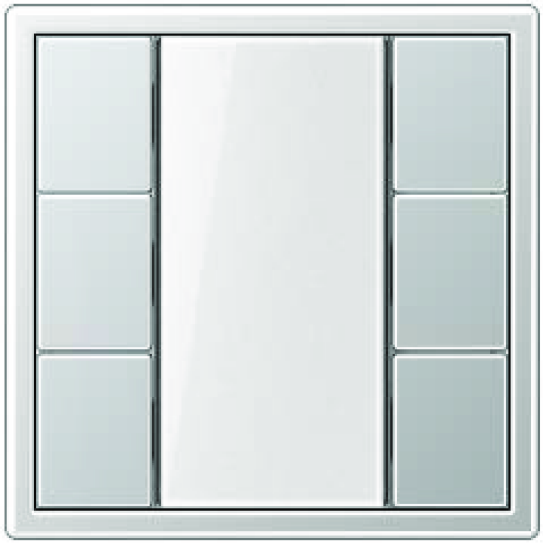
# Product documentation

Universal push-button module

Art. no. 529x1 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

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# 1 Information on the product

## 1.1 Product catalogue

| Product name | Article number | Use | Design |
|---|---|---|---|
| Universal push-button module, 1-gang | 52911 ST | Sensor | FM (Flush-mounted) |
| Universal push-button module, 3-gang | 52921 ST | Sensor | FM (Flush-mounted) |
| Universal push-button module, 3-gang | 52931 ST | Sensor | FM (Flush-mounted) |
| Universal push-button module, 4-gang | 52941 ST | Sensor | FM (Flush-mounted) |

## 1.2 Function

### General

The device is compatible with KNX Data Secure products. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. Detailed technical knowledge is required. 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 "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 pushbutton sensor modules consist of several operating areas. The operating concept can be configured in the ETS either as a rocker function or alternatively as a button function. With the rocker function, two neighbouring operating areas are combined into one rocker. In the button function, each operating area is evaluated as single-area operation.

If two operating areas are used as a rocker function, then, depending on the configuration, it is also possible to trigger special functions through "full-surface operation" of the rocker, i.e. both operating areas at the same time.

### Extension module push-button sensor

Optionally, the number of operating areas of the device can be expanded to include up to 8 additional operating areas, by connecting an extension module to the basic device. Configuration and commissioning of the extension module are clearly structured and easy to perform using the application program of the basic device. The connection between the push-button sensor module and the extension module is made using a two-wire cable (e.g. the yellow-white wire pair of the bus cable) and can be up to 30 metres long.

### 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.

### Lighting and LED functions

The universal push-button sensor modules have one status LED for each operating area. The status LEDs are executed in three colours and can – according to choice, in either red, green or blue – be switched on or off permanently or can function as an operation indication or as status indication.

As an alternative, with the aid of separate communication objects, they can signal widely varying display information completely independently of the push-button function, e.g. operation states of fault messages or also room temperature controllers, the results of logic value comparisons, flash or be permanently switched on or off.

Each colour of a status LED can be controlled either by three separate objects or alternatively by a mutual object (superimposed function), so that traffic light functions can also be implemented, – for example, depending on a limiting value - by means of an LED.

The large labelling field offers space for the convenient labelling of the pushbutton functions and can be lit in white where needed. Depending on the programming, the lighting can be permanently switched on as orientation lighting, or else only by pressing a button for a parameterised time. A flash signal can also be used e.g. as an alarm message.

An operation LED can either serve as an orientation light (also flashing), or can be activated via a separate communication object. In programming operating mode, the operation LED flashes permanently with a frequency of approx. 8 Hz.

The brightness of all the displays can be set in six stages, using a common parameter. A separate communication object allows the brightness to be reduced, e.g. during night hours.

### 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.

### Bus coupling unit

The push-button sensor modules contain a bus coupling unit and thus can be connected directly to the bus line. Push-button sensor extension modules do not include a bus coupling unit. The function and commissioning of the extension modules can only be carried out through a push-button sensor module basic device in each case.

## 1.3 Device components

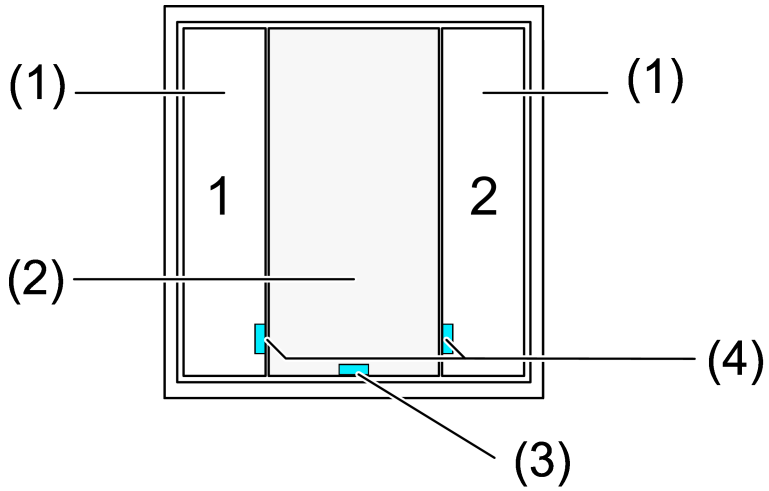


Image 1: Front view, universal push-button sensor module, 1-gang

(1) 2 operating areas, configurable as rocker 1 or as buttons 1…2
(2) Illuminable labelling field (white)
(3) 1 operation LED (red, green, blue)
(4) 2 status LEDs (red, green, blue) / one LED per button

