.001	C, R, -, T, A
1-byte object for recalling, switching over or storing one of a maximum of 64 scenes at a scene push-button sensor with full-surface operation.					

11.4 Value transmitter

With the "value transmitter" function, the device sends parameterised values to the bus at the press of a button. In case of a rocker function, different values can be configured for both buttons.

Value ranges

The value transmitter knows 14 different value ranges. The parameter "Data point type | Value range" determines the value range used by the value transmitter, depending on the application case:

Function	Function	Lower numerical limit	Upper numerical limit
1-byte value transmitter	0...100%	0%	100%
1-byte value transmitter	0...255	0	255
1-byte value transmitter	0…360°	0°	360°
1-byte value transmitter	0...255%	0%	255%
1-byte value transmitter	-128...127	-128	127
2-byte value transmitter	0...65535	0	65535
2-byte value transmitter	Colour temperature value	1000 K	10000 K
2-byte value transmitter	-32768...32767	-32768	32767
2-byte value transmitter	Temperature value	0 °C	40 °C
2-byte value transmitter	Brightness value	0 lux	1500 lux
6-byte value transmitter	Colour temperature value + brightness	1000 K | 0%	10000 K | 100%
3-byte value transmitter	RGB/HSV with colour wheel sequence	#000000	#FFFFFF
6-byte value transmitter	RGB/HSV with brightness adjustment	#000000 + 0	#FFFFFF + 255
6-byte value transmitter	Colour value RGBW/HSVW	#000000 + 0	#FFFFFF + 255

For each of these ranges, the value that can be transmitted to the bus for each button actuation is configurable.

Value adjustment

If the value adjustment feature is activated in the ETS, the button for adjusting the value must be kept depressed longer than the configured time period after pressing the button until the start of the adjustment in order to vary the current value of the value transmitter. The value adjustment function continues to be active until the button is released again.

- With the 1-byte and 2-byte value transmitter functions the value is adjusted across the entire number range.
- With the 3-byte value transmitter function in the function RGB/HSV with colour wheel adjustment, the colour hue (H) is adjusted in the range from 0 to 360°.
- With the 3-byte value transmitter function in the RGB / HSV function with brightness adjustment, the brightness value (V) is adjusted in the range from 0 to 100%.

By activating the "Value adjustment" parameter, further parameters used to configure the value adjustment are displayed in the ETS.

Example 1: Value adjustment without overflow
- Data point type | value range = DPT 5.010 | 0 ... 255)
- Value when pressed = 227
- Step width = 5
- Start value = same as configured value
- Direction = toggling (alternating)
- Time between two telegrams = 0.5 s

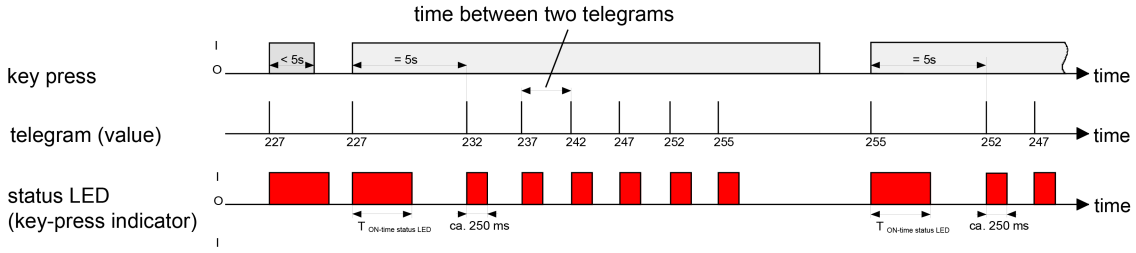

Figure 22: Example of value adjustment without value range overflow

Example 2: Value adjustment with overflow
- Data point type | value range = DPT 5.010 | 0 ... 255
- Value when pressed = 227
- Step width = 5
- Start value = same as configured value
- Direction = toggling (alternating)
- Time between two telegrams = 0.5 s

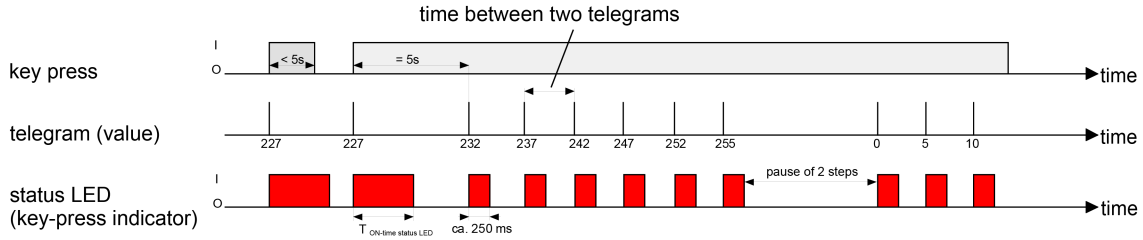

Figure 23: Example of value adjustment with value range overflow

The value adjustment is not available for the data point type | value range "colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)" and "DPT 249.600 | colour temperature value + brightness".

During a value adjustment, the newly adjusted values are only in the volatile RAM memory of the extension module. The stored values are thereby replaced by the preset values programmed in the ETS when a reset of the device occurs (bus voltage failure or ETS programming).

During a value adjustment, a status LED parameterised for the "actuation display" function flashes for each newly sent value if this button is assigned to the status LED for value adjustment.

If the starting value of the communication object is used, it may happen in this case during value adjustment that the value last received via the object must be rounded and adapted before a new value can be calculated on the basis of the step width and transmitted. Due to the computation procedure used, the new calculation of the value may be slightly inaccurate.

11.4.1 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Data point type | Value range	DPT 5.001 | 0 ... 100% **DPT 5.010 | 0 ... 255** DPT 5.003 | 0 ... 360° DPT 5.004 | 0 ... 255% DPT 6.010 | -128 ... 127 DPT 7.001 | 0 ... 65535 DPT 7.600 | 1000 ... 10000 K DPT 8.001 | -32768 ... 32767 DPT 9.001 | 0 ... 40 °C DPT 9.004 | 0 ... 1500 lux DPT 249.600 | Colour temperature value + brightness RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) Colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)
The "value transmitter" function distinguishes between 1-byte, 2-byte 3-byte and 6-byte values. The following parameters and their settings depend on the setting for this parameter.	

Value when pressed	**0** ... 100%
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 5.001 | 0 ... 100%".	

Value when pressed	**0** ... 255
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 5.010 | 0 ... 255".	

Value when pressed	**0** ... 360°
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 5.003 | 0 ... 360°".	

Value when pressed	**0** ... 255%
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 5.004 | 0 ... 255%".	

Value when pressed	-128...**0** ...127
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 6.010 | -128 ... 127".	

Value when pressed	**0** ... 65535
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 7.001 | 0 ... 65535".	

Colour temperature value when pressed	1000 ... **2700** ... 10000 K
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 7.600 | 1000 ... 10000 K".	

Value when pressed	-32768 ... **0** ... 32767
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 8.001 | -32768 ... 32767".	

Temperature value when pressed	0 ... **20** ... 40 °C
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 9.001 | 0 ... 40°C".	

Brightness value when pressed	0, 50 ... **300** ... 1500 lux
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 9.004 | 0 ... 1500 lux".	

Colour temperature value when pressed	1000 ... **2700** ... 10000 K
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 249.600 | colour temperature value + brightness".	

Brightness value when pressed	**0** ... 100%
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 249.600 | colour temperature value + brightness".	

Adjustment duration in the actuator	0 ... 100 min, 0, **1** ... 59 s, 0 ... 900 ms
This parameter defines the object value when the button is pressed. It is visible only if "data point type | value range = DPT 249.600 | colour temperature value + brightness".	

Colour value when pressed	#000000 ... **#FFFFFF**
This parameter determines the object values of the value transmitter 3-byte (or value transmitter 6-byte), brightness value (V), saturation (S) and colour hue (H) objects when the button is pressed. It is visible with "data point type | value range = RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)", "data point type | value range = RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)" and "data point type | value range = colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)". The value (RGB/HSV) is configured by means of a colour picker. With the data point type | value range "colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)", the white value is configured by means of a separate slider.	

White value	0 ... **255**
This parameter defines the object value of the white level (W) object when the button is pressed. It is visible only if "data point type | value range = colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)".	

Value adjustment	Active **Inactive**
If the value adjustment is activated, the ETS shows further parameters. If a status LED is configured for the "actuation display" function and is assigned to the button for value adjustment, then this flashes during a value adjustment. The status LED symbolises that a new telegram has been transmitted. The value adjustment is not available for the data point type | value range "colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)" and "DPT 249.600 | colour temperature value + brightness".	

Start value	same as configured value Same as value after last adjustment **Same as value from communication object**

Value adjustment can begin with different starting values.

With "same as configured value": The device always starts with the value configured in the ETS each time the button is pressed.

With "same as value after last adjustment": The device starts with the value it transmitted last when the button is pressed.

With "same as value from communication object": The device starts with the value transmitted last by itself or another device with this group address when the button is pressed.

This parameter is visible only if "value adjustment = active"!

The start value of the value adjustment is different for both buttons of a rocker if the setting is "same as value after last adjustment". If the value adjustment works for both buttons of a rocker and the last rocker adjustment is to be taken into account, the setting "same as value from communication object" must be configured.

This selection is available only with the data point type | value range: "DPT 5.001 | 0 ... 100%", "DPT 5.010 | 0 ... 255", "DPT 5.003 | 0 ... 360°", "DPT 5.004 | 0 ... 255%", "DPT 6.010 | -128 ... 127", "DPT 7.001 | 0 ... 65535", "DPT 7.600 | 1000 ... 10000 K", "DPT 8.001 | -32768 ... 32767", "DPT 9.001 | 0 ... 40 °C", "DPT 9.004 | 0 ... 1500 lux"

Starting value in case of value adjustment	**same as configured value** Same as value after last adjustment same as value from feedback object (1-byte colour hue/H-value) same as value on feedback object (1-byte brightness/V-value) as value from feedback object (3-byte RGB)

Value adjustment can begin with different starting values.

With "same as configured value": The device always starts with the value programmed by the ETS each time the button is pressed.

With "same as value after last adjustment": The device starts with the value it transmitted last when the button is pressed.

With "same as value on feedback object (1-byte colour hue/H-value)": The device starts with the value transmitted last by itself or another device with this group address when the button is pressed.
Available only with the data point type | value range: "RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)"

With "same as value on feedback object (1-byte brightness/V value)": The device starts with the value sent last by itself or another device with this group address when the button is pressed.
Available only with the data point type | value range: "RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)"

With "same as value from feedback object (3-byte RGB)": The device starts with the value transmitted last by itself or another device with this group address when the button is pressed.

This parameter is visible only if "value adjustment = active"!

i The start value of the value adjustment is different for both buttons of a rocker if the setting is "same as value after last adjustment". If the value adjustment works for both buttons of a rocker and the last rocker adjustment is to be taken into account, the setting "same as value from feedback object ..." must be configured.

i This selection is available only with the data point type | value range: "RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)", "RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".

Direction of value adjustment	Upwards Downwards **Toggling (alternating)**
When operated, the device can either adjust the values always in the same direction or store the direction of the last adjustment and reverse it the next time the button is pressed. This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "DPT 5.001 | 0 ... 100%", "DPT 5.010 | 0 ... 255", "DPT 5.003 | 0 ... 360°", "DPT 5.004 | 0 ... 255%", "DPT 6.010 | -128 ... 127", "DPT 7.001 | 0 ... 65535", "DPT 7.600 | 1000 ... 10000 K", "DPT 8.001 | -32768 ... 32767", "DPT 9.001 | 0 ... 40 °C", "DPT 9.004 | 0 ... 1500 lux"	

Direction of the colour sequence	**Colour sequence in clockwise direction (red -> green -> blue -> red -> ...)** Colour sequence in anti-clockwise direction (red -> blue -> green -> red -> ...) Toggling colour sequence (alternating with each new rising edge)
When operated, the device can either adjust the values always in the same direction or store the direction of the last adjustment and reverse it the next time the button is pressed. This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".	

Direction of the brightness adjustment	**Brighter** Darker Toggling (alternating)
When operated, the device can either adjust the values always in the same direction or store the direction of the last adjustment and reverse it the next time the button is pressed. This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".	

Step width	1...**15**
In a value adjustment, the device determines the new telegram value from the previous value and the preset step width. If the value falls below the lower limit of the adjustment range or if it exceeds the upper limit, the sensor adapts the step width of the last step automatically. This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "DPT 5.001 | 0 ... 100%", "DPT 5.010 | 0 ... 255", "DPT 5.003 | 0 ... 360°", "DPT 5.004 | 0 ... 255%", "DPT 6.010 | -128 ... 127", "RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".	

Step width	1, 2, 5, 10, 20, 50, 75, **100**, 200, 500, 750, 1000
In a value adjustment, the device determines the new telegram value from the previous value and the preset step width. If the value falls below the lower limit of the adjustment range or if it exceeds the upper limit, the sensor adapts the step width of the last step automatically. This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "DPT 7.001 | 0 ... 65535", "DPT 8.001 | -32768 ... 32767".	

Step width	0.5, **1** ... 40
This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "DPT 9.001 | 0 ... 40°C".	

Step width	1, 10, 20 ... **500** ... 1000
This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "DPT 7.600 | 1000 ... 10000 K".	

Step width	1 ... **50** ... 1500 lux
This parameter is visible only if "value adjustment = active"! This value range is only available for the following functions: 2-byte brightness value.	

Step width	**1**, 2, 4, 5, 10, 20, 25, 30, 50, 60
In a value adjustment, the device determines the new telegram value from the previous value and the preset step width. If the value falls below the lower limit of the adjustment range or if it exceeds the upper limit, the sensor adapts the step width of the last step automatically. This parameter is visible only if "value adjustment = active"! i This selection is available only with the data point type | value range: "RGB/ HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".	

Value adjustment starts after button is pressed	0.5 s 1 s 2 s 3 s **5 s**
This parameter determines the time from when the device starts the value adjustment after a key is pressed. This parameter is visible only if "value adjustment = active"!	

Time between two telegrams	**0.5 s** 1 s 2 s 3 s
This parameter defines the interval at which the device transmits new telegrams during a value adjustment. This parameter is visible only if "value adjustment = active"!	

Value adjustment with overflow	Active **Inactive**
If value adjustment is to be effected without overflow (setting "inactive") and if the device reaches the lower limit of the adjustment range or the upper limit during value adjustment, the adjustment will be stopped automatically by the sensor. If the value adjustment with overflow is programmed (setting "active") and if the device reaches the lower or the upper limit, it will transmit the value of this range limit and then add a pause the duration of which corresponds to two levels. Thereafter, the device transmits a telegram with the value of the other range limit and continues the value adjustment in the same direction.	

11.4.2 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - 0...100%	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object for the transmission of values from 0 to 100%. i These objects are visible only if "data point type | value range = DPT 5.001 | 0 ... 100%".					

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - 0...255	Button/rocker *n* - output	1-byte	5.010	C, R, -, T, A
1-byte object for the transmission of values from 0 to 255. i These objects are visible only if "data point type | value range = DPT 5.010 | 0 ... 255".					

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - 0...360°	Button/rocker *n* - output	1-byte	5.003	C, R, -, T, A
1-byte object for the transmission of values from 0 to 360°. i These objects are visible only if "data point type | value range = DPT 5.003 | 0 ... 360°".					

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - 0...255%	Button/rocker *n* - output	1-byte	5.004	C, R, -, T, A
1-byte object for the transmission of values from 0 to 255%. i These objects are visible only if "data point type | value range = DPT 5.004 | 0 ... 255%".					

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter -128...127	Button/rocker *n* - output	1-byte	6.010	C, R, -, T, A
1-byte object for the transmission of values from -128 to 127. i These objects are visible only if "data point type | value range = DPT 6.010 | -128 ... 127".					

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - 0...65535	Button/rocker *n* - output	2-byte	7.001	C, R, -, T, A

2-byte object for the transmission of values from 0 to 65535.

i These objects are visible only if "data point type | value range = DPT 7.001 | 0 ... 65535".

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - Colour temperature value	Button/rocker *n* - output	2-byte	7.600	C, R, -, T, A

2-byte object for transmitting colour temperatures from 1000 to 10000 Kelvin.

i These objects are visible only if "data point type | value range = DPT 7.600 | 1000 ... 10000 K".

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter -32768...32767	Button/rocker *n* - output	2-byte	8.001	C, R, -, T, A

2-byte object for the transmission of values from -32768 to 32767.

i These objects are visible only if "data point type | value range = DPT 8.001 | -32768 ... 32767".

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - Temperature value	Button/rocker *n* - output	2-byte	9.001	C, R, -, T, A

2-byte object for transmitting temperature values from 0 to 40 °C.

i These objects are visible only if "data point type | value range = DPT 9.001 | 0 ... 40°C".

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - Brightness value	Button/rocker *n* - output	2-byte	9.004	C, R, -, T, A

2-byte object for transmitting brightness values from 0 to 1500 Lux.

i These objects are visible only if "data point type | value range = DPT 9.004 | 0 ... 1500 lux".

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - RGB/HSV (colour wheel sequence)	Button/rocker *n* - output	3-byte	232.600	C, R, -, T, A

3-byte object for transmitting 3-byte colour information.

i These objects are visible only if "data point type | value range = RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".

Object no.	Function	Name	Type	DPT	Flag
334, 346, ..., 514	Value transmitter - Colour hue (H)	Button/rocker *n* - output	1-byte	5.003	C, R, -, T, A

1-byte object for transmitting the colour hue.

i These objects are visible only with data point type | value range:

- RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- Colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)

Object no.	Function	Name	Type	DPT	Flag
335, 347, ..., 515	Value transmitter - Saturation (S)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A

1-byte object for transmitting the saturation.

i These objects are visible only with data point type | value range:

- RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- Colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)

Object no.	Function	Name	Type	DPT	Flag
336, 348, ..., 516	Value transmitter - brightness value (V)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A

1-byte object for transmitting the brightness value.

These objects are visible only with data point type | value range:

- RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- Colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)

Object no.	Function	Name	Type	DPT	Flag
337, 349, ..., 517	Value transmitter - White value (W)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A

1-byte object for transmitting the white level.

These objects are visible only with data point type | value range: colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001).

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - RGB/HSV (brightness adjustment)	Button/rocker *n* - output	3-byte	232.600	C, R, -, T, A

3-byte object for transmitting 3-byte colour information.

These objects are visible only with data point type | value range: RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001).

Object no.	Function	Name	Type	DPT	Flag
333, 345, ..., 513	Value transmitter - RGBW	Button/rocker *n* - output	6-byte	251.600	C, R, -, T, A

6-byte object for transmitting 6-byte colour information.

These objects are visible only with data point type | value range: colour value RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001).

Object no.	Function	Name	Type	DPT	Flag
339, 351, ..., 519	Value transmitter - Brightness value (V) status	Button/rocker *n* - input	1-byte	5.001	C, -, W, -, U
1-byte object for receiving the brightness value. i These objects are only visible with the following configuration: - Data point type | value range: RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) - "Starting value" parameter = same as value from feedback object (1-byte brightness/V value)					

Object no.	Function	Name	Type	DPT	Flag
339, 351, ..., 519	Value transmitter - Colour hue (H) status	Button/rocker *n* - input	1-byte	5.003	C, -, W, -, U
1-byte object for receiving the colour hue. i These objects are only visible with the following configuration: - Data point type | value range: RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) - "Starting value" parameter = same as value from feedback object (1-byte/ colour hue/H value)					

Object no.	Function	Name	Type	DPT	Flag
339, 351, ..., 519	Value transmitter - RGB - Status	Button/rocker *n* - input	3-byte	232.600	C, -, W, -, U
3-byte object for receiving 3-byte colour information. i These objects are only visible with the following configuration: - Parameter: data point type | value range: RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001), RGB/ HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001). - "Starting value" parameter = same as value from feedback object (3-byte RGB)					

11.5 Scene extension

Like the scene function, the "Call up internal scene" setting option can be used from firmware version 1.0.2 and from version 2.2 of the ETS application programme.

For each rocker or button whose function is set to "scene extension", the ETS shows the command "short button actuation" and "long button actuation".

In the scene extension function, the device calls either one of the eight internal device scenes or sends a preset scene number (1…64) via the "scene extension" communication object to the bus after pressing the button briefly. This makes it possible to call or switch over scenes stored in other devices.

Setting options when button is pressed briefly:

- Recall internal scene: leads to the retrieval of an internal scene (1...8).
- Recall scene: results in simply recalling the scene (1...64).
- Switch over scene: The two entered scene numbers (1...64) are switched to and from each time the button is briefly pressed.

The "Call up internal scene" selection option can only be parameterised if the "Scene function" is activated on the "General" parameter page.

Setting options when button is pressed and held:

- No reaction
- Storage function: A storage command is generated by a button actuation for more than five seconds. In the scene extension function, a storage telegram is in this case transmitted to the bus. The internal scene is stored. The internal scene control module will then request the current scene values for the actuator groups used from the bus.

A button actuation lasting between one and five seconds will be discarded as invalid.

11.5.1 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Short button operation	Recall internal scene* **Recall scene** Switch over scene
This parameter defines the functionality of the scene extension. If the device is used as a scene extension, the scenes can either be stored in one or several other KNX devices (e.g. light scene push button sensor). When a scene is recalled, the device transmits a telegram with the respective scene number via the extension object of the button. * The "Call up internal scene" selection option can only be parameterised if the "Scene function" is activated on the "General" parameter page.	

Scene number	**1**...64
In accordance with the KNX standard, objects with data type 18.001 "Scene Control" can retrieve or store up to 64 scenes by their numbers. The parameter defines the scene number to be transmitted when the button is pressed.	

Scene number	**1**...8
In accordance with the KNX standard, objects with data type 18.001 "Scene Control" can retrieve or store up to 8 internal scenes by their numbers. The parameter defines the scene number to be transmitted when the button is pressed.	

First scene number	**1**...64
In accordance with the KNX standard, objects with data type 18.001 "Scene Control" can retrieve or store up to 64 scenes by their numbers. The parameter defines the scene number to be transmitted when the button is pressed. The input of the first scene number is available only if "Switch over scene" is active in the event of the "short button actuation" command.	

Second scene number	1, **2** ... 64
In accordance with the KNX standard, objects with data type 18.001 "Scene Control" can retrieve or store up to 64 scenes by their numbers. The parameter defines the scene number to be transmitted when the button is pressed. The input of the second scene number is available only if "Switch over scene" is active in the event of the "short button actuation" command.	

Long button operation	**No reaction** Memory function
This parameter defines the functionality of the scene extension. If the device is used as a scene extension, the scenes can either be stored in one or several other KNX devices (e.g. light scene push button sensor). With activated storage function, the device transmits a telegram with the respective scene number via the extension object of the button.	

11.5.2 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
550, 554, ..., 610	Scene extension - Scene number	Button/rocker *n* - output	1-byte	18.001	C, R, -, T, A
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor.					

11.6 Short and long button operation

The "short and long button actuation" function allows two objects to be operated with one button. In some situations it is desirable to control two different functions with a single press of a button and to transmit different telegrams.

For both objects, the "short button actuation (object 1)" and "long button actuation (object 2)" function can be used to determine the communication object types to be used.

The following functions are available:

- DPT 1.001 | Switching
- DPT 5.001 | 0 ... 100%
- DPT 5.010 | 0 ... 255
- DPT 5.003 | 0 ... 360°
- DPT 5.004 | 0 ... 255%
- DPT 6.010 | -128 ... 127
- DPT 7.001 | 0 ... 65535
- DPT 8.001 | -32768 ... 32767
- DPT 9.001 | 0 ... 40 °C
- DPT 9.004 | 0 ... 1500 lux
- DPT 18.001 | Call up scene (externally)
- RGB/HSV (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)
- RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)

The object value that the device is to transmit on a button actuation can be selected depending on the selected function.

"DPT 1.001 | switching" can be used to select whether an ON or OFF telegram is to be sent or the object value is to be switched over (TOGGLE) and sent when the button is pressed.

With configuration as value transmitter ("DPT 5.001 | 0 ... 100% ..." or "DPT 7.001 | 0 ... 65535 ...") the object value can be selected within the value range.

"DPT 18.001 | Recall scene (externally)" can be used to set the scene number to be transmitted to the bus when the button is pressed.

The status LEDs can be configured independently.

Unlike in the other rocker and button functions, the application program assigns the "Telegram acknowledge" function instead of the "Actuation display" function to the status LED. In this mode, the status LED lights up for approx. 250 ms with each telegram transmitted.

Transmission behaviour, long button actuation = object 2

With this transmission behaviour, exactly one telegram is sent each time the button is pressed.

– The device sends the telegram for object 1 if the button is pressed briefly.
– The device sends the telegram for object 2 if the button is pressed longer.

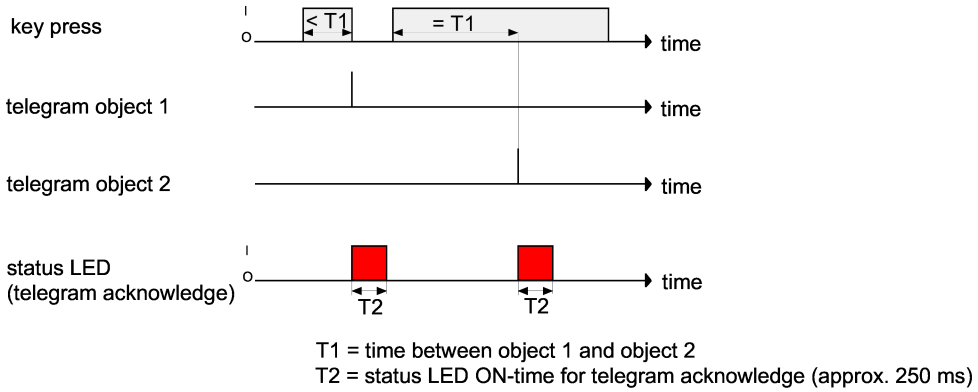

Figure 24: Example of "object 1 or object 2" operating concept

The "Long button actuation from" parameter defines the time period for distinguishing between short-time and long-time operation. If the button is pressed for shorter than the configured time, only the telegram to object 1 is sent. If the time for long button actuation is exceeded by the actuation period, only the telegram to object 2 will be sent. This concept provides the transmission of only one object. To indicate that a telegram has been transmitted, the status LED lights up for approx. 250 ms in the "Telegram acknowledge" setting.
In this operating concept, the push-button sensor will not transmit a telegram immediately after the rocker has been depressed.

Transmission behaviour, long button actuation = object 1 and object 2

With this transmission behaviour, one or alternatively two telegrams can be transmitted each time the button is pressed.

– The device will send the telegram for object 1 if the button is pressed briefly.
– The device will send the telegram for object 1 and then the telegram for object 2 if the button is pressed longer.

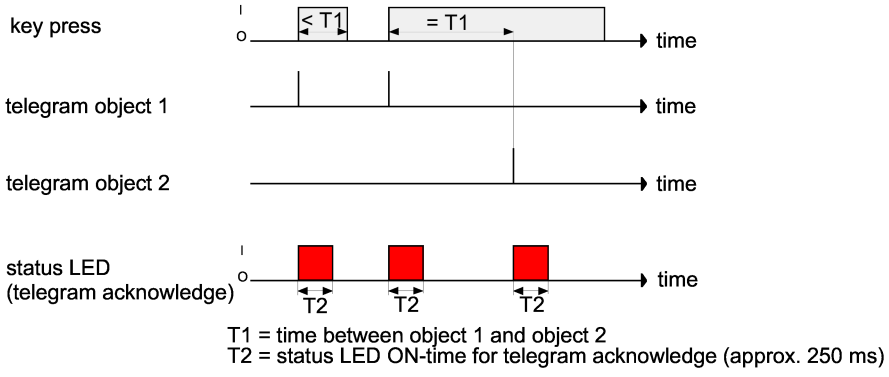

Figure 25: Example of "object 1 and object 2" operating concept

The "Long button actuation from" parameter defines the time period for distinguishing between short-time and long-time operation. The telegram to object 1 is immediately sent if the button is pressed. If the button is held depressed for the configured time, the telegram for object 2 is transmitted as well. If the button is released before the time has elapsed, no further telegram will be transmitted. This operating concept, too, offers the configurable possibility of having the transmission of a telegram signalled by the status LED (setting "Telegram acknowledge").

Full-surface operation with the "short and long button actuation" function

If a rocker is configured for "short and long button actuation", the device needs some time at the beginning of each operation to distinguish between short and long operation. When full-surface operation is enabled, the device can make use of this time span to evaluate the otherwise invalid simultaneous actuation of both buttons of a rocker.

Full-surface operation of a rocker is detected by the device when both buttons are pressed at the same time. When the device has detected a valid full-surface operation, the status LED flashes quickly at a rate of about 8 Hz for the duration of the actuation. The full-surface operation needs to have been detected before the first telegram is sent. If this is not so (e.g. one of the two buttons is pressed too late), the full-surface operation will not be correctly executed.

11.6.1 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Short button actuation (object 1)	No function **DPT 1.001 | Switching** DPT 5.001 | 0 ... 100% DPT 5.010 | 0 ... 255 DPT 5.003 | 0 ... 360° DPT 5.004 | 0 ... 255% DPT 6.010 | -128 ... 127 DPT 7.001 | 0 ... 65535 DPT 8.001 | -32768 ... 32767 DPT 9.001 | 0 ... 40 °C DPT 9.004 | 0 ... 1500 lux DPT 18.001 | Call up scene (externally) RGB/HSV (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)
This parameter determines the function of the short button actuation and defines the other parameters and communication objects to be displayed.	

Long button actuation (object 2)	No function **DPT 1.001 | Switching** DPT 5.001 | 0 ... 100% DPT 5.010 | 0 ... 255 DPT 5.003 | 0 ... 360° DPT 5.004 | 0 ... 255% DPT 6.010 | -128 ... 127 DPT 7.001 | 0 ... 65535 DPT 8.001 | -32768 ... 32767 DPT 9.001 | 0 ... 40 °C DPT 9.004 | 0 ... 1500 lux DPT 18.001 | Call up scene (externally) RGB/HSV (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)
This parameter determines the function of the long button actuation and defines the other parameters and communication objects to be displayed.	

Short button actuation (object 1) Long button actuation (object 2)	ON OFF **TOGGLE**
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 1.001 | switching".	

Value	**0**...100
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 5.001 | 0 ... 100%".	

Value	**0**...255
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 5.010 | 0 ... 255".	

Value	**0**...360
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 5.003 | 0 ... 360°".	

Value	**0**...255
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 5.004 | 0 ... 255%".	

Value	-128...**0**...127
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 6.010 | -128 ... 127".	

Value	**0**...65535
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 7.001 | 0 ... 65535".	

Value	-32768...**0**...32767
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 8.001 | -32768 ... 32767".	

Temperature value	0...**20**...40
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 9.001 | 0 ... 40°C".	

Brightness value	0...**300**...1500
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function of object 1 (2) = DPT 9.004 | 0 ... 1500 lux".	

Scene number	**1**...64
This parameter defines the object value transmitted to the bus when the button is pressed. It is visible only if "function = DPT 18.001 | Recall scene (externally)".	

Colour value	**#000000** ... #FFFFFF
This parameter determines the object values of the colour hue (H), saturation (S), brightness value (V), which is transmitted to the bus when the button is pressed. It is visible if "function = RGB/HSV (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)".	

White value	**0** ... 255
This parameter defines the object value of the white level (W) object when the button is pressed. It is visible only if "function = RGBW/HSVW (RGBW: DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001)".	

Long button operation from	0...**3**...25 s | 0...990 ms
This parameter defines the interval at which the device transmits the telegram for object 1 and the telegram for object 2, depending on the selected transmission behaviour. A time from 100 ms to 25.5 s can be set.	

Full-surface operation	Active **Inactive**
When the full-surface operation is activated, the ETS shows the following parameters. Full-surface operation can be configured only if "operating concept = rocker function"!	