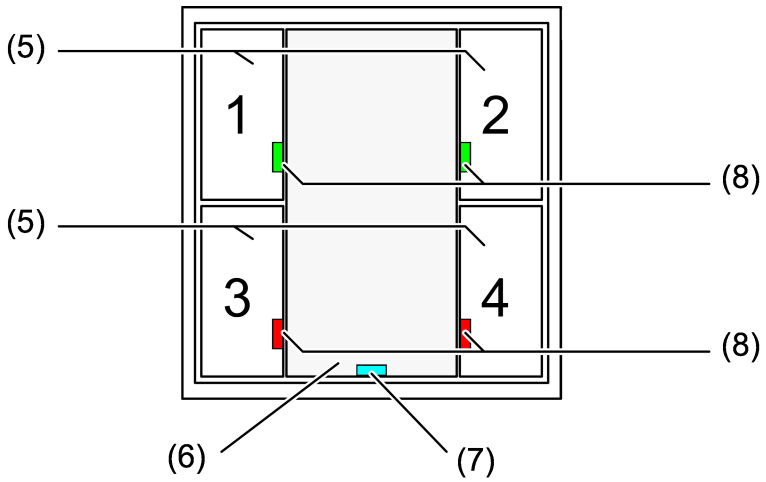


Image 2: Front view, universal push-button sensor module, 2-gang

(5) 4 operating areas configurable as rockers 1...2 or as buttons 1…4
(6) Illuminable labelling field (white)
(7) 1 operation LED (red, green, blue)
(8) 4 status LEDs (red, green, blue) / one LED per button

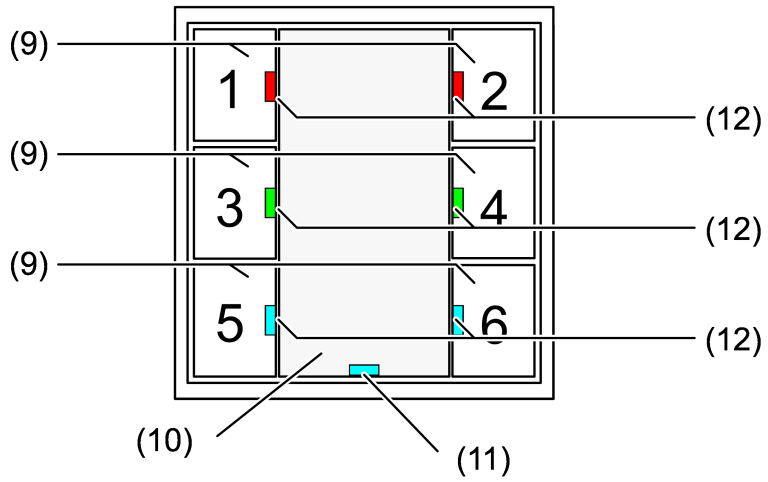


Image 3: Front view, universal push-button sensor module, 3-gang

(9) 6 operating areas configurable as rockers 1...3 or as buttons 1…6
(10) Illuminable labelling field (white)
(11) 1 operation LED (red, green, blue)
(12) 6 status LEDs (red, green, blue) / one LED per button

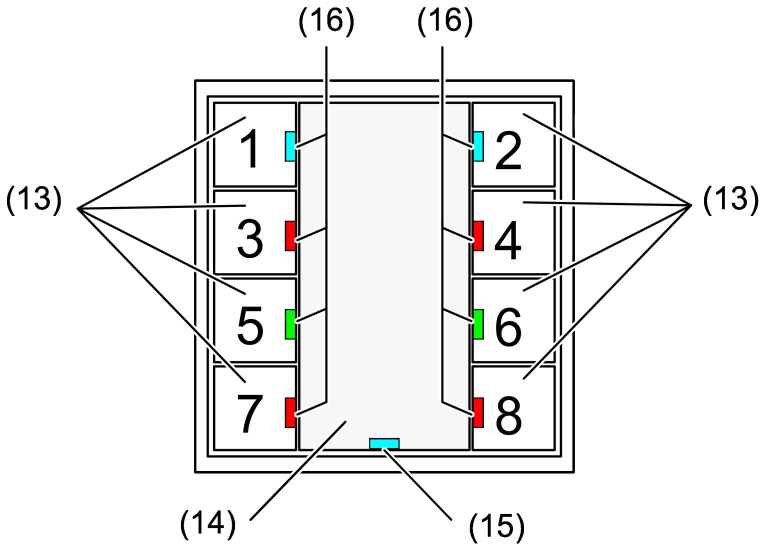


Image 4: Front view, universal push-button sensor module, 4-gang

(13) 8 operating areas configurable as rockers 1...4 or as buttons 1…8
(14) Illuminable labelling field (white)
(15) 1 operation LED (red, green, blue)
(16) 8 status LEDs (red, green, blue) / one LED per button

The push-button sensor modules can be integrated into the switch programs A500, LS990 or CD500.

## 1.4 As-delivered state

Upon delivery, the operation LED (colour: blue), together with the labelling field, flashes slowly (approx. 0.75 Hz). When any of the buttons are pressed, the appropriate status LED lights up for the duration the button is pressed (button-press display). The colour of the status LED changes with each new press of a button.

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 TSEM | Max. 12 mA |
| with TSEM | Max. 20 mA |
| Connection mode KNX | Device connection terminal |
| Connecting cable KNX | EIB-Y (St)Y 2x2x0.8 |
| Protection class | III |

### Connection of the extension module

| | |
|---|---|
| Number | 1 |
| Cable length | Max. 30 m |
| Cable type | J-Y(St)Y 2×2×0.8 |

### Ambient conditions

| | |
|---|---|
| Measuring range Temperature | -5 ... +45°C |
| Ambient temperature | -5 ... +45°C |
| Storage/transport temperature | -25 ... +70°C |

## 1.6 Accessories

| | |
|---|---|
| Cover kit 1-gang | ..501 TSA.. |
| Cover kit 2-gang | ..502 TSA.. |
| Cover kit 3-gang | ..503 TSA.. |
| Cover kit 4-gang | ..504 TSA.. |
| Push-button extension module, 1-gang | ..5091TSEM |
| Push-button extension module, 2-gang | ..5092TSEM |
| Push-button extension module, 3-gang | ..5093TSEM |
| Push-button extension module, 4-gang | ..5094TSEM |