Function	**Switching** Scene extension
In case of full-surface operation, this parameter defines the function that is to be used. The ETS shows the corresponding communication object and the other parameters. This parameter is only visible if "Full-surface actuation = Active"!	

Command	ON OFF **TOGGLE**
This parameter defines the value of the transmitted telegram when a full-surface operation has been sensed. "TOGGLE" changes over the current object value. This parameter is visible only if "function = switching"!	

Short button operation	**Recall scene** Switch over scene
This parameter defines the functionality of the scene extension. If the device is used as a scene extension, the scenes can either be stored in one or several other KNX devices (e.g. light scene push button sensor). When a scene is recalled, the device transmits a telegram with the respective scene number via the extension object of the button. This parameter is visible only if "function = scene extension"!	

Scene number (1 … 64)	**1** ... 64
This parameter defines the scene number, which is to be transmitted to the bus after a scene recall or during storage of a scene. This parameter is only visible if "function for full-surface operation = scene recall ..."!	

First scene number (1 … 64)	**1** ... 64
This parameter defines the scene number, which is to be transmitted to the bus after a scene recall or during storage of a scene. This parameter is only visible if "function for full-surface operation = scene recall ..."! The input of the first scene number is available only if "Switch over scene" is active in the event of the "short button actuation" command.	

Second scene number (1 … 64)	1, **2** ... 64
This parameter defines the scene number, which is to be transmitted to the bus after a scene recall or during storage of a scene. This parameter is only visible if "function for full-surface operation = scene recall ..."! The input of the second scene number is available only if "Switch over scene" is active in the event of the "short button actuation" command.	

Long button operation	**No reaction** Memory function
It can be set here whether the scene is to be stored when a button is pressed and held. This parameter is visible only if "function = scene extension"!	

11.6.2 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Switching	Button/rocker *n* - output	1-bit	1.001	C, R, -, T, A
1-bit object to send switching telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Switching	Button/rocker *n* - output	1-bit	1.001	C, R, -, T, A
1-bit object to send switching telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value 0...100%	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value 0...100%	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value 0...255	Button/rocker *n* - output	1-byte	5.010	C, R, -, T, A
1-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value 0...255	Button/rocker *n* - output	1-byte	5.010	C, R, -, T, A
1-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value 0...360°	Button/rocker *n* - output	1-byte	5.003	C, R, -, T, A
1-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value 0...360°	Button/rocker *n* - output	1-byte	5.003	C, R, -, T, A
1-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value 0...255%	Button/rocker *n* - output	1-byte	5.004	C, R, -, T, A
1-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value 0...255%	Button/rocker *n* - output	1-byte	5.004	C, R, -, T, A
1-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value -128...127	Button/rocker *n* - output	1-byte	6.010	C, R, -, T, A
1-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value -128...127	Button/rocker *n* - output	1-byte	6.010	C, R, -, T, A
1-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value 0...65535	Button/rocker *n* - output	2-byte	7.001	C, R, -, T, A
2-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value 0...65535	Button/rocker *n* - output	2-byte	7.001	C, R, -, T, A
2-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Value -32768...32767	Button/rocker *n* - output	2-byte	8.001	C, R, -, T, A
2-byte object to send value telegrams if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Value -32768...32767	Button/rocker *n* - output	2-byte	8.001	C, R, -, T, A
2-byte object to send value telegrams if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Temperature value	Button/rocker *n* - output	2-byte	9.001	C, R, -, T, A
2-byte object to send temperature values if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Temperature value	Button/rocker *n* - output	2-byte	9.001	C, R, -, T, A
2-byte object to send temperature values if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Brightness value	Button/rocker *n* - output	2-byte	9.004	C, R, -, T, A
2-byte object to transmit brightness values if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Brightness value	Button/rocker *n* - output	2-byte	9.004	C, R, -, T, A
2-byte object to send brightness values if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Scene number 1...64	Button/rocker *n* - output	1-byte	18.001	C, R, -, T, A
1-byte object to send scene values if the button is briefly pressed (object 1).					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Scene number 1...64	Button/rocker *n* - output	1-byte	18.001	C, R, -, T, A
1-byte object to send scene values if the button is pressed and held (object 2).					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Colour value (RGB)	Button/rocker *n* - output	3-byte	232.600	C, R, -, T, A
3-byte object to send RBG values if the button is briefly pressed (object 1). This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Colour value (RGB)	Button/rocker *n* - output	3-byte	232.600	C, R, -, T, A
3-byte object to send RBG values if the button is pressed and held (object 2). This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
653, 669 ..., 893	Short and long button actuation - Object 1 - Colour value (RGBW)	Button/rocker *n* - output	6-byte	251.600	C, R, -, T, A
6-byte object to send RBGW values if the button is briefly pressed (object 1). This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
654, 670, ..., 894	Short and long button actuation - Object 2 - Colour value (RGBW)	Button/rocker *n* - output	6-byte	251.600	C, R, -, T, A
6-byte object to send RBGW values if the button is pressed and held (object 2). This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
655, 671 ..., 895	Short and long button actuation - Object 1 - Red colour value	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the red colour value if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
659, 675 ..., 899	Short and long button actuation - Object 2 - Red colour value	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the red colour value if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
656, 672 ..., 896	Short and long button actuation - Object 1 - Green colour value	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the green colour value if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
660, 676 ..., 900	Short and long button actuation - Object 2 - Green colour value	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the green colour value if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
657, 673 ..., 897	Short and long button actuation - Object 1 - Blue colour value	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the blue colour value if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
661, 677 ..., 901	Short and long button actuation - Object 2 - Blue colour value	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the blue colour value if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
655, 671 ..., 895	Short and long button actuation - Object 1 - Colour hue (H)	Button/rocker *n* - output	1-byte	5.003	C, R, -, T, A
1-byte object to send the colour hue if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
659, 675 ..., 899	Short and long button actuation - Object 2 - Colour hue (H)	Button/rocker *n* - output	1-byte	5.003	C, R, -, T, A
1-byte object to send the colour hue if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
656, 672 ..., 896	Short and long button actuation - Object 1 - Saturation (S)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the saturation if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
660, 676 ..., 900	Short and long button actuation - Object 2 - Saturation (S)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the saturation if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
657, 673 ..., 897	Short and long button actuation - Object 1 - Brightness value (V)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the brightness value if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
661, 677 ..., 901	Short and long button actuation - Object 2 - Brightness value (V)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the brightness value if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
658, 674 ..., 898	Short and long button actuation - Object 1 - White value (W)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the white value if the button is briefly pressed (object 1). This object is visible only if "colour control = individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
662, 678 ..., 902	Short and long button actuation - Object 2 - White value (W)	Button/rocker *n* - output	1-byte	5.001	C, R, -, T, A
1-byte object to send the white value if the button is pressed and held (object 2). This object is visible only if "colour control = individual object: HSVW" was selected.					

Object no.	Function	Name	Type	DPT	Flag
121, 125 ... 149	Switching	Button/rocker *n* - Full-surface operation - Output	1-bit	1.001	C, R, -, T, A
1-bit object for the transmission of switching telegrams (ON, OFF) when there is full-surface operation.					

Object no.	Function	Name	Type	DPT	Flag
122, 126 ... 150	Switching status	Button/rocker *n* - Full-surface operation - Input	1-bit	1.001	C, R, -, T, A
1-bit object for receiving feedback telegrams (ON, OFF) for full-surface operation.					

Object no.	Function	Name	Type	DPT	Flag
622, 627 ... 650	Scene extension	Button/rocker *n* - Full-surface operation - Output	1-byte	18.001	C, R, -, T, A
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor in case of full-surface operation.					

11.7 Room temperature control point

The "room temperature control point" button or rocker function can be used to control a KNX room temperature controller.

The room temperature control point itself is not involved in the temperature control process. With it, the user can operate the single-room regulation from different places in the room. The room temperature control point can also be used to control central heating control devices located, for example, in a sub-distribution unit.

Typical KNX room temperature controllers generally offer different ways of influencing the room temperature control:

- Operating mode switchover:
  Switching over between different modes of operation (e.g. "Comfort", "Night" ...) with different setpoint temperatures assigned to each mode by the controller.
- Presence function:
  Signalling the presence of a person in a room. The signalling may also be combined with a configured switchover in the mode of operation.
- Setpoint temperature shift:
  Adjustment of the setpoint temperature via a temperature offset (DPT 9.002) or via levels (DPT 6.010).

The room temperature control point is operated with the button functions of the device. In this way, it is possible to completely control a room temperature controller by changing the operating mode, specifying the presence function or adjusting the target temperature shift.

In addition, the device can – also independently of the room temperature control point function – indicate the state of one or more room temperature controllers with the status LEDs of the rockers or buttons. This feature permits the indication of operating modes or the bit-oriented evaluation of different status objects of controllers. In case of the room temperature control point function "Target temperature shift" or "Presence function", the status LEDs can also signal the state of the corresponding functions directly.

11.7.1 Operating mode switchover

Switchover of the controller operating mode can be effected in accordance with the standard function block for room temperature controllers defined in the KNX handbook using two 1-byte communication objects. The operating mode can be switched over with the normal and with the forced objects. The "Operating mode switchover" object offers a selection between the following modes:

- Comfort
- Standby
- Night
- Frost/heat protection
- Switchover: comfort/standby

- Switchover: comfort/night
- Switchover: standby/night
- Switchover: comfort/standby/night

The "Forced operating mode switchover" communication object is of higher priority. It permits forced switching between the following modes of operation:

- Auto (normal operating mode switchover)
- Comfort
- Standby
- Night
- Frost/heat protection
- Switchover: comfort/standby
- Switchover: comfort/night
- Switchover: standby/night
- Switchover: comfort/standby/night
- Switchover: auto/comfort
- Switchover: auto/standby
- Switchover: auto/night
- Switchover: auto / frost/heat protection

The operating mode transmitted to the bus when pressing the button of the room temperature control point is defined by the parameter "When pressed". Depending on the parameterised operating concept, either pressing a button activates one of the above modes (with the "rocker function" and "button function" operating concepts), or each button actuation toggles between two or three modes (only with the "rocker function" operating concept).

If a status LED is to indicate the current operating mode, the status LED function must be programmed for "Operating mode indication" and its status object be linked with the corresponding group address for operating mode change-over with normal or high priority.

11.7.2 Presence function

All operating areas whose function is set to "Presence function" have the two communication objects "Presence" and "Presence - Status". The "When pressed" parameter determines the object value transmitted to the bus in the event of button actuation.

The status LED of a presence function button can directly indicate the presence status (setting "Presence status indicator").

11.7.3 Setpoint temperature shift

Another function of the room temperature control point that is available is the target temperature shift. It makes use of either two 2-byte communication objects with datapoint type 9.002 or two 1-byte communication objects with datapoint type 6.010 (integer with sign).

This control point function allows the basic setpoint for the temperature to be shifted on a room temperature controller by pressing a button. The control point is usually operated in the same way as the main control point. A button configured as target temperature shift reduces or increases the target temperature shift value each time the button is pressed. The direction of the value adjustment is defined by the parameters "Increase setpoint temperature difference when pressed" or "Reduce setpoint temperature difference when pressed".

The status LED of a button that performs a target temperature shift can directly display the status of the target temperature shift ("Setpoint value shift indicator" setting).

Communication with main controller

To enable the device to shift the target temperature on a room temperature controller, the controller must have input and output objects for the target temperature shift. In this case, the output object of the controller must be connected to the input object of the room temperature control point, and the input object of the controller must be connected to the output object of the room temperature control point in each case via their own group address.

All objects are of the same datapoint type and have the same value range. A target temperature shift is interpreted by count values: a shift in positive direction is expressed by positive values, whereas a shift in negative direction is represented by negative object values. An object value of "0" means that no target temperature shift has been set.

The room temperature control points detect the current position of the setpoint adjustment by means of the object "RTC control point - Target temperature shift - Status" of the room temperature control point connected to the room temperature controller. Starting from the value of the communication object, the setpoint is adjusted in the configured direction each time a button is pressed on a room temperature control point. Each time the setpoint is adjusted, the new shift by means of the object "RTC control point - Target temperature shift" of the room temperature control point is sent to the room temperature regulator.

With the "by counter value" function, the individual levels are weighted by the controller itself.

This requires that the respective communication objects are connected to all room temperature control points and the controller. The feedback information from the controller enables the room temperature control point to continue the adjustment at any time at the right point.

11.7.4 Table of parameters

The following parameters are available for the individual buttons, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Function	**Operating mode switchover** Forced oper. mode switchover Presence function Setpoint temperature shift
A room temperature control point can optionally switch over (force) the operating mode with normal or high priority, change the presence status or change the current room temperature setpoint value. With regard to the setting of this parameter, the ETS shows further parameters.	

When pressed	**Comfort** Standby Night Frost/heat protection Switchover: comfort/standby Switchover: comfort/night Switchover: standby/night Switchover: comfort/standby/night
If the room temperature control point is intended to change over the operating mode of the room temperature controller with normal priority, the extension can either switch on a defined operating mode or switch between different operating modes when operated.	

When pressed	Auto (Normal operating mode switchover) **Comfort** Standby Night Frost/heat protection Switchover: comfort/standby Switchover: comfort/night Switchover: standby/night Switchover: comfort/standby/night Switchover: auto/comfort Switchover: auto/standby Switchover: auto/night Switchover: auto / frost/heat protection
If the room temperature control point is intended to switch the operating mode of the room temperature controller with high priority, the extension can either enable change-over with normal priority (auto), switch on a defined operating mode with high priority or switch different operating modes when operated.	

When pressed	Presence ON Presence OFF **Presence TOGGLE**
The room temperature control point can switch the presence state of the room temperature controller either on or off in a defined way or the extension can switch between both states ("Presence TOGGLE") by pressing the button. This parameter is only visible if "Function = presence function".	

Setpoint temperature shift	**By relative temperature value** By meter value
Depending on the setting of the "Target temperature shift" parameter, the shift takes place by means of the 2-byte communication object in accordance with KNX DPT 9.002 or KNX DPT 6.010. This parameter is visible only if "function = target temperature shift".	

When pressed	2 K 1.5 K 1 K **0.5 K** -0.5 K -1 K -1.5 K -2 K

The temperature difference is defined in Kelvin here by which the setpoint temperature will be shifted up or down when the button is pressed.
To shift the target temperature value, the room temperature control point uses the two communication objects "RTC control point - Target temperature shift" and "RTC control point - Target temperature shift - Status".
The communication object "RTC control point - Target temperature shift - Status" informs the room temperature control point about the current state of the room temperature controller. Based on this value and the parameter here, the room temperature control point calculates the new level value, which it sends to the room temperature controller via the communication object "RTC control point - Target temperature shift".

This parameter is visible only if "function = target temperature shift" and "type of target temperature shift = above relative temperature value".

When pressed	Increase setpoint temperature **Reduce setpoint temperature**

The direction of the target temperature shift is defined here at the room temperature control point.
To shift the target temperature value, the room temperature control point uses the two communication objects "RTC control point - Target temperature shift" and "RTC control point - Target temperature shift - Status".
The communication object "RTC control point - Target temperature shift - Status" informs the extension about the current state of the room temperature controller.
Based on this value and the parameter here, the room temperature control point calculates the new level value, which it sends to the room temperature controller via the communication object "RTC control point - Target temperature shift".

This parameter is visible only if "function = target temperature shift" and "type of target temperature shift = above meter value".

11.7.5 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
942, 947, ..., 1017	RTC control point - Operating mode	Button/rocker n - RTC control point - Output	1-byte	20.102	C, R, -, T, A
1-byte object for switching a room temperature controller between the Comfort, Standby, Night and Frost/heat protection operating modes. This object is only visible if "Function = operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
943, 948, ..., 1018	RTC control point - Operating mode - Status	Button/rocker n - RTC control point - Input	1-byte	20.102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Function = operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
942, 947, ..., 1017	Forced operating mode	Button/rocker n - RTC control point - Output	1-byte	20.102	C, R, -, T, A
1-byte object for switching a room temperature controller under forced control between the Automatic, Comfort, Standby, Night and Frost / heat protection operating modes. This object is only visible if "Function = forced operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
943, 948, ..., 1018	RTC control point - Operating mode - Forced - Status	Button/rocker n - RTC control point - Input	1-byte	20.102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Function = forced operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
942, 947, ..., 1017	Presence	Button/rocker n - RTC control point - Output	1-bit	1.018	C, R, -, T, A
1-bit object for changing over the presence status of a room temperature controller. This object is only visible if "Function = presence function".					

Object no.	Function	Name	Type	DPT	Flag
943, 948, ..., 1018	RTC control point - Presence - Status	Button/rocker n - RTC control point - Input	1-bit	1.018	C, -, W, -, U
1-bit object for receiving the presence status of a room temperature controller. This object is only visible if "Function = presence function".					

Object no.	Function	Name	Type	DPT	Flag
942, 947, ..., 1017	Setpoint shift	Button/rocker n - RTC control point - Output	2-byte	9.002	C, R, -, T, A
2-byte object for specification of a target temperature shift in Kelvin. The value "0" means that no shift is active . Values can be specified between -670760 K and 670760 K. This object is visible only if "function = target temperature shift" and "type of target temperature shift = above relative temperature value".					

Object no.	Function	Name	Type	DPT	Flag
943, 948, ..., 1018	Setpoint shift status	Button/rocker n - RTC control point - Input	2-byte	9.002	C, -, W, -, U
2-byte object for receiving the status of the current target temperature shift in Kelvin. This object is visible only if "function = target temperature shift" and "type of target temperature shift = above relative temperature value".					

Object no.	Function	Name	Type	DPT	Flag
942, 947, ..., 1017	Setpoint shift	Button/rocker n - RTC control point - Output	1-byte	6.010	C, R, -, T, A
1-byte object for specification of a target temperature shift. The value "0" means that no shift is active . The value is depicted in a two's complement in the positive or negative direction. This object is visible only if "function = target temperature shift" and "type of target temperature shift = above meter value".					

Object no.	Function	Name	Type	DPT	Flag
943, 948, ..., 1018	Setpoint shift status	Button/rocker n - RTC control point - Input	1-byte	6.010	C, -, W, -, U
1-byte object to receive the status of the current target temperature shift. This object is visible only if "function = target temperature shift" and "type of target temperature shift = above meter value".					

11.8 Status LED

Each operating element on the push-button sensor basic device or on the extension module has two status LEDs. The functions available differ slightly, depending on the settings of the rockers or buttons.

The configurable functions of the status LED adapt to the configured functions of the rockers or buttons.

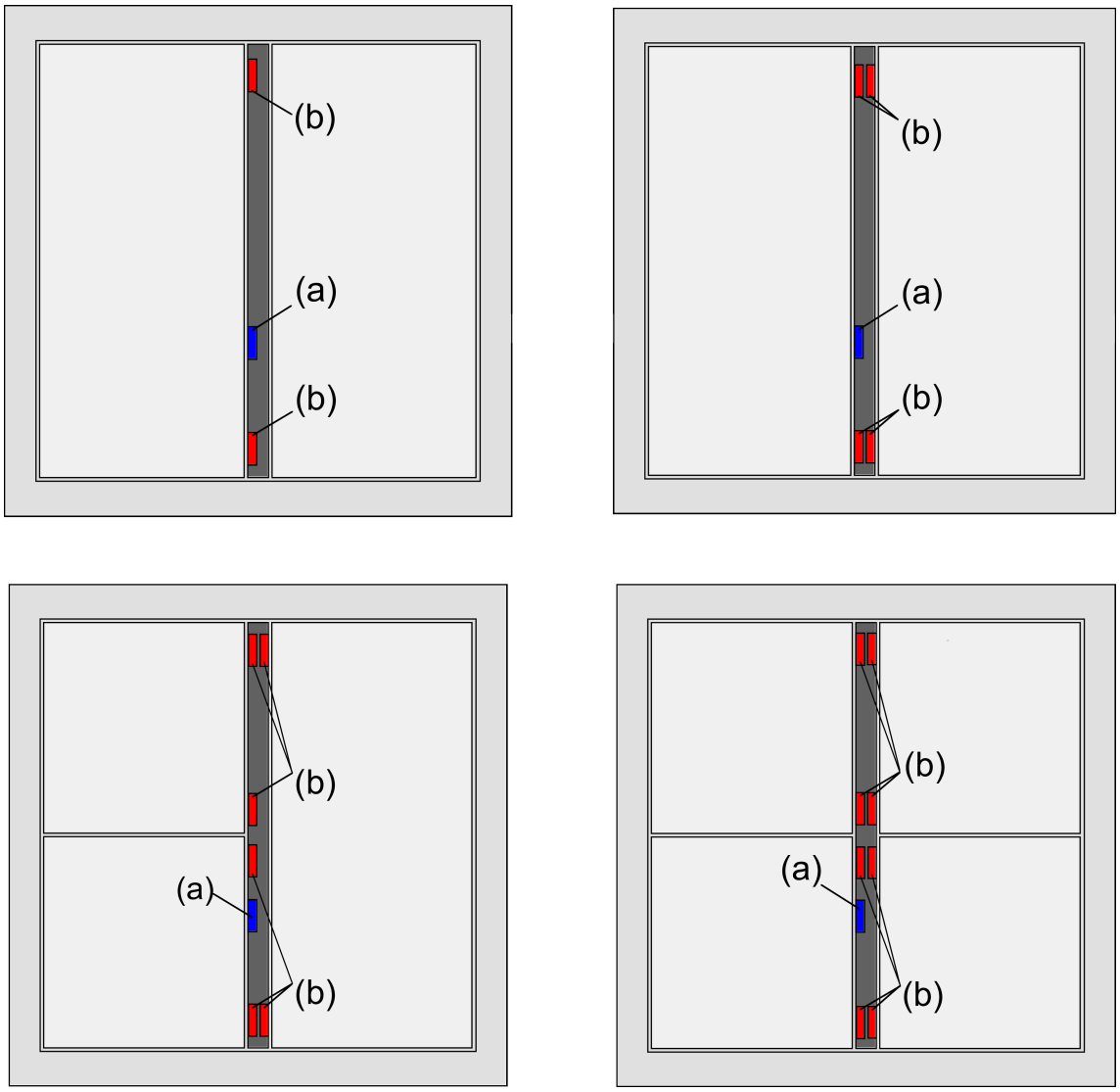

Figure 26: Position of the status LED with 1-gang, 2-gang, 3-gang and 4-gang version

(a) 2 status LEDs per rocker

(b) 1 operation LED (blue)

Independent functions of the status LED

A variety of functions of the status LED can be configured independently of the configured rocker or button function. These functions either define a fixed lighting status of the status LED or have a separate communication object.

The following functions can always be configured for each Status LED:

- always OFF
- always ON
- Control via separate LED object
- Operating mode indication
- Controller status indication
- Comparator without sign (1-byte)
- Comparator with sign (1-byte)
- Logic link
- Bit-coded evaluation

Dependent functions of the status LED

A variety of functions of the status LED can be configured depending on the configured rocker or button function.

The following functions are configurable for each Status LED depending on the configured rocker or button function:

- Button-actuation indication
- Telegram acknowledgment
- Status indication
- Inverted status indication
- Presence status indication
- Setpoint value shift indication

Besides the functions that can be set separately for each status LED, all status LEDs are also used together for LED alarm signalling.

11.8.1 Basic functions

"always OFF" or "always ON"

The corresponding status LED is always switched off or always switched on depending on the parameter setting.

"Button-actuation indication"

This function can be configured for each status LED if the rocker or button is configured to "switching", "dimming", "venetian blind", "value transmitter", "scene extension" or "room temperature control point":

- With the rocker function, each actuation of one of the two buttons is displayed.
- With the button function, the parameter "Assignment of the status LED" decides whether the actuation of both buttons or a single button is displayed.

A status LED used as button-actuation display is switched on by the device each time the corresponding rocker or button is pressed. The parameter "Light period of status LED for button-actuation indicator" on the parameter page "General -> Status LED" determines how long the status LED for all status LEDs remains on together. Even if the device only sends a telegram when you release it, the status LED lights up regardless of whether you press the rocker or button.

In the "value transmitter" device function with activated value adjustment by a long press of the button, a status LED configured for the "Actuation display" function flashes each time a new value is transmitted.

"Telegram acknowledgment"

This function can be configured for each status LED if the rocker or button is configured to "short and long button actuation":

If a status LED is used for telegram acknowledgement, the status LED lights up when both channels are transmitted for about 250 ms each.

"Status display" and "inverted status display"

These functions can be configured for each status LED if the rocker or button is parameterised to "switching" or "dimming":

With the rocker or button functions "switching" and "dimming", the status LEDs can also be connected internally to the "switching status" object and therefore signal the current switching state of the actuator group.
It is possible to indicate or evaluate the inverted object value.

After a bus reset or after ETS programming, the value of the LED object is always "OFF".

"Control via separate LED object"

Each status LED can indicate the state of a separate LED communication object. Here the LED can be switched on or off statically via the 1-bit object value received, or also activated as flashing. If multiple status LEDs are configured to "flashing" and switched on, they will flash synchronously.
It is possible to indicate or evaluate the inverted object value.

After a bus reset or after ETS programming, the value of the LED object is always "OFF".

"Operating mode indication"

In this configuration the status LED has its own 1-byte communication object.
If a status LED is to indicate the operating mode, the communication object of the status LED must be linked with the matching object of a room temperature controller (e. g. Controller status). The desired operating mode that the LED is to indicate can then be selected with the parameter "Status LED ON with". The LED is then lit up when the corresponding operating mode has been activated at the controller.

After a bus reset or after ETS programming, the value of the LED object is always "0" (automatic).

"Controller status indication"

The status LED can indicate the controller status in the data formats "KNX-compliant" or "Controller general". The KNX-compliant objects or general controller objects are offered depending on the configuration. The objects should be connected to the communication objects of the main controller with the same functions via group addresses.
The status objects combine different information. The "Status LED on with" parameter is used to select what information should be evaluated and displayed via the status LED.

The following information is available for selection with "KNX-compliant":

- Controller error status ("0" = no error / "1" = error)
- Operating mode ("0" = Cooling / "1" = Heating)
- Controller disabled ("0" = Controller enabled / "1" = Controller disabled)
- Frost alarm ("0" = Frost protection temperature exceeded / "1" = Frost protection temperature undershot)
- Heat alarm ("0" = Heat protection temperature exceeded / "1" = Heat protection temperature undershot)
- Controller inactive (Is active in the "Heating and cooling" operating mode when the measured room temperature lies within the deadband. This status information is as a rule always "0" for the individual operating modes "heating" or "cooling"! Is inactive if controller is disabled.)
- Comfort mode extension ("0" = extension inactive/ "1" = extension active)
- Window open ("0" = Window closed / "1" = Window open)

– Additional level active ("0" = Additional level inactive / "1" = Additional level active)

The following table shows the evaluation of the three KNX-compliant objects.

Status LED ON with	Object RHCC - DPT22.101	Object RTSM - DPT21.107	Object RTC - DPT22.103
Controller error status	✓ (bit 0)	☒	✓ (bit 0)
Operating mode	✓ (bit 8)	☒	✓ (bit 1)
Controller disabled	✓ (bit 12)	☒	✓ (bit 2)
Frost alarm	✓ (bit 13)	☒	✓ (bit 3)
Heat alarm	✓ (bit 14)	☒	✓ (bit 4)
Controller inactive	☒	☒	✓ (bit 5)
Additional level active	☒	☒	✓ (bit 6)
Open window	☒	✓ (bit 0)	☒
Comfort mode extension	☒	✓ (bit 3)	☒

The following information is available for selection with "Controller general":

– Comfort mode ("0" = Comfort mode inactive / "1" = Comfort mode active)
– Standby mode ("0" = Standby mode inactive / "1" = Standby mode active)
– Night mode ("0" = Night mode inactive / "1" = Night mode active)
– Frost/heat protection mode ("0" = Frost/heat protection mode inactive / "1" = Frost/heat protection mode active)
– Controller disabled ("0" = Controller enabled / "1" = Controller disabled)
– Heating / cooling ("0" = Cooling / "1" = Heating)
– Controller inactive ("0" = Controller active / "1" = Controller inactive (dead band))
– Frost alarm ("0" = no frost alarm / "1" = frost alarm)
– Normal/forced operation ("0" = Forced operation/ "1" = Normal operation)
– Comfort mode extension ("0" = no comfort extension/"1" = comfort extension)
– Window open ("0" = Window closed / "1" = Window open)
– Additional level active ("0" = Additional level inactive / "1" = Additional level active)
– Dew point alarm ("0" = Controller not disabled / "1" = Controller disabled (dew point operation))

The following table shows the evaluation of the two general objects.

Status LED ON with	Object "controller status"	Object "controller status addition"
Comfort mode	✓ (bit 0)	☒

Status LED ON with	Object "controller status"	Object "controller status addition"
Standby mode	✓ (bit 1)	☒
Night mode	✓ (bit 2)	☒
Frost/heat protection mode	✓ (bit 3)	☒
Controller disabled	✓ (bit 4)	☒
Heating / cooling	✓ (bit 5)	☒
Controller inactive	✓ (bit 6)	☒
Frost alarm	✓ (bit 7)	☒
Normal/Forced operating mode	☒	✓ (bit 0)
Comfort mode extension	☒	✓ (bit 1)
Open window	☒	✓ (bit 4)
Additional level active	☒	✓ (bit 5)
Dew point alarm	☒	✓ (bit 7)

After a bus reset or after ETS programming, the value of the LED object is always "0".

"Presence status indication" and "Inverted presence status indication"

These functions can be configured for each status LED if the rocker or button is configured to "room temperature control point" with the "presence" function.

When the presence status is indicated, the LED evaluates the value of the object "presence function status" and switches either on or off, depending on the parameter configuration in the ETS.

"Setpoint value shift indication"

This function can be configured for each status LED if the rocker or button is configured to "room temperature control point" with the "setpoint shift" function.

When a setpoint shift is indicated the LED evaluates the value of the "Current setpoint shift" object and switches either on or off, depending on the parameter configuration in the ETS.

"Comparator without sign (1-byte)" and "Comparator with sign (1-byte)"

The status LED can indicate whether a parameterized reference value is greater than, equal to or less than the 1-byte object value of the status object. This comparator can be used for unsigned (0 … 255) or for signed integers (-128 … 127). The data format of the comparison is defined by the function of the status LED.

The status LED lights up only if the comparison is "true".

After a reset or after ETS programming, the value of the LED object is always "0".

"Logic link"

The status LED indicates the initial state of the internal logic gate. The logic link is separated from the button or rocker function. The logic gate has up to 8 input objects. The inputs can optionally be OR, AND or XOR linked. The status LED is switched on if the initial state corresponds to "1".

After a bus reset or after ETS programming, the value of the LED objects is always "0".

"Bit-coded evaluation"

The bit-coded evaluation logically links individual bits. The bits to be linked are selected in the ETS. The type of evaluation (1-byte, 2-byte or 4-byte) can be parameterised for this purpose. The status LED is switched on according to the parameterised linking behaviour (AND, OR).

After a bus reset or after ETS programming, the value of the LED object is always "0".

11.8.2 Brightness settings

The brightness of all status LEDs is defined in the ETS. The "Brightness at push-button sensor basic module" parameter on the parameter page "General -> Status-LED" can be used to set the regular brightness of all status LEDs in six levels (level 0 = OFF, level 1 = dark, ..., level 5 = bright).
The brightness of the status LED on the push-button sensor extension module cannot be set and corresponds to level 5.

Brightness reduction

Optionally, the brightness of the status LED and operation LED can be changed during operation of the push-button sensor, controlled by the brightness reduction. Changing may be advisable, for example, to reduce the brightness during nighttime hours. If switching the brightness by means of the object is required, "brightness reduction" must be activated on the "General" parameter page. In this case the "brightness reduction" communication object will become visible in the ETS. As soon as a "1" telegram is received via this object, the push-button sensor switches over to the "Reduced brightness at push-button sensor basic module" configured in the ETS ("Brightness reduction" parameter page). If a "0" telegram is received via the object, the push-button sensor switches back to regular brightness.