# 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.

### Mounting and connecting the device

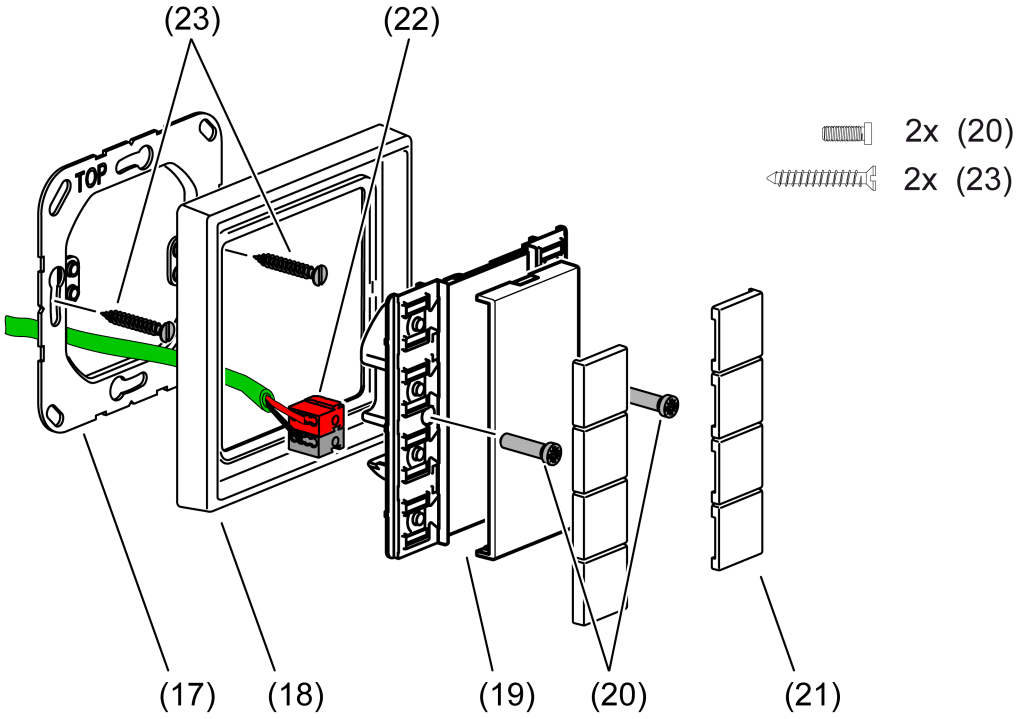


Image 5: Mounting the push-button sensor basic module

(17) Supporting frame
(18) Design frame
(19) Push-button sensor module
(20) Fastening screws
(21) Buttons
(22) KNX device connection terminal
(23) Box screws

- Mount supporting frame (17) in the right orientation on an appliance box. Note the TOP marking. Use the enclosed box screws (23).
- Position the design frame (18) on the supporting frame.
- Connect the push-button module (19) with KNX device connection terminal (22), which is connected to the KNX bus line, on the rear side of the module. Run the connection cable downwards from the push-button module and then into the appliance box from the rear.
- Attach the push-button module onto the supporting frame.

- Fasten push-button module to supporting frame using the enclosed plastic screws (20). Tighten the plastic screws only lightly.

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

### Mount and connect the push-button sensor basic module with push-button extension module

One push-button extension module can be connected to each push-button sensor basic module. The white-yellow wire pair of the bus line, or alternatively a separate cable, can be used as the connection cable. When connecting, make sure the polarity is correct (e.g. on the TSM and TSEM yellow = "+", white = "–").

When the white-yellow wire pair of the bus line is used as the connection cable, the two-wire pair can only connect one push-button sensor basic device and one push-button sensor extension module to each other along the shortest path. Leading the two-wire pair electrically into the system, e.g. to connect additional push-button sensor modules with each other, is not permitted! Leading further is also not permitted, if this results in total cabling paths of longer than is permitted (max. 30 m).

The white-yellow wire pair of the bus line must not be used to connect push-button sensor modules, if these wires are already used to fulfil other tasks of the KNX installation (e.g. additional power supply for specific bus devices). In this case, a separate connection line is to be used. This is especially to be heeded when retrofitting an existing KNX system.

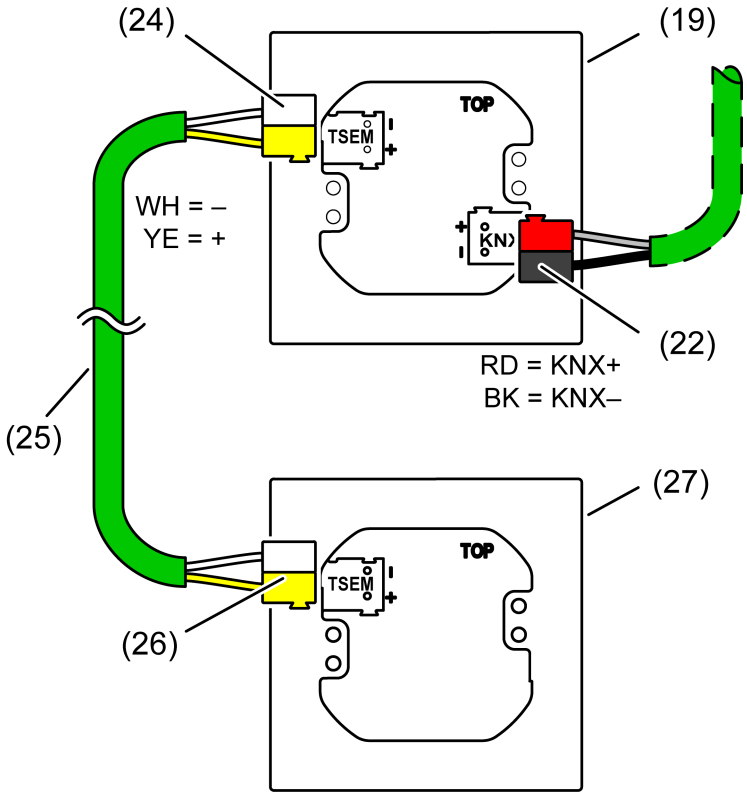


Image 6: Connection of the push-button sensor extension module (view from rear)

(19) Push-button sensor module Universal
(22) KNX device connection terminal
(24) Device connection terminal for connecting an extension module, white-yellow
(25) Connection line for push-button sensor extension module
(26) Device connection terminal for extension module, white-yellow
(27) Extension module push-button sensor

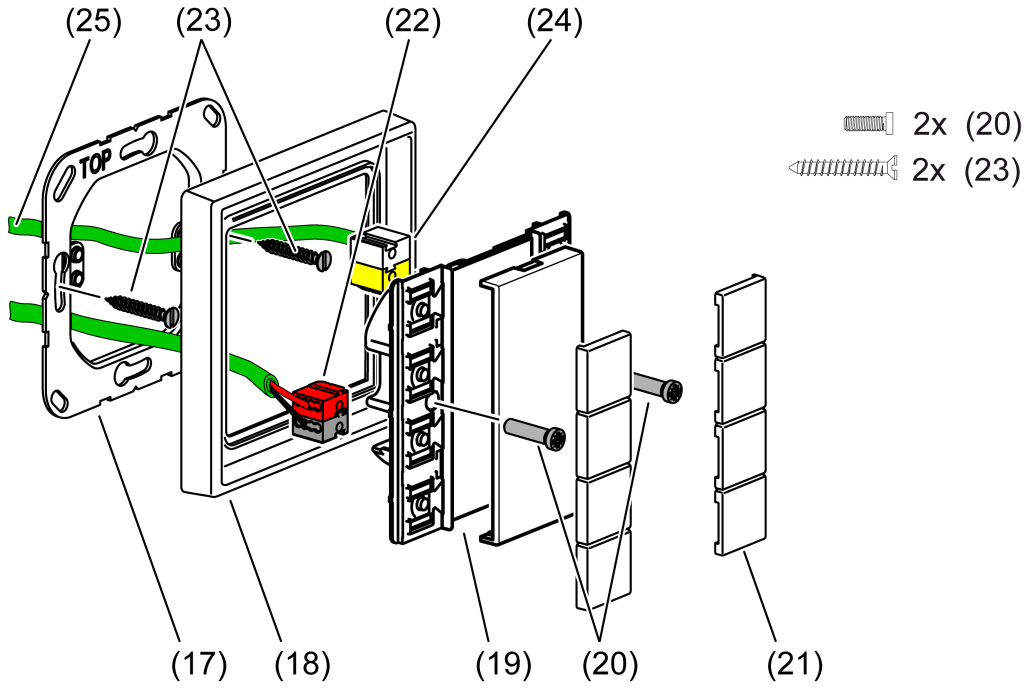


Image 7: Mounting the push-button sensor module with connection of a push-button sensor extension module

(17) Supporting frame
(18) Design frame
(19) Push-button sensor module
(20) Fastening screws
(21) Design control surfaces
(22) KNX device connection terminal
(23) Box screws
(24) Device connection terminal for connecting an extension module, white-yellow
(25) Connection line for push-button sensor extension module

The push-button sensor basic device and a push-button sensor extension module are essentially mounted

- Mount supporting frame (17) in the right orientation on an appliance box. Marking TOP
- Lead the bus line and connection line out of the box and through the supporting frame (17) and frame (18).

- Push frame (18) onto supporting frame (17).

On the push-button sensor basic device (19):

- Connect the KNX bus line with red-black KNX device connection terminal (22) to the "**KNX**" slot at the back.
- Connect the connection line (25) with white-yellow device connection terminal (24) to the "**TSEM**" slot at the back.

On the push-button sensor extension module (19):

- Connect the connection line (25) with white-yellow device connection terminal (24) to the "**TSEM**" slot at the back.
- Attach the push-button module onto the supporting frame (17).
- Fix push-button sensor module to supporting frame using the supplied plastic screws (20).

# 4 Commissioning

After connection and mounting, the push-button sensor module can be put into operation. The commissioning is basically confined to programming with the ETS and attaching the decorative operating areas.

The extension module does not receive any physical address of its own. It is activated by the application program loaded in the basic module.

### Programming the physical address

The push-button sensor does not have a separate programming button or LED. Programming mode is activated by a defined and time-delayed press of the upper left and lower right of the push-button. Programming mode is signalled by flashing operation LEDs on the basic and extension modules. To program the physical address, the decorative operating areas can be snapped onto the device.

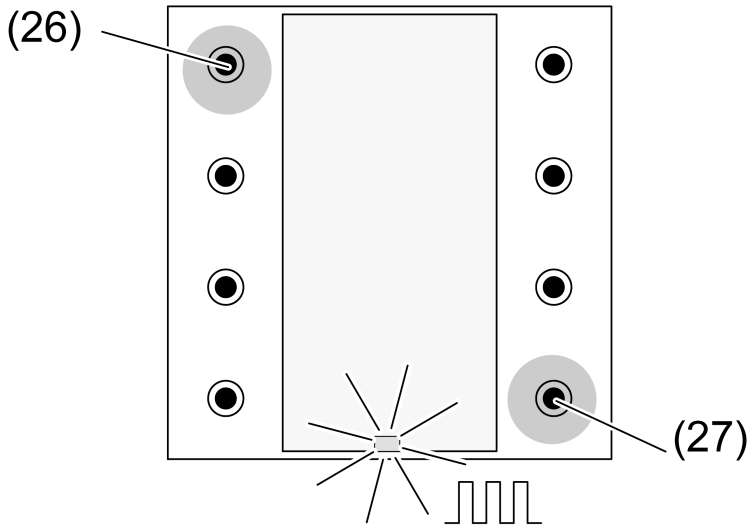


Image 8: Buttons for activating Programming mode

If the device does not contain any application software, or the wrong application software, then the operation LED (colour: blue) and the labelling field illumination on the basic and extension modules flash slowly.

For commissioning, the push-button sensor module must be connected and the bus voltage switched on.

- Activate Programming mode. Press and hold down the push-button at the top left of the basic device (26) (see figure 8). Then press second push-button at the lower right (27).