The brightness set applies only to the push-button sensor basic module. The brightness of the status LED and operation LED cannot be changed on the push-button sensor extension module.

11.8.3 Table of parameters

The following parameters are configured on the "General" -> Status-LED" parameter page.

Light duration of status LED for button-actuation display	1 s 2 s **3 s** 4 s 5 s
This parameter defines the switch-on time the status LED is lit up to indicate actuation. The setting concerns all status LEDs whose function is set to "Button-actuation display".	

Brightness at basic module push-button sensor	Level 0 (OFF) Level 1 (dark) Level 2 Level 3 Level 4 **Level 5 (bright)**
The brightness level for all status LEDs of the push-button sensor basic module is defined here. The brightness of the status LED on the push-button sensor extension module cannot be set and corresponds to level 5.	

The following parameters are configured on the parameter pages "Status-LED *n* - function".

Function of status LED	always OFF always ON **Button-actuation indication** Telegram acknowledgment Status indication Inverted status indication Control via separate LED object Operating mode indication Controller status indication Setpoint value shift indication Presence status indication Inverted presence status indication Comparator without sign (1-byte) Comparator with sign (1-byte) Logic link Bit-coded evaluation
The ETS automatically compiles the selection of functions of the status LED depending on the set rocker or button function. Only functions that make sense in combination with the parameterised rocker or button function are offered for selection.	

The following selection of status LED basic functions can be configured for each rocker or button function.

Function of status LED	always OFF always ON Control via separate LED object Operating mode indication Controller status indication Comparator without sign (1-byte) Comparator with sign (1-byte) Logic link Bit-coded evaluation

always OFF: Irrespective of the button or rocker function, the status LED is switched off permanently.

always ON: Irrespective of the button or rocker function, the status LED is switched on permanently.

Control via separate LED object: The status LED indicates the state of its own, separate 1-bit LED object. This setting causes the additional parameter "Control of the status LED via object value" to be shown.

Operating mode display: The status LED indicates the state of a KNX room temperature controller via a separate 1-byte communication object. This setting causes the additional parameter "Status LED ON with" to be shown.

Controller status indication: The status LED indicates the state of the internal room temperature controller or room temperature control point. This setting causes the additional "controller status" and "Status LED on with" parameters to be displayed.

Comparator without sign (1-byte): The status LED is activated depending on a comparison. In this configuration there is a separate 1-byte communication object available via which the unsigned reference value (0...255) is received. This setting causes the additional parameter "Status LED ON with" to be shown.

Comparator with sign (1-byte): The status LED is activated depending on a comparison. In this configuration there is a separate 1-byte communication object available via which the positive or negative reference value (-128...127) is received. This setting causes the additional parameter "Status LED ON with" to be shown.

Logic link: The status LED indicates whether the parameterised logic behaviour is fulfilled. The number of logic inputs that affect the logic output (status LED) according to the parameterised logic behaviour can be configured.

Bit-coded evaluation: The status LED indicates whether the parameterised linking behaviour is fulfilled. Up to 32-bits can be evaluated. All activated bits affect the lighting behaviour of the status LED according to the parameterised link behaviour.

The following selection of status LED functions can be configured **in addition** to the basic functions for the rocker or button functions "switching" and "dimming and colour temperature".

Function of status LED	Button-actuation indication Status indication Inverted status indication
Button-actuation display: The status LED indicates a button actuation. The ON time is set on the parameter page "General" in common for all status LEDs that are configured as actuation displays. Status display: The status LED indicates the state of the communication object "Switching". If the object value is "ON", the status LED is illuminated. If the object value is "OFF" the status LED is switched off. Inverted status display: The status LED indicates the state of the communication object "Switching". If the object value is "OFF", the status LED is illuminated. If the object value is "ON" the status LED is switched off.	

The following selection of status LED functions can be configured **in addition** to the basic functions for the rocker or button function "Short and long button actuation".

Function of status LED	Telegram acknowledgment
Telegram acknowledgement: The status LED indicates the transmission of a telegram for the communication object "short and long button actuation".	

The following selection of status LED functions can be configured **in addition** to the basic functions for the rocker or button function "Room temperature control point -> Presence button".

Function of status LED	Button-actuation indication Presence status indication Inverted presence status indication
Button-actuation display: The status LED indicates a button actuation. The ON time is set on the parameter page "General" in common for all status LEDs that are configured as actuation displays. Presence status: The status LED indicates the state of the presence button of the controller operation or in case of controller extension operation. The LED lights up if the presence function is activated. The LED is off if the presence function is inactive. Inverted presence status: The status LED indicates the state of the presence button of the controller operation or in case of controller extension operation. The LED lights up if the presence function is inactive. The LED is off if the presence function is activated.	

The following selection of status LED functions can be configured **in addition** to the basic functions for the rocker or button function "Room temperature control point -> Setpoint shift".

Function of status LED	Button-actuation indication Setpoint value shift indication
Button-actuation display: The status LED indicates a button actuation. The ON time is set on the parameter page "General" in common for all status LEDs that are configured as actuation displays. Setpoint value shift display: The status LED indicates the state of a setpoint shift of the controller operation or in case of controller extension operation. This setting causes the additional parameter "Status LED" to be shown.	

The following parameter is visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "control via separate LED object".

Control of the status LED via object value	**1 = LED static ON / 0 = LED static OFF** 1 = LED static OFF / 0 = LED static ON 1 = LED flashes / 0 = LED static OFF 1 = LED static OFF / 0 = LED flashes
This parameter defines the telegram polarity of the 1-bit object "status LED". The LED can be switched on or off statically. In addition, the received switching telegram can be evaluated in such a way that the LED flashes.	

The following parameter is visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "Operating mode display".

Status LED ON with	Automatic mode **Comfort mode** Standby mode Night mode Frost/heat protection mode
The values of a communication object with data type 20.102 "HVAC Mode" are defined as follows: 0 = Automatic 1 = Comfort 2 = Standby 3 = Night 4 = Frost/heat protection The value "Automatic" is used only by the "forced operating mode switch-over" objects. The status LED is illuminated when the object receives the value configured here.	

The following parameters are visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "Controller status indication".

Status controller	**KNX compliant** Controller general
Room temperature controllers can transmit their current status to the KNX. The data formats "KNX compliant" and "Controller general" are usually available for this. This parameter adjusts the "Controller status indication" function of the status LED to the status message's status format of the room temperature controller. The selection options of the "Status LED ON with" parameter as well as the available communication objects adapt depending on this setting. In the "KNX-compliant" setting, the device provides the three communication objects "RHCC controller status", "RTSM controller status" and "RTC controller status". If the setting is "controller general", the device provides the 2 communication objects "Controller status" and "Controller status addition".	

Status LED ON with	**Controller error status** Operating mode (Heating = 1 / Cooling = 0) Controller disabled (dew point operation) Frost alarm Heat alarm Controller inactive (deadband operation) Comfort mode extension Open window Additional level active
This parameter is only visible if "Controller status = KNX compliant". The status LED shows the information of the controller status according to the parameterization.	

Status LED ON with	**Comfort mode** Standby mode Night mode Frost/heat protection mode Controller disabled Heating / Cooling (Heating = 1 / Cooling = 0) Controller inactive (deadband operation) Frost alarm Normal/Forced operating mode Comfort mode extension Open window Additional level active Dew point alarm
This parameter is only visible if controller status = controller general. The status LED shows the information of the controller status according to the parameterization.	

The following parameters are visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "Comparator without sign".

Status LED ON with	**Reference value greater than received value** Reference value less than received value Reference value equal to received value
The status LED indicates whether the configured reference value is greater or less than or equal to the value of the "Status LED" object".	

Reference value	**0**...255
This parameter defines the reference value to which the value of the "Status LED" object is compared.	

The following parameters are visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "Comparator with sign".

Status LED ON with	**Reference value greater than received value** Reference value less than received value Reference value equal to received value
The status LED indicates whether the configured reference value is greater or less than or equal to the value of the "Status LED" object".	

Reference value	-128...**0**...127
This parameter defines the reference value to which the value of the "Status LED" object is compared.	

The following parameters are visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "Logic link".

Logic behaviour	**OR** AND XOR
The status LED indicates whether the parameterised logic behaviour is fulfilled. If "OR", the status LED lights up as soon as an input is true ("1"). If "AND", the status LED lights up when all inputs are true ("1"). If "XOR", the status LED lights up when an odd number of inputs are true ("1").	

Number of logic inputs	**2**...8
Here, the number of logic inputs that affect the logic output (status LED) according to the parameterised logic behaviour is configured.	

The following parameters are visible on the parameter pages "Status-LED *n* - function" if the function of the status LED is configured to "Bit-coded evaluation".

Linking behaviour	**OR** AND
The status LED indicates whether the parameterised linking behaviour is fulfilled. If "OR", the status LED lights up as soon as an input is true ("1"). If "AND", the status LED lights up when all inputs are true ("1").	

Type of evaluation	**1-byte** 2-byte 4-byte
The type of evaluation and thus the number of bytes is configured here. According to this setting, the ETS displays a table for selecting the individual bits. Up to 32 bits can be activated for the evaluation. All activated bits affect the lighting behaviour of the status LED according to the parameterised link behaviour.	

11.8.4 Object list

The following communication objects are available for the individual buttons or rockers, depending on the set operating concept. The name of the object corresponds to the selection of the operating concept and can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
1031, 1043, ..., 1211	Switching	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1031, 1043, ..., 1211	Operating mode indication	Status LED *n* - Input	1-byte	20.102	C, -, W, -, -
1-byte object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1031, 1043, ..., 1211	RHCC controller status - KNX-compliant	Status LED *n* - Input	2-byte	22.101	C, -, W, -, -
2-byte object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1041, 1053, ..., 1221	Controller status RTSM - KNX-compliant	Status LED *n* - Input	1-byte	21.107	C, -, W, -, -
1-byte object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1043, 1054, ..., 1222	Controller status RTC - KNX-compliant	Status LED *n* - Input	2-byte	22.103	C, -, W, -, -
2-byte object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1031, 1043, ..., 1211	Controller status - controller general	Status LED *n* - Input	1-byte		C, -, W, -, -
1-byte object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1041, 1053, ..., 1221	Controller status addition - controller general	Status LED *n* - Input	1-byte		C, -, W, -, -
1-byte object for activation of the status LED.					

Object no.	Function	Name	Type	DPT	Flag
1031, 1043, ..., 1211	Value (0...255)	Status LED *n* - Input	1-byte	5.010	C, -, W, -, -
1-byte object for activation of the status LED according to the parameter setting.					

Object no.	Function	Name	Type	DPT	Flag
1031, 1043, ..., 1211	Value (-128...127)	Status LED *n* - Input	1-byte	6.010	C, -, W, -, -
1-byte object for activation of the status LED according to the parameter setting.					

Object no.	Function	Name	Type	DPT	Flag
1033, 1045, ..., 1213	Logic link input 1	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 1 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1034, 1046, ..., 1214	Logic link input 2	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 2 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1035, 1047, ..., 1215	Logic link input 3	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 3 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1036, 1048, ..., 1216	Logic link input 4	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 4 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1037, 1049, ..., 1217	Logic link input 5	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 5 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1038, 1050, ..., 1218	Logic link input 6	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 6 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1039, 1051, ..., 1219	Logic link input 7	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 7 of the logic link.					

Object no.	Function	Name	Type	DPT	Flag
1040, 1052, ..., 1220	Logic link input 8	Status LED *n* - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activation of the status LED according to the parameter setting. This object describes the input 8 of the logic link.					

12 Channel-independent device functions

The following subchapters provide a description of the device functions. Each subchapter consists of the following sections:

- Functional description
- Table of parameters
- Object list

Functional description

The functional description explains the function and provides helpful tips on project design and usage of the function. Cross references support you in your search for further information.

Table of parameters

The table of parameters lists all parameters associated with the function. Each parameter is documented in a table as follows.

Name of the parameter	Parameter values
Parameter description	

Object list

The object list specifies and describes all communication objects associated with the function. Each communication object is documented in a table.

Object no.	This column contains the object number of the communication object.
Function	This column contains the function of the communication object.
Name	This column contains the name of the communication object.
Type	This column contains the length of the communication object.
DPT	This column assigns a datapoint type to a communication object. Datapoint types are standardized in order to ensure interoperability of KNX devices.
Flag	This column assigns the communication flags in accordance with the KNX specification.
C-Flag	activates / deactivates the communication of the communication object
R-Flag	enables externally triggered reading of the value from the communication object
W-Flag	enables externally triggered writing of the value to the communication object
T-Flag	enables transfer of a value
U-Flag	enables updating of an object value in case of feedback
I-Flag	enforces updating of the communication object value when the devices is switched on (reading at init)

12.1 Temperature measurement

Basic principles

The device possesses an integrated temperature sensor that can be used to measure the room temperature. Alternatively (e.g. if the device has been installed in an unfavourable location or in case of operation in difficult conditions, as in a humid atmosphere) or additionally (e.g. in large rooms or halls), a second external sensor linked via bus telegrams can be used to determine the actual value.

The temperature measurement is activated on the "General" parameter page and configured on the "Room temperature measurement" parameter page.

When choosing the installation location for the device or the external sensors, the following points should be considered:

- The device or temperature sensor should not be used in multiple combinations, especially together with flush-mounted dimmers.
- Do not install the temperature sensor in the area of large electrical consumers (avoid heat influences).
- Installation in the vicinity of radiators or cooling systems is not advisable.
- The temperature sensor should not be exposed to direct sun.
- The installation of sensors on the inside of an outside wall might have a negative impact on the temperature measurement.
- Temperature sensors should be installed at least 30 cm away from doors, windows or ventilation devices and at least 1.5 m above the floor.

Temperature measurement and measured value determination

The device possesses an integrated temperature sensor. This temperature sensor can be used to measure the ambient temperature and forward it to a room temperature controller via the 2-byte object "Temperature sensor - Actual temperature - Status".

The room temperature measurement can optionally be supplemented with an external sensor. The external sensor is linked to the device (for example a KNX room temperature controller) via the bus by means of the additional 2-byte communication object "Temperature sensor - External value".

The "Temperature measurement by" parameter in the "Room temperature measurement" parameter node specifies the sensors used to measure the room temperature. The following settings are possible:

- "Internal sensor"

  The temperature sensor integrated in the device is activated. Thus, the actual temperature value is determined only locally on the device.

- "Internal sensor and ext. value via bus"

  With this setting the internal as well as the external temperature sensor is active. The external sensor must either be a KNX room temperature controller coupled via the 2-byte object "Temperature sensor - External value" or another

bus device with temperature measurement.
When evaluating the internal and the external sensors, the real actual temperature is made up from the two measured temperature values. The weighting of the temperature values is defined by the parameter "Weighting of measured values". Depending on the different locations of the sensors or a possible non-uniform heat distribution inside the room, it is thus possible to adjust the actual temperature measurement. Often, those temperature sensors that are subject to negative external influences (for example, unfavourable location because of exposure to sun or heater or door / window directly next to it) are weighted less heavily.

Example:

The device has been installed next to the entrance door (internal sensor). An additional external temperature sensor has been mounted on an inner wall in the middle of the room below the ceiling.
Internal sensor: 21.5 °C
Ext. value via bus: 22.3 °C
Weighting of the measured values: 30% to 70%

-> TResult internal = T internal · 0.3 = 6.45 °C,
-> TResult external = Texternal = 22.3 °C · 0.7 = 15.61 °C
-> TResult actual = TResult internal + TResult external = 22.06 °C

Transmission of the actual temperature

The measured actual temperature can be transmitted to the bus by means of the 2-byte objects "Temperature sensor - Actual temperature - Status" or "Temperature sensor - Actual temperature without adjustment - Status".

The room temperature can be transmitted to the bus either after a change in a parameterised temperature value or cyclically after a parameterised cycle time.

The value "0" deactivates the transmission when room temperature changes and the cyclical transmission of the room temperature. If both parameters are set to zero, the room temperature is not transmitted to the bus.