  Programming mode is activated. The operation LEDs (26) on the basic and extension modules flash quickly (approx. 8 Hz).

Use suitable objects to push the buttons without design operating areas (e.g. thin screwdriver, tip of a ballpoint pen, etc.).

i To exclude any inadvertent activation of Programming mode during a 'normal' use of the operating area in later operation, the time between the first and the second button actuation must be at least 200 ms. Pressing both buttons simultaneously (time between first and second button actuation < 200 ms) will not result in an activation of Programming mode.

i In programming mode, the operation LED flashes steadily in the colour blue. The flashing rate remains the same until the operating mode is ended. The state of the LED defined by Programming mode will always prevail.

- Program the physical address with the help of the ETS.
- Programming mode ends:
  - Automatically after adoption of the physical address
  - By pressing any button on the basic module

i If Programming mode is to be activated or deactivated in a device which is already programmed with a valid application, there is the possibility that telegrams will be transmitted to the bus at the time the button is pressed. The telegram transmitted depends on the button function programmed.

i The extension module does not receive any physical address of its own. It is activated by the application program loaded in the basic module. The programming mode cannot be activated or deactivated on the extension module. When programming mode is active, the extension module can be operated normally. Then the telegrams corresponding to the project design are also transmitted to the bus.

**Programming the application program**

Program the application into the device with the help of the ETS. For commissioning, the ETS from Version 5.7.7 or 6.0.6 onwards is required. The ETS detects automatically whether a valid application has already been programmed into the device before. To reduce the programming time, the ETS downloads the whole application only if the device was programmed beforehand with another application or with no application at all. In all other cases, the ETS makes a time-optimised partial download in which only the modified data is loaded into the device.

**Installing the decorative control surfaces**

The decorative control surfaces are available as a complete set of buttons. Individual buttons or the complete set of buttons can be replaced by buttons with icons. The design control surfaces are not included in the scope of supply of the push-button sensor basic module or the push-button extension module. These must be ordered specially according to the required design.

- Place control surfaces on the push-button sensor basic module in the right orientation and also on the push-button extension module (if used), and snap in with a short push.

**Preconditions in secure operation**

– Secure commissioning is 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.

## 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 down the top left and bottom right button.
- Switch on the bus voltage.

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

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**

Precondition: The safe-state mode is activated.

- Press and hold the button at the top left and the button at the bottom right for more than five seconds until the operation LED flashes quickly (approx. 4 Hz).
- 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 Operation

## Operating areas

The universal push-button sensor modules consist of several operating areas. The operating concept can be configured in the ETS either as a rocker function or alternatively as a button function. With the rocker function, two neighbouring operating areas are combined into one rocker. In the button function, each operating area is evaluated as single-area operation. If two operating areas are used as a rocker function, then, depending on the configuration, it is also possible to trigger special functions through "full-surface operation" of the rocker switch, i.e. both operating areas at the same time.
The number of operating areas depends on the push-button sensor variant used. As an option, the number of rockers of each universal push-button sensor module can be supplemented with a 1 to 4-gang push-button sensor extension module. This makes up to 4 additional rockers available.

The universal push-button sensor modules have one status LED for each operating area. The status LEDs are executed in three colours and can – according to choice, in either red, green or blue – be switched on or off permanently or can function as an operation indication or as status indication. As an alternative, with the aid of separate communication objects, they can signal widely varying display information completely independently of the push-button function, e.g. operation states of fault messages or also room temperature controllers, the results of logic value comparisons, flash or be permanently switched on or off.
Each colour of a status LED can be controlled either by three separate objects or alternatively by a mutual object (superimposed function), so that traffic light functions can also be implemented, – for example, depending on a limiting value - by means of an LED.
The operation LEDs and the illuminated labelling field can signal the switching state of an own object, flash or be permanently switched on or off. Besides functions that can be set using the ETS, the operation LED also indicates that the push-button sensor is in the programming mode for commissioning or diagnosis purposes.
Moreover, the universal push-button sensor module has functions which are not immediately linked with the rockers or buttons. This includes the room temperature control point, push-button function disabling and the indication of alarm signals.

## 5.1 Flashing frequencies of the LEDs

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

*) The labelling field is also activated with approx. 2 Hz.

# 6 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, 3-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 |

**Application program available for Universal push-button module, 1-gang**

| | |
|---|---|
| Name | Universal push-button module, 1-gang D14121 |
| Version | 2.1 for ETS from version 5.7.7 or 6.0.6 |
| from mask version | 07B0 |
| Summarized description | Multifunctional application universal push-button sensor TSM 1-gang. |
| | 2 operating areas on push-button sensor basic module. |
| | Can be extended to up to 10 operating areas by the push-button sensor extension module. |

**Application program available for Universal push-button module, 3-gang**

| | |
|---|---|
| Name | Universal push-button module, 3-gang D14221 |
| Version | 2.1 for ETS from version 5.7.7 or 6.0.6 |
| from mask version | 07B0 |
| Summarized description | Multifunctional application universal push-button sensor TSM 2-gang. |
| | 4 operating areas on push-button sensor basic module. |
| | Can be extended to up to 12 operating areas by the push-button sensor extension module. |

**Application program available for Universal push-button module, 3-gang**

| | |
|---|---|
| Name | Universal push-button module, 3-gang D14321 |
| Version | 2.1 for ETS from version 5.7.7 or 6.0.6 |
| from mask version | 07B0 |
| Summarized description | Multifunctional application universal push-button sensor TSM 3-gang. |
| | 6 operating areas on push-button sensor basic module. |
| | Can be extended to up to 14 operating areas by the push-button sensor extension module. |

### Application program available for Universal push-button module, 4-gang

| | |
|---|---|
| Name | Universal push-button module, 4-gang D14421 |
| Version | 2.1 for ETS from version 5.7.7 or 6.0.6 |
| from mask version | 07B0 |
| Summarized description | Multifunctional application universal push-button sensor TSM 4-gang.<br>8 operating areas on push-button sensor basic module.<br>Can be extended to up to 16 operating areas by the push-button sensor extension module. |

# 7 Scope of functions

### General

- KNX Data Secure compatible
- Firmware updates are possible
- The number of buttons can be expanded using Push-button extension module.

### Push-button sensor functions

- The operating concept can be configured
- 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 command sequence 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, operation LED and labelling field illumination

- Each operating area has one status LED of its own available. The status LED can light up in red, green or blue according to choice
- 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, operation LED and the labelling field illumination is adjustable in 6 stages.

  With brightness reduction, the brightness of the status LED, operation LED and the labelling field illumination can be reduced at night time using a communication object.
- Alarm signal can be activated

  All status LEDs, operation LEDs and labelling field illumination for 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 controller 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, target 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.

# 8 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 configuration of the push-button sensor basic module occurs on the parameter page "TSM". The operating concept for every push-button of the push-button sensor basic module can be defined.
If an extension module is also used, the parameter page "TSEM" is displayed. The configuration and operating concept of the extension module can be set here.

## 8.1 General 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.
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. Thus, for example, a 1-gang push-button sensor module as a basic device can be supplemented with a 4-gang extension module, adding 8 to 10 operating areas. In the same way, a 2-gang basic device can be expanded with a 4-gang extension module to 12 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 area of the extension module has a status LED that is 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".

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

- LED alarm signalling
- Disabling function
- Energy saving mode

These functions are configured on separate parameter pages.

**TSM/TSEM - Configuration**

Settings for the status LED, operation LED and labelling field illumination can be mad on the parameter page "TSM/TSEM - Configurations".

The function and colour as well as the light duration for actuation indication (up to 5 s) can be set under “Status LED“.

The function and colour can be set under “Operation LED“.

The function can be set under "Labelling field illumination".

The brightness of all status LEDs, operation LEDs and the labelling field illumination can be jointly set in 6 stages under "Brightness".

Furthermore, the cross-channel device functions can be enabled on the "TSM/TSEM - Configurations" parameter page:

– Temperature measurement
– Brightness reduction

These functions are configured on separate parameter pages.

### TSM/TSEM - Operating concept

The operating concept for all buttons of the push-button sensor basic module are set on the "TSM - Operating concept" parameter page. If a push-button sensor extension module is present, the same settings can be made for this on a separate "TSEM - Operating concept" page.

Here, for each button pair, it is possible to configure whether the buttons opposite each other operate in the rocker function or in the button function. A separate parameter page appears for each rocker/button.

### Operating concept and extension module

If a push-button sensor extension module is connected, its must be enabled separately in the ETS. The type of extension module must be specified under "General", "Button configuration".

Configuration of the operating areas of the connected extension module is carried out in the ETS on the "TSEM - Operating concept" parameter page.
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)).

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.

### Operating concept and button evaluation

The changeover between rockers and button operation of an operating area of the basic or extension module is made on the parameter pages "TSM - Operating concept" and "TSEM - Operating concept".
The "TSM - Operating concept" parameters define for each operating area 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 parameterized 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.

### 8.1.1 Operation LED

Some of the functions of the operation LED of the push-button sensor modules are permanently predefined internally:

- In a non-programmed device (delivery state) or with an incorrectly-loaded application program, this LED flashes – together with the labelling field – at a slow frequency of approx. 0.75 Hz. For this case, the colour is permanently set to blue.
- When the push-button sensor is switched over into the programming mode for commissioning or for diagnosis purposes, the LED flashes at a fast rate of about 8 Hz (cf. "Commissioning" in the hardware description of this documentation). In this case too, the colour is permanently set to blue.

In the ETS, additional functions can be set through parameters:

- The LED can flash together with all other status LEDs with a frequency of about 2 Hz, when the communication object for the alarm signalling is active.
- The LED can display the status of a separate communication object in inverted or non-inverted form. Here the operation LED can also be activated as flashing with a frequency of approx. 2 Hz.
- It can be switched on permanently to serve as orientation lighting.
- It can be switched off permanently.
- It can be switched on by pressing a button of the push-button sensor module and switched off after a pre-set time has elapsed.

If several of the above states occur at the same time, the priority is as follows:

1. The display of the programming mode.
   The programming mode is cancelled automatically after any actuation on the basic module.
2. The display of an alarm.
   The mode of resetting the alarm either automatically by a button-press or by the communication object must be specified in the parameters.
3. The status indication for the separate communication object or the permanent states (on, off, automatic switch-off).

The operation LEDs are activated using either one single or three separate 1-bit communication objects. In the first case, the colour is permanently predefined by the parameter "Colour".
When the parameter "Function and colour" is set to the value "3-colour individual control via objects", an individual communication object is displayed for each colour red, green and blue. The most recently received communication object, which switches the LED to active, then determines the colour of the LED. A switch-off signal always only switches the corresponding colour off. Then the LED switches back to the colour of the previously received object. The LED is off when all communication objects have the value "0".

The push-button sensor extension module also has an operation LED. The same display functions of the operation LEDs as in the basic device are available on the extension module.

### 8.1.2 Labelling field illumination

The labelling field can be illuminated by white LEDs. The labelling field illumination can be used flexibly as needed, whereby individual functions are permanently predefined internally:

- In a non-programmed device (delivery state) or after downloading of a wrong application program, it flashes – together with the operation LED – at a slow rate of approx. 0.75 Hz.
- When a full-surface press with the rocker function has been detected, the labelling field flashes at about 8 Hz.

The application software permits selecting parameters for further functions:

- The labelling field can flash together with all other status LEDs at a frequency of approx. 2 Hz when the communication object for the alarm message is active.
- The LED can display the status of a separate communication object in inverted or non-inverted form. The labelling field can also be activated as flashing with a frequency of approx. 2 Hz.
- The labelling field can be switched on permanently to serve as orientation lighting.
- The labelling field can be switched off permanently.
- The labelling field illumination can be switched on by pressing a button of the push-button sensor and switched off after a pre-set time has elapsed.