Calibrating the measured values

In some cases during room temperature measurement, it may be necessary to adjust the single temperature values. Adjustment becomes necessary, for example, if the temperature measured by the sensors stays permanently below or above the actual temperature in the vicinity of the sensor. To determine the temperature deviation, the actual room temperature should be detected with a reference measurement using a calibrated temperature measuring device.

The "Calibration ..." parameter enables the temperature calibration to be calibrated in 0.1 K-levels. Thus, the calibration is only set statically once.

The measured value has to be increased, if the value measured by the sensor lies below the actual room temperature. The measured value has to be decreased, if the value measured by the sensor lies above the actual room temperature.

The object "Temperature sensor - Actual temperature - Status" is always used to transmit the adjusted temperature value to the bus. When determining the measured value with combined sensors, the two adjusted values are used to calculate the actual value.

12.1.1 Table of parameters

"General" parameter page

Temperature measurement	Active **Inactive**
This parameter activates the temperature measurement. Additional parameters and objects become visible.	

"Room temperature measurement" parameter page

Temperature measurement by	**Internal sensor** Internal sensor and ext. value via bus
The "Temperature measurement by" parameter specifies the sensors used to measure the room temperature. "Internal temperature sensor": The temperature sensor integrated in the device is activated. Thus, the actual temperature value is determined only locally on the device. In this configuration, the feedback control will start directly after a device reset. "Internal sensor and ext. value via bus": This setting is used to combine the selected temperature sources. The external temperature is received by means of the "External value" 2-byte object.	

Weighting of the measured values	10% to 90% 20% to 80% 30% to 70% 40% to 60% **50% to 50%** 60% to 40% 70% to 30% 80% to 20% 90% to 10%
The weighting of the measured temperature value for the internal and external sensors is specified here. That results in an overall value, which will be used for the further interpretation of the room temperature. This parameter is visible only if "Room temperature measurement by = internal sensor and ext. value via bus"!	

Internal sensor calibration (0 = inactive)	-12.8...**0**...12.7
Determines the value in Kelvin by which the internal sensor’s measured value is adjusted. This parameter is only visible when the temperature detection system requires an internal sensor.	

Calibration of external value via bus (0 = inactive)	-12.8...**0**...12.7
Determines the value in Kelvin by which the external sensor’s room temperature value is calibrated. This parameter is only visible when the temperature detection system requires an external sensor.	

Transmit actual temperature	**On change** Cyclical On change and cyclical
The polling time for the external sensor’s temperature value is specified here. In the "0" setting, the external sensor is not automatically polled by the controller. In this case, the sensor must transmit its temperature value itself. This parameter is only visible when the temperature detection system requires an external sensor.	

On change by	0...**0.2**...25.5
Determines the size of the value change of the room temperature in Kelvin after which the current value is automatically transmitted to the bus via the "Actual temperature" object. If set to "0", the actual value will be transmitted to the bus, regardless of the change in room temperature.	

Cycle time	0 ... 24 h, 0 ... **5** ... 60 min, 0 ... 60 s
This parameter defines whether and when (in hours, minutes and seconds) the determined room temperature is to be periodically output via the "Actual temperature" object. If the setting is "0", the current room temperature will not be transmitted cyclically to the bus.	

Actual temperature without calibration	Active **Inactive**
If necessary, the unadjusted room temperature can be additionally transmitted to the bus as an information value via the object "Actual temperature without adjustment" and, for example, be displayed in visualisations. This parameter enables the corresponding object.	

12.1.2 Object list

The name of the following objects can be specified by the parameter "Name of the room temperature measurement".

Object no.	Function	Name	Type	DPT	Flag
1237	Temperature sensor - Actual temperature	Room temperature - output	2-byte	9.001	C, R, -, T, A
2-byte object for displaying the actual temperature (room temperature) determined internally. Possible value range: -99.9 °C to +99.9 °C / Measuring range of internal temperature sensor: -40 °C to +125 °C. The temperature value is always output in the format "°C".					

Object no.	Function	Name	Type	DPT	Flag
1238	Temperature sensor external value	Room temperature - Input	2-byte	9.001	C, -, W, -, U
2-byte object used to couple an external KNX room temperature sensor or a room temperature control point. Thus cascading of multiple temperature sensors for room temperature measurement. Possible range of values: -99.9 °C to +99.9 °C. The temperature value must always be specified in the format "°C".					

The name of the following object can be specified by the parameter "Name of the further temperature measurement".

Object no.	Function	Name	Type	DPT	Flag
1240	Temperature sensor - Actual temperature without calibration - Status	Room temperature - output	2-byte	9.001	C, R, -, T, A
2-byte object for the display of the determined actual temperature. The actual temperature is either determined by the internal sensor or by a combination of the internal sensor with an external temperature. The output value does not take the configured value for calibration into account. Internal to external measured value formation is taken into account. Possible value range: -99.9 °C to +99.9 °C / Measuring range of internal temperature sensor: 0 °C to +40 °C. The temperature value is always output in the format "°C".					

12.2 LED alarm signalling

The device permits signalling of an externally reported alarm via its status LED. The alarm can be triggered, for instance, in case of burglary or fire through a KNX central alarm unit. The device signals an alarm by all status LEDs of the device flashing synchronously. This alarm indication can be separately enabled with the parameter "alarm signalling" on the "General" parameter page.

When alarm signalling is enabled, the ETS displays the communication object "Alarm signalling" and further alarm function parameters on a separate parameter page.

The "Alarm signalling" object is used as an input for activating or deactivating the alarm signal indication. The polarity of the object can be selected. When the object value corresponds to the "Alarm" condition, all status LEDs are always flashing red with a frequency of approx. 2 Hz. If there is an alarm, the behaviour of the status LED as configured in the ETS for normal operation have no significance. The LEDs adopt their originally configured behaviour only after the alarm indication function has been deactivated. Changes of the state of the LEDs during an alarm - if they are controlled by separate LED objects or if they signal push-button functions - are internally stored and recovered at the end of the alarm.

When an indication alarm signal is active, the status LEDs of the device always flash with the regular brightness ("Brightness of all status LEDs" parameter). The device automatically deactivates the brightness reduction as long as the alarm is indicated and restores it when the alarm is switched off and the brightness reduction object is still "1"-active.

Apart from the possibility of deactivating an indication alarm via the alarm object, it can also be deactivated locally by pressing a button on the device itself. The "Reset alarm signalling by a button actuation" parameter defines the button response during an alarm:

- If this parameter is set to "Active", the active alarm signal indication can be deactivated by actuating a button on the device. This button function does not cause the configured function of the pressed button to be executed. Only after the next button is pressed will the configuration of the button be evaluated and a telegram be transmitted to the bus, if applicable.
- If "Inactive" is selected, an indication alarm can be deactivated only by means of the alarm signalling object. A button function will always directly execute the configured button function.

With the disabling function configured, alarm signalling cannot be reset by a disabled button.

If an indication alarm can be deactivated by a button actuation, the "Alarm acknowledgement object" parameter defines whether an additional alarm acknowledge telegram is to be transmitted to the bus via the separate object "Alarm signalling acknowledge" after triggering by this button actuation.

Such an acknowledge telegram can, for instance, be sent via a 'listening' group address to the "Alarm signalling" objects of other push-button sensors in order to reset the alarm status there as well. Attention must be paid during resetting of an alarm to the selectable polarity of the acknowledgement object.

If the setting is "Alarm when OFF and alarm reset when ON", the bus must actively write "0" to the alarm object in order to activate the alarm after a reset or after programming with the ETS.

An active alarm message is not stored so that the alarm indication is generally deactivated after a device reset or after programming with the ETS.

12.2.1 Table of parameters

"General" parameter page

Alarm signal	Active **Inactive**
This parameter can be used to enable alarm signal indication. When alarm signalling is enabled, the ETS displays further parameters and up to two further communication objects.	

The following parameters are visible on the "alarm signalling" parameter page if LED alarm signalling has been activated.

Polarity of the alarm signalling object	**Alarm when ON and alarm reset when OFF** Alarm when OFF and alarm reset when ON
The alarm signalling object is used as an input for activating or deactivating alarm signal indication.	

Reset alarm signalling by a button actuation?	**Active** Inactive
If this parameter is set to "Active", the active alarm signal indication can be deactivated by actuating a button on the device. This button function does not cause the configured function of the pressed button to be executed. Only after the next button is pressed will the configuration of the button be evaluated and a telegram be transmitted to the bus, if applicable. If "Inactive" is selected, an indication alarm can be deactivated only by means of the alarm signalling object. A button actuation will always execute the configured button function.	

Alarm acknowledgement object	Active **Inactive**
If an indication alarm can be deactivated by a button actuation, this parameter defines whether an additional alarm acknowledge telegram is to be transmitted to the bus via the separate object "Alarm signalling acknowledge" after triggering by this button actuation.	

Acknowledge alarm signalling by	ON telegram **OFF telegram**
This parameter sets the polarity of the "Alarm signalling acknowledge" object. This parameter presetting depends on the selected polarity of the alarm message object.	

12.2.2 Object list

Object no.	Function	Name	Type	DPT	Flag
1	Alarm signal	Alarm signalling - Input	1-bit	1.001	C, -, W, -, -
1-bit object for the reception of an alarm signalling (polarity configurable).					

Object no.	Function	Name	Type	DPT	Flag
4	Alarm message acknowledge	Alarm signalling - Output	1-bit	1.001	C, -, -, T, -
1-bit object for transmitting the acknowledgement of an alarm signalling (polarity configurable).					

12.3 Brightness reduction

Optionally, the brightness of the status LED and operation LED can be changed during operation of the push-button sensor, controlled by the brightness reduction. Changing may be advisable, for example, to reduce the brightness during nighttime hours. If switching the brightness by means of the object is required, "brightness reduction" must be activated on the "General" parameter page. In this case, the "brightness reduction" communication object will become visible in the ETS. As soon as a "1" telegram is received via this object, the push-button sensor switches over to the "Reduced brightness at push-button sensor basic module" configured in the ETS ("Brightness reduction" parameter page). If a "0" telegram is received via the object, the push-button sensor switches back to regular brightness.

The brightness of the status LED can be set, regardless of the brightness of the operation LED. The brightness set applies only to the push-button sensor basic module. The brightness of the status LED cannot be changed on the push-button sensor extension module.
The brightness of the status LED of the push-button sensor extension module corresponds to brightness level 5 of the basic module.

The LED brightness is always changed gently by means of a brief dimming process. Dimming with a higher increment value results in quicker dimming than with dimming at a lower increment value. This results in a slow soft dimming that is pleasing for the human eye. The dimming speeds are fixed and therefore not changeable.

In the ETS it is possible to perform configuration in accordance with the possible selection of required stage values for the regular and reduced brightness. No check is made whether a reduced brightness level is configured for the lower brightness level. This also makes it possible to use the object to switch over the object to larger brightness levels in comparison to the regular brightness. It is advisable to set the brightness value for the brightness reduction to a lower level than regular brightness.

After a device reset, the regular brightness for switched-on LEDs is always effective. A switch-over by brightness reduction will only take place when a telegram is written to the respective object after a reset.

When the status LED is activated via the regular display function or via the superposed function, it is possible to let the status LED flash. During flashing the LEDs switch synchronously between the "switched-on" and "switched-off" states in the active brightness. This is not interpreted as a change of state of the display function, by means of which the brightness is therefore also not switched over automatically.

When LED alarm signalling is active, the status LEDs of the push-button sensor always flash with the regular brightness. The push-button sensor automatically deactivates the brightness reduction as long as the alarm LED is on and restores it when the alarm LED is switched off and the brightness reduction object is still "1"-active.

12.3.1 Table of parameters

"Configuration TSM/TSEM" parameter page

Brightness reduction	Active **Inactive**
The brightness reduction can be enabled here. If the brightness reduction is enabled, the ETS will show further parameters and another communication object.	

The following parameters are visible on the "Brightness reduction" parameter page when brightness reduction is activated.

Object polarity	**1 = active / 0 = not active** 0 = active / 1 = not active
The brightness reduction object is used as an input for activating or deactivating the brightness reduction. This object defines the polarity of the "Activate/deactivate brightness reduction" object.	

Status LED: reduced brightness at push-button sensor basic module	Level 0 (OFF) Level 1 (dark) **Level 2** Level 3 Level 4 Level 5 (bright)
The brightness of all status LEDs of the push-button sensor can be defined on the "Brightness reduction" parameter page. The illumination brightness of all LEDs with active brightness reduction can be set here in 6 levels.	

Increase brightness for 30 seconds	**Active** Inactive
Here, the brightness increase can be enabled for 30 seconds after a button has been actuated. The TSM then switches the brightness of the status LED to its normal brightness.	

12.3.2 Object list

Function	Name	Type	DPT	Flag
Activate/deactivate	Brightness reduction - Input	1-bit	1.001	C, -, W, -, -
1-bit object for activating or deactivating the brightness reduction (changed brightness of all LEDs). This makes it possible, for example, to reduce the brightness during night time to a value configured in the ETS ("1" = brightness reduction ON; "0" = brightness reduction OFF).				

12.4 Scene function

The scene function can be used from firmware version 1.0.2 and from version 2.2 of the ETS application programme.

The device can be used in two different ways as part of a scene control:

- Each rocker or button can work as a scene extension. This feature makes it possible to recall or to store scenes which may be stored in other devices Scene extension.
- The push-button sensor can independently store up to eight scenes with eight actuator groups. These internal scenes can be recalled or stored by the rockers or buttons (internal scene recall) and also by the "extension" communication object.
  In the following subsections the internal scene function will be dealt with in greater detail.

12.4.1 Storing scenes

For each output of a scene, the user can define a corresponding scene value in the ETS which is then transmitted to the bus during a scene recall. During the ongoing operation of the system it may be necessary to adapt these preset values and to save the adapted values in the push-button sensor. This can be ensured by the storage function of the scene control.

The value storage function for the corresponding scene number is activated or deactivated with the parameter "Permit storage". When the storage function is disabled, the object value of the corresponding output is not sampled during storage.

A scene storage process can be initiated in two different ways:

- by long actuation of a rocker or button of an operating element configured as "scene extension"
- by a storage telegram to the extension object.

During a storage process, the push-button sensor reads the current object values of the connected actuators. This is carried out by means of eight read telegrams (ValueRead) addressed to the devices in the scene which return their own value (ValueResponse) as a reaction to the request. The returned values are received by the push-button sensor and taken over permanently into the scene memory. Per scene output, the push-button sensor waits one second for a response. If no answer is received during this time, the value for this scene output remains unchanged and the push-button sensor scans the next output.

In order to enable the push-button sensor to read the object value of the actuator addressed when a scene is stored, the read flag of the corresponding actuator object must be set. This should be done only for one actuator out of an actuator group so that the value response is unequivocal.

The stored values overwrite those programmed into the push-button sensor with the ETS.

The storage process will always be executed completely by the push-button sensor and cannot not be aborted before it has ended. No scenes can be recalled during a storage process, however the operating elements of the push-button sensor can be operated normally.

12.4.2 Scene definition and scene recall

If the internal scenes are to be used, the "Scene function" parameter on the "General" parameter page must be set to "Activated". When the scene function is activated, the ETS automatically shows the "Scene function" parameter page. The matching data types for the eight scene outputs must then be selected on the "Scene data types" parameter page and adapted to the actuator groups used. The following types are available for selection:

- Switching
- Value (0…255)
- Value / shading position (0…100%)
- Colour temperature value
- Colour value RGB/HSV
- Colour value RGBW/HSVW

As a rule, Venetian blinds are controlled via two scene outputs. One output controls the blind height and the other one adjusts the slat position.

The ETS sets the corresponding communication objects and the parameters of the scene commands on the following parameter pages "Scene 1" to "Scene 8".

It is possible that the values for the individual scenes preset by the parameters are changed later on when the system is in operation with the storage function "Save scenes". If the application program is then loaded again with the ETS, these locally adapted values will normally be overwritten by the parameters. Due to the fact that it may take considerable efforts to readjust the values for all scenes in the system, the parameter "Overwrite scene values during ETS download ?" offers the possibility of retaining the scene values stored in operation.

The scene parameters can be set on the parameter page of each individual scene ("Scene 1 ... 8"). The setting options are the same for all 8 scenes.