If several of the above states occur at the same time, the priority is as follows:

1. The display of a valid full-surface actuation with the rocker function.
2. The display of an alarm.
   The mode of resetting the alarm either automatically by a button-press or by the communication object must be specified in the parameters.
3. The status indication for the separate communication object or the permanent states (on, off, automatic switch-off).

The labelling field of a connected push-button sensor extension module can be illuminated in the same way. To do so, the same functions as in the basic device are available in the extension module.

### 8.1.3 Table of parameters

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

| | |
|---|---|
| Extension module push-button sensor | **not present**<br>1-gang<br>2-gang<br>3-gang<br>4-gang |
| 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, new parameter pages are created according to the number of buttons.<br>The push-button sensor basic module is automatically detected and created with its existing buttons. | |

The following parameters are available under the "TSM - Configuration" parameter page (if extension module present, also "TSEM - Configuration") under the "Status LED" heading.

| | |
|---|---|
| Function and colour | **User-defined (colour selection per status LED)**<br>3-colour-individual control via object |
| How the operation LED works is set here. | |

| | |
|---|---|
| Colour | **red**<br>green<br>blue<br>Colour selection per status LED |
| Here, a set colour is specified for all status LEDs or there is the possibility of defining the colour for each status LED separately.<br>For the setting "Colour selection per status LED", the "Colour of the status LED" is set for each status LED separately on the parameter page "TSM/TSEM - Buttons/ rockers". | |

| | |
|---|---|
| Light duration of status LED for button-actuation display | 1 s<br>2 s<br>**3 s**<br>4 s<br>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 under the "TSM - Configuration" parameter page (if extension module present, also "TSEM - Configuration") under the "Operation LED" heading.

| | |
|---|---|
| Function and colour | **user-defined**<br>3-colour-individual control via object |
| How the operation LED works is set here. | |

| | |
|---|---|
| Function | switched-off<br>**switched-on**<br>Control via object<br>Button-actuation display |
| This parameter defines the functionality of the operation LED. Only visible when the parameter "Function and colour" is set to "user-defined". | |

| | |
|---|---|
| Colour | red<br>green<br>**blue** |
| The colour of the operation LED is set here. Only visible when the parameter "Function and colour" is set to "user-defined". | |

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

| | |
|---|---|
| Operation LED light duration | 0 ... **5** ... 20 min \| **0** ... 59 s |
| This parameter defines the period for which the operation LED is lit up to indicate actuation. | |

The following parameters are available under the "TSM - Configuration" parameter page (if extension module present, also "TSEM - Configuration") under the "Labelling field illumination" heading.

| | |
|---|---|
| Function | switched-off<br>**switched-on**<br>Control via object<br>Button-actuation display |
| The function of the labelling field illumination is set here. | |

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

| | |
|---|---|
| Light duration for labelling field illumination | 0 ... **5** ... 20 min \| **0** ... 59 s |
| This parameter defines the period for which the labelling field illumination is lit up to indicate actuation. | |

The following parameter is available under the "TSM - Configuration" parameter page (if extension module present, also "TSEM - Configuration") under the "Brightness (status LED, operation LED and labelling field illumination)" heading.

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

### 8.1.4 Object list

The following communication objects are available for the operation LED or the labelling field illumination, depending on the set function of the LED.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 5, 19 | Control | TSM/TSEM - Operation LED - Input | 1-bit | 1.001 | C, -, W, -, - |
| 1-bit object for activation of the operation LED.<br>Only visible when "Function and colour" for the operation LED is set to "user-defined" and a "Control via object" has been selected for the "Function". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1241.1253 | Switching colour red | TSM/TSEM - Operation LED - Input | 1-bit | 1.001 | C, -, W, -, - |
| 1-bit object for activation of the operation LED in the colour red.<br>Only visible when "3-colour-individual control via object" has been selected for "Function and colour" for the operation LED. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1242.1254 | Switching colour green | TSM/TSEM - Operation LED - Input | 1-bit | 1.001 | C, -, W, -, - |
| 1-bit object for activation of the operation LED in the colour green.<br>Only visible when "3-colour-individual control via object" has been selected for "Function and colour" for the operation LED. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1243.1255 | Switching colour blue | TSM/TSEM - Operation LED - Input | 1-bit | 1.001 | C, -, W, -, - |
| 1-bit object for activation of the operation LED in the colour green.<br>Only visible when "3-colour-individual control via object" has been selected for "Function and colour" for the operation LED. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 11, 25 | Control | TSM/TSEM - Labelling field illumination - Input | 1-byte | 20.102 | C, -, W, -, - |
| 1-byte object for activation of the status LED. | | | | | |

# 9 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) |

## 9.1 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.

### 9.1.1 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<br>ON<br>OFF<br>**TOGGLE** |
| This parameter defines the reaction when the button is pressed. | |

| | |
|---|---|
| When released | **no reaction**<br>ON<br>OFF<br>TOGGLE |
| This parameter defines the reaction when the button is released. | |

### 9.1.2 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 adjusted by the "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 65, 69 ... 125 | Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 66, 70, ..., 126 | Switching - Status | TSM/TSEM - Button/rocker *n* - Input | 1-bit | 1.001 | C, -, W, -, U |
| 1-bit object for receiving feedback telegrams (ON, OFF).<br>This object is visible if the "When pressed" parameter or "When released" parameter is configured to "TOGGLE". | | | | | |

## 9.2 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.

### 9.2.1 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.

### 9.2.2 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.

### 9.2.3 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.

### 9.2.4 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**<br>**Single object: colour temperature**<br>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<br>**Brighter (ON)**<br>Darker (OFF)<br>Brighter / darker (TOGGLE)<br>Brighter (TOGGLE)<br>Darker (TOGGLE) |
| This parameter defines the reaction when a button is pressed.<br>If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked.<br>This parameter is visible only if: dimming control = individual object: brightness | |