These internal scenes can be recalled directly via the rockers or buttons ("Recall internal scene" function) and also by another bus device via the "Extension" communication object. This 1-byte communication object supports the evaluation of up to 64 scene numbers. For this reason, it must be specified in ETS which of the external scene numbers (1 … 64) is to recall the internal scene (1 … 8). If the same scene number is listed for several internal scenes, it is always only the first of these scenes that will be activated (scene with the lowest scene number).

In some situations there may be the requirement that a group of actuators is not controlled by all, but only by certain scenes. A classroom, for instance, may require open blinds for the "Welcome" and "Break" scenes, closed blinds in the "PC presentation"

scene and no change in the "Discussion" scene. In this example, the parameter "Permit transmission" for the "Meeting" scene can be set to "No". The scene output is then deactivated during the corresponding scene.

The parameter "Transmit delay" permits entering an individual waiting time for each scene output. This transmit delay can be used in different situations:

- When the actuators participating in a scene transmit status messages automatically or when several scene buttons are used to increase the number of channels within the scenes, the recall of a scene may result for a short time in high bus loading. The transmit delay helps to reduce the bus load at the time of scene recall.
- Sometimes, it is desirable that an action is started only after another action has ended. This can be for instance the illumination which is to shut off only after the blinds/shutters have been raised.

The transmit delay can be set separately for each scene output. The transmit delay defines the time delay between the individual telegrams during a scene recall. The setting specifies how much time must pass after the first scene telegram before the second is transmitted. After transmission of the second scene telegram, the configured time must again pass before the third is transmitted. The delay continues as follows for each additional scene telegram. The transmit delay for the first scene telegram starts immediately after the scene has been recalled.

The transmit delay between telegrams can also be deactivated (setting "0"). The telegrams are then transmitted at the shortest possible time interval. In this case, however, the order of the telegrams transmitted can deviate from the numbering of the scene outputs.

When a new scene recall (also with the same scene number) occurs during a current scene recall - even in consideration of the pertaining transmit delays - the scene processing started first will be aborted and the newly received scene number will be processed. A running scene is also aborted when a scene is being stored!

During a scene recall - even if delayed - the operating areas of the push-button sensor are normally operational.

12.4.3 Table of parameters

"General" parameter page

Scene function	activated **deactivated**
The device can internally handle eight scenes with eight actuator groups. This parameter activates the scene function and the other parameters and communication objects, if needed.	

"Scene function -> Scene data types" parameter page

Overwrite scene values during ETS download?	**activated** deactivated
If the values of the actuator groups that have been changed on site by the user are to be reset to the values preset in the ETS during an application download by the ETS, the setting must be activated. If the setting is deactivated the ETS values will not overwrite any scene values stored in the push-button sensor.	

Scene output *n*	**Switching** Value (0…255) Value / shading position (0…100%) Colour temperature value Colour value RGB/HSV Colour value RGBW/HSVW
The push-button sensor has an independent communication object for each of the eight actuator groups. With these parameters, the object type can be set separately for each output.	

Colour space	**RGB** HSV
This parameter defines the colour space when the scene output executes the "Colour value RGB/HSV" function. With RGB, communication can take place via individual objects or via a combination object. With HSV, communication takes place via individual objects.	

Communication	**Individual objects** Combi object
When the colour space is set to RGB, communication via the bus can take place either via individual objects (red, green, blue) or via a combination object (RGB).	

Colour space	**RGBW** HSVW
This parameter defines the colour space when the scene output executes the "Colour value RGBW/HSVW" function. With RGBW, communication can take place via individual objects or via a combination object. With HSVW, communication takes place via individual objects. This parameter is only visible if "Value range = colour value RGBW/HSVW"	

Communication	**Individual objects** Combi object
When the colour space is set to RGBW, communication via the bus can take place either via individual objects (red, green, blue, white) or via a combination object (RGBW).	

"Scene function -> Scene *n*" parameter page

Name	Scene *n* max. 40 characters long text
This parameter gives the scene a name for identification. This name serves merely as an aid in the ETS and is not programmed into the device.	

Scene number	**1** ... 64
If the internal scenes are to be recalled via the extension object, a definite number is required for each of them. This parameter is for specifying the extension number of the corresponding scene. If several internal scenes have the same scene number, only the first scene with this number can be called up.	

The following parameters must be set on each "Scene n" parameter page for scene outputs 1 to 8, depending on the selected data type.

Switching command	**ON** OFF
This parameter can be used to predefine the switching command of the scene output. This parameter is only visible if "Data types scene output n = switching"!	

Value (0 … 255)	**0**...255
This parameter can be used to predefine the value of the scene output. This parameter is only visible if "Data types scene output n = value (0 … 255)"!	

Value / Venetian blind position (0 … 100 %)	**0**...100
This parameter can be used to predefine the value of the scene output. This parameter is only visible if "Data types scene output n = value / venetian blind position (0 … 100%)"!	

Colour temperature (1000, 1100, ..., 10000 K)	1000, 1100, ..., **2700**, ..., 10000
This parameter can be used to predefine the value of the scene output. This parameter is only visible if "Data types scene output n = colour temperature value"!	

Value (RGB/HSV)	#000000 ... **#FFFFFF**
This parameter can be used to predefine the value of the scene output. The value (RGB/HSV) is configured by means of a colour picker. This parameter is only visible if "Data types scene output n = colour value RGB/HSV" and "Data types scene output n = colour value RGBW/HSVW"! With "Data types scene output n = colour value RGBW/HSVW", the W-value is configured using a separate slider.	

Value (W)	**0** ... 255
This parameter can be used to predefine the value of the scene output. This parameter is only visible if "Data types scene output n = colour value RGBW/HSVW"!	

Allow save?	**activated** deactivated
If the user is to be given the possibility of changing the value of the actuator group (scene output) within this scene and of storing it during regular operation, this parameter must be set to "activated".	

Allow transmission?	**activated** deactivated
If the state of an actuator group is to remain unchanged during the recall of a scene, this parameter can be set to "deactivated". In this case, the push-button sensor does not transmit a telegram via the scene output concerned during the recall of the scene. The scene output is deactivated for this scene.	

Transmission delay	**0**...120000
When the push-button sensor sends the telegrams to the various scene outputs, it can insert a presettable waiting time of 2 min. max. before each telegram. This parameter sets the time in 100 millisecond increments. This can be used to reduce bus loading, but also to have certain lamps switched on only after the shutters are really closed. If no delay is selected ("0"), the push-button sensor sends the output telegrams with maximum speed. With this setting it may happen in some cases that the telegram sequence is not compatible with output numbering.	

12.4.4 Object list

The following communication objects are available for the individual scene outputs, depending on the set data type. The name of the object can be specified by the parameter "Name of ..." .

Object no.	Function	Name	Type	DPT	Flag
1243	Extension	Scenes - input	1-byte	18.001	C, -, W, -, U
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor.					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Switching	Scene - Scene output *n*	1-bit	1.001	C, -, W, T, U
1-bit objects for controlling up to eight actuator groups (ON, OFF).					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Value (0...255)	Scene - Scene output *n*	1-byte	5.010	C, -, W, T, U
1-byte objects for controlling up to eight actuator groups (0…255).					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Value / shading position (0…100%)	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Colour temperature value	Scene - Scene output *n*	2-byte	7.600	C, -, W, T, U
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Colour value RGB	Scene - Scene output *n*	3-byte	232.600	C, -, W, T, U
3-byte object for transmitting the colour information red, green and blue in one communication object, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Colour value RGBW	Scene - Scene output *n*	6-byte	251.600	C, -, W, T, U
6-byte object for transmitting the colour information red, green, blue and white in one communication object, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Colour value Red	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the red colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1245, 1249, ..., 1273	Colour value Green	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the green colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1246, 1250, ..., 1274	Colour value Blue	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the blue colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1247, 1251, ..., 1275	Colour value White	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the white colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1244, 1248, ..., 1272	Colour hue (H)	Scene - Scene output *n*	1-byte	5.003	C, -, W, T, U
1-byte object for sending the colour hue (H) from 0 ... 360°, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1245, 1249, ..., 1273	Saturation (S)	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the saturation (S) from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1246, 1250, ..., 1274	Brightness (V)	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

Object no.	Function	Name	Type	DPT	Flag
1247, 1251, ..., 1275	White value (W)	Scene - Scene output *n*	1-byte	5.001	C, -, W, T, U
1-byte object for transmitting the white value (W) from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.					

12.5 Disabling function

Configuration

With the 1-bit communication object "Disabling", the operating areas of the device can be partly or completely disabled. During a disable, the rockers or buttons can also temporarily execute other functions.

An active disable applies only to the functions of the rockers or buttons. The functions of the status LED and the temperature measurement are not affected by the disabling function.

With alarm signalling configured, the alarm signalling indication cannot be reset by a disabled button.

The disabling function and the associated parameters and communication objects are enabled if the "Disabling function" parameter on the "General" parameter page is set to "Active".

You can parameterise the polarity of the disabling object. In case of polarity inversion (disabled = 0 / enabled = 1), the disabling function is not activated immediately after a bus reset or after ETS programming (object value = "0"). There must first be an object update "0" until the disabling function will be activated. Telegram updates from "0" to "0" or from "1" to "1" on the "Disabling" object remain without effect.

After a device reset, the disabling function is deactivated and must be activated via the bus.

Configuring the reaction during a disable

In an active disable, either all buttons of the device or only individual buttons may be affected by the disable. You can furthermore define in the ETS whether disabled buttons will not show any response when pressed or, alternatively, will behave like another button of the device. This can be used to limit the control function of the device completely or partially.

Precondition: The disabling function must be activated.

- Set the parameter "Behaviour in the event of active disabling" to "all buttons without function".

  The disabled buttons do not respond when pressed. The status LEDs of the disabled buttons remain off if the display function is configured to "Button-actuation display" or "Telegram acknowledgement".

- Set the parameter "Behaviour in the event of active disabling" to "All buttons behave like...". Also configure the parameters "All uneven buttons behave like" and "All even buttons behave like" to the desired button number or disabling function as a reference button.

  All buttons assigned to the disabling function behave as defined in the parameters for the two specified reference buttons of the device. Different or identical reference buttons can be configured separately for all uneven and even buttons. The two 'virtual' disabling functions of the device can also be

configured as a reference button.
The telegrams are transmitted to the bus via the communication objects of the specified reference buttons. The status LEDs of the reference buttons are controlled according to their function. The status LEDs of the disabled buttons remain off if the display function is configured to "Button-actuation display" or "Telegram acknowledgement".

- Set the parameter "Behaviour in the event active disabling" to "Individual buttons without function". A "Button assignment“ parameter page appears, on which the individual buttons can be selected.

  The disabling function affects only the buttons assigned on the "Button assignment" parameter page. As soon as one of the assigned buttons of the device is pressed while a disabling function is active, the device will not execute any function. All other, non-disabled buttons respond normally when pressed.

- Set the parameter "Behaviour in the event of active disabling" to "Individual buttons behave like". A "Button assignment“ parameter page appears, on which the individual buttons can be selected. Also configure the parameters "All uneven buttons behave like" and "All even buttons behave like" to the desired button number or disabling function as a reference button.

  The disabling function affects only the buttons assigned on the "Button assignment" parameter page. As soon as one of the assigned buttons is pressed while a disabling function is active, the "Behaviour when a disabling function is active" for this button is executed. All other, non-disabled buttons respond normally when pressed. Different or identical reference buttons can be configured separately for all uneven and even buttons. The two 'virtual' disabling functions of the device can also be configured as a reference button.
  The telegrams are transmitted to the bus via the communication objects of the specified reference buttons. The status LEDs of the reference buttons are controlled according to their function. The status LEDs of the disabled buttons remain off if the display function is configured to "Button-actuation display" or "Telegram acknowledgement".

i If a button evaluation is taking place at the time of activation / deactivation of a disabling function, this function is aborted immediately and with it also the pertaining button function. It is first necessary to release all buttons before a new button function can be executed if so permitted by the state of disabling.

12.5.1 Table of parameters

"General" parameter page

Disabling function	Active **Inactive**
With this parameter, the disabling function of the device can be centrally activated. If "Active", the ETS shows further communication object and parameters.	

"Disable function" parameter page

Polarity of disabling object	0 = enable / 1 = disable **1 = enable / 0 = disable**
This parameter defines the value of the disabling object at which the disabling function is active.	

At the beginning of the disabling function	**No reaction** Reaction as button *>>X<<* when pressed Reaction as button *>>X<<* when released Reaction as disabling function 1 when pressed Reaction as disabling function 1 when released Reaction as disabling function 2 when pressed Reaction as disabling function 2 when released Retrieve internal scene 1 Retrieve internal scene 2 Retrieve internal scene 3 Retrieve internal scene 4 Retrieve internal scene 5 Retrieve internal scene 6 Retrieve internal scene 7 Retrieve internal scene 8
Besides disabling of rocker and button functions, the device can also trigger a specific function immediately at the time of activation of the disabling state. This function can: – correspond to the function assigned to any button in the non-disabled state ("Reaction as button *>>X<<* …") and – be defined on the following parameter pages ("Reaction as disabling function 1 or 2 when pressed or released"). – retrieve one of the 8 internal scenes.	

Behaviour during active disabling	**all buttons without function** all buttons behave as individual buttons without function individual buttons behave as
You can define here whether disabled buttons will not show any response when pressed or, alternatively, will behave like another button of the device or like a virtual disabling function. This can be done for all buttons or for individual buttons selected from the "Button assignment" parameter page. "No reaction to button-actuation": The disabled buttons do not respond when pressed. "Individual buttons without function" or "Individual buttons behave like": The disabling function applies only to the assigned buttons. As soon as one of the assigned buttons is pressed while a disabling function is active, the "Behaviour when a disabling function is active" for this button is executed. All other, non-disabled buttons respond normally when pressed. "Reaction to button actuation like": The disabled buttons can either execute the function of a button that has already been configured or the function of a separate disabling function. The parameters "All uneven buttons behave like" and "All even buttons behave like" define the function of the buttons assigned to the disabling function.	

Button *n*	Active **Inactive**
With the setting "Individual buttons without function" or "Individual buttons behave like", these parameters are displayed whenever a button can be assigned to the disabling function. The parameters define the assignment of the buttons to the disabling function.	

All uneven buttons behave like	**Button 1** Button n … (Selection depends on device variant!) Disabling function 1 Disabling function 2
If a specific button function is to be assigned during disabling to all or to individual buttons, this parameter can be used to select the desired button the function of which will then be executed. During disabling, all buttons with odd numbers behave like the ones configured here. The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions. This parameter is visible only if "Behaviour with active disabling function" = "All buttons behave like" or "Individual buttons behave like"!	

All even buttons behave like	**Button 1** Button n … (Selection depends on device variant!) Disabling function 1 Disabling function 2
If a specific button function is to be assigned during disabling to all or to individual buttons, this parameter can be used to select the desired button the function of which will then be executed. During disabling, all assigned lower buttons behave like the one parameterised here. The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions. This parameter is visible only if "Behaviour with active disabling function" = "All buttons behave like" or "Individual buttons behave like"!	

At the end of the disabling function	**No reaction** Reaction as button *>>X<<* when pressed Reaction as button *>>X<<* when released Reaction as disabling function 1 when pressed Reaction as disabling function 1 when released Reaction as disabling function 2 when pressed Reaction as disabling function 2 when released Retrieve internal scene 1 Retrieve internal scene 2 Retrieve internal scene 3 Retrieve internal scene 4 Retrieve internal scene 5 Retrieve internal scene 6 Retrieve internal scene 7 Retrieve internal scene 8
Besides disabling of rocker and button functions, the push-button sensor can also trigger a special function immediately at the end of disabling. This function can: – correspond to the function assigned to any button in the non-disabled state ("Reaction as button *>>X<<* …") and – be defined on the following parameter pages ("Reaction as disabling function 1 or 2 when pressed or released"). – retrieve one of the 8 internal scenes.	

Parameter page "Disabling function -> Disabling function 1 / Disabling function 2"

The functions "switching", "dimming", "venetian blind", "value transmitter", "scene extension", "short and long button actuation" and "room temperature control point" are available for the two disabling functions. These functions behave like the button functions of the device (same parameters).

12.5.2 Object list

Object no.	Function	Name	Type	DPT	Flag
9	Disabling	Disabling function - input	1-bit	1.002	C, -, W, -, U
1-bit object for transmission of switching telegrams (ON, OFF).					

Disabling function: Switching

Object no.	Function	Name	Type	DPT	Flag
113, 117	Switching	Disabling function *n* - Output	1-bit	1.001	C, R, -, T, A
1-bit object for transmission of switching telegrams (ON, OFF).					

Object no.	Function	Name	Type	DPT	Flag
114, 118	Switching - Status	Disabling function *n* - Input	1-bit	1.001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).					

Disabling function: Dimming and colour temperature

Object no.	Function	Name	Type	DPT	Flag
249, 255	Dimming - Switching	Disabling function *n* - Output	1-bit	1.001	C, R, -, T, A
1-bit object for transmission of switching telegrams (ON, OFF).					

Object no.	Function	Name	Type	DPT	Flag
250, 256	Dimming	Disabling function *n* - Output	4-bit	3.007	C, R, -, T, A
4-bit object for the transmission of relative dimming telegrams.					

Object no.	Function	Name	Type	DPT	Flag
252, 258	Dimming - Colour temperature fading	Disabling function *n* - Output	4-bit	3.007	C, R, -, T, A
4-bit object used to send relative colour temperature telegrams.					

Object no.	Function	Name	Type	DPT	Flag
250, 256	Dimming - Brightness and colour temperature	Disabling function *n* - Output	3-byte	250.600	C, R, -, T, A
4-bit object used to send relative brightness and colour temperature telegrams.					

Disabling function: Venetian blind / shutter / awning / skylight

Object no.	Function	Name	Type	DPT	Flag
325, 329	Venetian blind - Short time operation	Disabling function *n* - Output	1-bit	1.007	C, R, -, T, A
1-bit object for the transmission of telegrams with which a venetian blind or shutter drive motor can be stopped or with which the blind slats can be adjusted by short time operation.					

Object no.	Function	Name	Type	DPT	Flag
326, 330	Venetian blind - Long time operation	Disabling function *n* - Output	1-bit	1.008	C, R, -, T, A
1-bit object for the transmission of telegrams with which a venetian blind or shutter drive motor can be can be moved upwards or downwards.					

Disabling function: Value transmitter

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - 0...100%	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object for the transmission of values from 0 to 100%.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - 0...255	Disabling function *n* - Output	1-byte	5.010	C, R, -, T, A
1-byte object for the transmission of values from 0 to 255.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - 0...360°	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object for the transmission of values from 0 to 360°.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - 0...255%	Disabling function *n* - Output	1-byte	5.004	C, R, -, T, A
1-byte object for the transmission of values from 0 to 255%.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter -128...127	Disabling function *n* - Output	1-byte	6.010	C, R, -, T, A
1-byte object for the transmission of values from -128 to 127.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - 0...65535	Disabling function *n* - Output	2-byte	7.001	C, R, -, T, A
2-byte object for the transmission of values from 0 to 65535.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - Colour temperature value	Disabling function *n* - Output	2-byte	7.600	C, R, -, T, A
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter -32768...32767	Disabling function *n* - Output	2-byte	8.001	C, R, -, T, A
2-byte object for the transmission of values from -32768 to 32767.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - Temperature value	Disabling function *n* - Output	2-byte	9.001	C, R, -, T, A
2-byte object for transmitting temperature values from 0 to 40 °C.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - Brightness value	Disabling function *n* - Output	2-byte	9.004	C, R, -, T, A
2-byte object for transmitting brightness values from 0 to 1500 Lux.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - Colour temperature value and brightness value	Disabling function *n* - Output	6-byte	249,600	C, R, -, T, A
6-byte object used to send colour temperature and brightness information.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - RGB/HSV (colour wheel sequence)	Disabling function *n* - Output	3-byte	232.600	C, R, -, T, A
3-byte object for transmitting 3-byte colour information.					

Object no.	Function	Name	Type	DPT	Flag
525, 537	Value transmitter - RGBW -	Disabling function *n* - Output	6-byte	251.600	C, R, -, T, A
6-byte object for transmitting 6-byte colour information.					

Object no.	Function	Name	Type	DPT	Flag
526, 538	Value transmitter - Colour hue (H)	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object for transmitting the colour hue.					

Object no.	Function	Name	Type	DPT	Flag
527, 539	Value transmitter - Saturation (S)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object for transmitting the saturation.					

Object no.	Function	Name	Type	DPT	Flag
528, 540	Value transmitter - brightness value (V)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object for transmitting the brightness value.					

Object no.	Function	Name	Type	DPT	Flag
529, 541	Value transmitter - White value (W)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object for transmitting the brightness value.					

Disabling function: Scene extension

Object no.	Function	Name	Type	DPT	Flag
614, 618	Scene extension - Scene number	Disabling function *n* - Output	1-byte	18.001	C, R, -, T, A
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor.					

Disabling function: Short and long button actuation

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Switching	Disabling function *n* - Output	1-bit	1.001	C, R, -, T, A
1-bit object used to send switching telegrams by briefly pressing the button (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Switching	Disabling function *n* - Output	1-bit	1.001	C, R, -, T, A
1-bit object used to send switching telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
921, 937	Short and long button actuation - Object 1 - Switching - Status	Disabling function *n* - Input	1-bit	1.001	C, -, W, -, U
1-bit object used to receive switching telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
922, 938	Short and long button actuation - Object 2 - Switching - Status	Disabling function *n* - Input	1-bit	1.001	C, -, W, -, U
1-bit object used to receive switching telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Value 0...100%	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value 0...100%	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short button actuation - Object 1 - Value 0...255	Disabling function *n* - Output	1-byte	5.010	C, R, -, T, A
1-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value 0...255	Disabling function *n* - Output	1-byte	5.010	C, R, -, T, A
1-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Value 0...360°	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value 0...360°	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Value 0...255%	Disabling function *n* - Output	1-byte	5.004	C, R, -, T, A
1-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value 0...255%	Disabling function *n* - Output	1-byte	5.004	C, R, -, T, A
1-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Value -128...127	Disabling function *n* - Output	1-byte	6.010	C, R, -, T, A
1-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value -128...127	Disabling function *n* - Output	1-byte	6.010	C, R, -, T, A
1-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Value 0...65535	Disabling function *n* - Output	2-byte	7.001	C, R, -, T, A
2-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value 0...65535	Disabling function *n* - Output	2-byte	7.001	C, R, -, T, A
2-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Value -32768...32767	Disabling function *n* - Output	2-byte	8.001	C, R, -, T, A
2-byte object used to send value telegrams by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Value -32768...32767	Disabling function *n* - Output	2-byte	8.001	C, R, -, T, A
2-byte object used to send value telegrams by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Temperature value	Disabling function *n* - Output	2-byte	9.001	C, R, -, T, A
2-byte object used to send temperature values by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Temperature value	Disabling function *n* - Output	2-byte	9.001	C, R, -, T, A
2-byte object used to send temperature values by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Brightness value	Disabling function *n* - Output	2-byte	9.004	C, R, -, T, A
2-byte object used to send brightness values by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Brightness value	Disabling function *n* - Output	2-byte	9.004	C, R, -, T, A
2-byte object used to send brightness values by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - Scene number 1...64	Disabling function *n* - Output	1-byte	18.001	C, R, -, T, A
1-byte object used to send scene values by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - Scene number 1...64	Disabling function *n* - Output	1-byte	18.001	C, R, -, T, A
1-byte object used to send scene values by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
909, 925	Short and long button actuation - Object 1 - RGB colour value	Disabling function *n* - Output	3-byte	232.600	C, R, -, T, A
1-byte object used to send scene values by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
910, 926	Short and long button actuation - Object 2 - RGB colour value	Disabling function *n* - Output	3-byte	232.600	C, R, -, T, A
1-byte object used to send scene values by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
911, 927	Short and long button actuation - Object 1 - Colour hue (H)	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object used to send the colour hue by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
915, 931	Short and long button actuation - Object 2 - Colour hue (H)	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object used to send the colour hue by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
912, 928	Short and long button actuation - Object 1 - Saturation (S)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the saturation by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
916, 932	Short and long button actuation - Object 2 - Saturation (S)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the saturation by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
913, 929	Short and long button actuation - Object 1 - Brightness value (V)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the brightness by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
917, 933	Short and long button actuation - Object 2 - Brightness value (V)	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the brightness by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
911, 927	Short and long button actuation - Object 1 - Red colour value	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object used to send the red colour value by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
915, 931	Short and long button actuation - Object 2 - Red colour value	Disabling function *n* - Output	1-byte	5.003	C, R, -, T, A
1-byte object used to send the red colour value by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
912, 928	Short and long button actuation - Object 1 - Green colour value	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the green colour value by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
916, 932	Short and long button actuation - Object 2 - Green colour value	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the green colour value by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
913, 929	Short and long button actuation - Object 1 - Blue colour value	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the blue colour value by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
917, 933	Short and long button actuation - Object 2 - Blue colour value	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the blue colour value by pressing and holding the button (object 2).					

Object no.	Function	Name	Type	DPT	Flag
914, 930	Short and long button actuation - Object 1 - White colour value	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to send the white colour value by pressing the button briefly (object 1).					

Object no.	Function	Name	Type	DPT	Flag
918, 934	Short and long button actuation - Object 2 - White colour value	Disabling function *n* - Output	1-byte	5.001	C, R, -, T, A
1-byte object to send the white colour value by pressing and holding the button (object 2).					

Disabling function: Room temperature control point

Object no.	Function	Name	Type	DPT	Flag
1022, 1027	RTC control point - Operating mode	Disabling function *n* - Output	1-byte	20.102	C, R, -, T, A
1-byte object for switching a room temperature controller between the Comfort, Standby, Night and Frost/heat protection operating modes. This object is only visible if "Function = operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
1023, 1028	Operating mode status	Disabling function *n* - Input	1-byte	20.102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Function = operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
1022, 1027	Forced operating mode	Disabling function *n* - Output	1-byte	20.102	C, R, -, T, A
1-byte object for switching a room temperature controller under forced control between the Automatic, Comfort, Standby, Night and Frost / heat protection operating modes. This object is only visible if "Function = forced operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
1023, 1028	RTC control point - Operating mode - Forced - Status	Disabling function *n* - Input	1-byte	20.102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Function = forced operating mode switchover".					

Object no.	Function	Name	Type	DPT	Flag
1022, 1027	Presence	Disabling function *n* - Output	1-bit	1.018	C, R, -, T, A
1-bit object for changing over the presence status of a room temperature controller. This object is only visible if "Function = presence function".					

Object no.	Function	Name	Type	DPT	Flag
1023, 1028	Presence status	Disabling function *n* - Input	1-bit	1.018	C, -, W, -, U
1-bit object for receiving the presence status of a room temperature controller. This object is only visible if "Function = presence function".					

Object no.	Function	Name	Type	DPT	Flag
1022, 1027	Setpoint shift	Disabling function *n* - Output	2-byte	9.002	C, R, -, T, A
2-byte object for presetting a basic setpoint shift in Kelvin. The value "0" means that no shift is active . Values can be specified between +2 K and -2 K. This object is visible only if "function = target temperature shift".					

Object no.	Function	Name	Type	DPT	Flag
1023, 1028	Setpoint shift status	Disabling function *n* - Input	2-byte	9.002	C, -, W, -, U
2-byte object for receiving the feedback from the current basic setpoint shift in Kelvin. This object is visible only if "function = setpoint shift".					

12.6 Energy saving mode

The device has an energy-saving mode to save electrical energy during operation. If the function is used, the device switches to the energy saving mode after a preset time without operation or controlled by an external telegram to a separate object. In the energy saving mode, essential display functions of the device are switched off. The status LED is then without any function. The energy saving mode can be deactivated by actuating a button or by a special telegram. Afterwards, the device is fully functional again.

The energy saving mode can only be parameterised in the ETS if no alarm message is parameterised!

Activating energy saving mode

The device has two different activation options for setting the device to the energy saving mode. These can either be combined together or used separately.

Firstly, the device can be set to the energy saving mode by a group telegram via a communication object designated for this purpose. To do this, the telegram polarity that triggers the activation of the energy saving mode must be defined in the ETS.

Secondly, it is possible to switch to the energy saving mode automatically if no button has been actuated on the device within a defined time period. The time for this case is defined in the ETS. Each operation restarts the time for activating the energy saving mode.

On activation of energy-saving mode, all status LEDs are switched off under forced control.

Any activation attempts of the energy saving mode are ignored while the programming mode of the device is active

Deactivating energy saving mode

The device has two different options for deactivation of energy-saving mode, which can be optionally combined.

Firstly, it is always possible to deactivate energy-saving mode automatically, as soon as the device is operated.

On the other hand, deactivation can also take place by a group telegram via the communication object designated for this purpose. For this purpose, the telegram polarity that triggers the deactivation of the energy saving mode must be defined in the ETS.

If an operation deactivates the energy saving mode, the device always executes the configured operating function immediately as well (e.g. switching, dimming, etc ...).

If the transmission flag is set at the energy-saving mode object, other devices can be informed about the deactivation of energy-saving mode by pressing a button on the local device, causing them also to leave energy-saving mode (prerequisite: all the devices are linked to the same group address and deactivation via an object must be possible in the configuration of the other devices). When energy-saving mode is de-

activated when the transmission flag is set, the device sends an "Energy-saving mode deactivated" telegram to the bus, according to the inverted activated telegram polarity.

The device will activate the energy saving mode even if the operating areas are disabled. The energy saving mode (first operation) can also be deactivated by a disabled button. The configured operating functions (switching, dimming...) will not be executed thereby, however.

12.6.1 Table of parameters

"General" parameter page

Energy saving mode	Active **Inactive**
The energy saving mode can be enabled here. If the alarm signalling is enabled, the energy saving mode cannot be enabled.	

The following parameters are visible on the "Energy saving mode" parameter page if the energy saving mode has been activated.

Activating energy saving mode	**by object** automatically by time automatically by time or by object
This parameter defines how the energy saving mode is activated in the device. Firstly, the device can be set to the energy saving mode by a group telegram via a communication object designated for this purpose. Secondly, it is possible to switch to the energy saving mode automatically if no button has been actuated within a defined time period.	

Deactivating energy saving mode	automatically on operation **automatically on operation or via object**
This parameter defines how the energy saving mode is deactivated in the device. Firstly, it is possible to deactivate energy-saving mode automatically, as soon as the device is operated. If an operation of the device deactivates the energy saving mode, the device always executes the configured operating function immediately as well (e.g. switching, dimming, etc.). Secondly, the energy saving mode can be deactivated by a group telegram via a communication object designated for this purpose. However, this possibility can only be combined with the automatic deactivation on operation.	

Polarity of the "Energy saving mode" object	0 = activate / 1 = deactivate **1 = activate / 0 = deactivate**
This parameter defines the telegram polarity for the object for activating or deactivating the energy saving mode.	

Time until energy saving mode is activated	1 ... **5** ... 60 min
This parameter defines the time that must elapse after an operation so that the device activates the energy saving mode. Each operation restarts the time.	

12.6.2 Object list

Object no.	Function	Name	Type	DPT	Flag
47	Activate/deactivate	Energy saving mode - input	1-bit	1.003	C, -, W, -, U
1-bit object for activating or deactivating the energy saving mode. If the transmission flag is set, then other devices can be informed of the deactivation of energy-saving mode through operation on the local device, causing them also to leave energy-saving mode (precondition: all the devices are linked to the same group address and the deactivation via an object must be possible in the parameterisation of the other devices). When energy-saving mode is deactivated when the transmission flag is set, the device sends an "Energy-saving mode deactivated" telegram to the bus, according to the inverted activated telegram polarity.					

ALBRECHT JUNG GMBH & CO. KG
Volmestraße 1
58579 Schalksmühle
GERMANY

Telefon: +49 2355 806-0
Telefax: +49 2355 806-204
kundencenter@jung.de
www.jung.de