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

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

| | |
|---|---|
| Advanced parameters | Active<br>**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. | |

| | |
|---|---|
| Increase brightness by | 1.5%<br>3%<br>6%<br>12.5%<br>25%<br>50%<br>**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.<br>It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition"). | |

| | |
|---|---|
| Reduce brightness by | 1.5%<br>3%<br>6%<br>12.5%<br>25%<br>50%<br>**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.<br>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%<br>3%<br>6%<br>12.5%<br>25%<br>50%<br>**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.<br>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%<br>3%<br>6%<br>12.5%<br>25%<br>50%<br>**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.<br>It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition"). | |

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

| Telegram repetition | Active<br>**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**<br>300 ms<br>400 ms<br>500 ms<br>750 ms<br>1000 ms<br>2000 ms |
|---|---|
| This parameter defines the interval at which the dimming telegrams are automatically repeated in the telegram repetition mode.<br>This parameter is only visible if "Telegram repetition = active"! | |

### 9.2.5 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 "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 169, 175, ..., 259 | Dimming - Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 170, 176..., 260 | Dimming | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 170, 176..., 260 | Dimming - Brightness and colour temperature | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 171, 177, ..., 261 | Dimming - Switching - Status | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 172, 178, ..., 262 | Dimming - Colour temperature | TSM/TSEM - 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. | | | | | |

## 9.3 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 area as a rocker, the double-surface venetian blind function is preset. This means that the device e.g. with a press of the left button, transmits a telegram for an upward movement and, after a press of the right button, transmits a telegram for a downward movement.

In the case of an operating area 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:

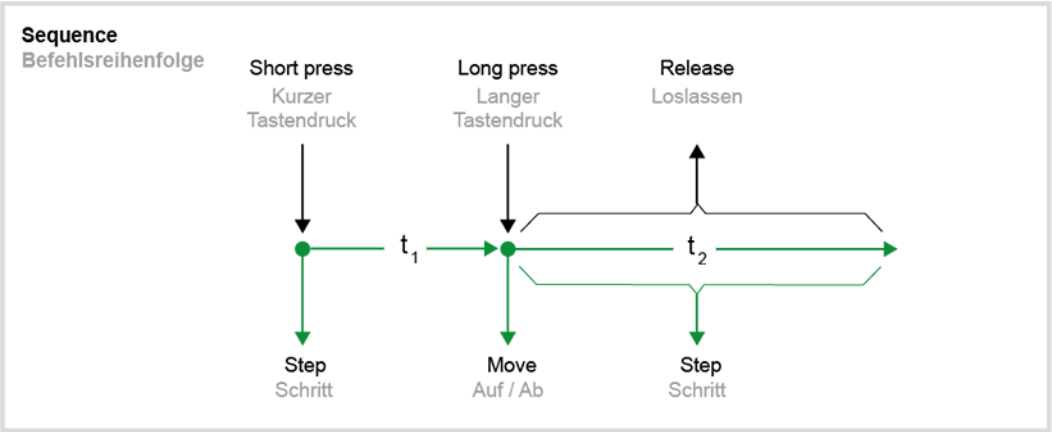


Image 9: "Step - Up/down - Step" operating concept

– 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:

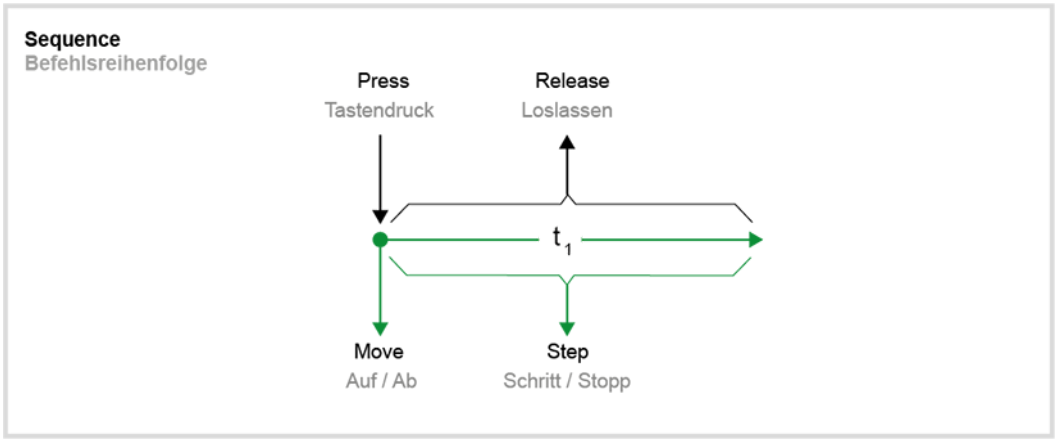


Image 10: "Up/down - Step" operating concept

- 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:

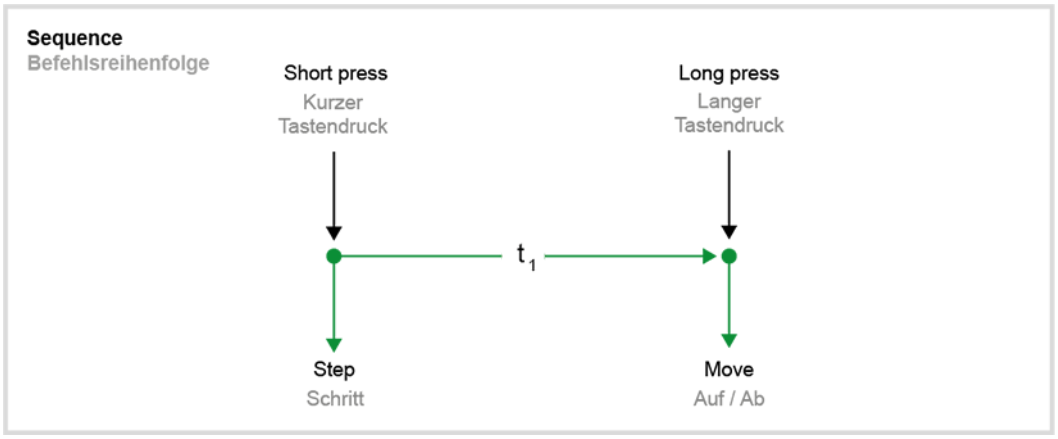


Image 11: "Step - Up/down" operating concept

- 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:

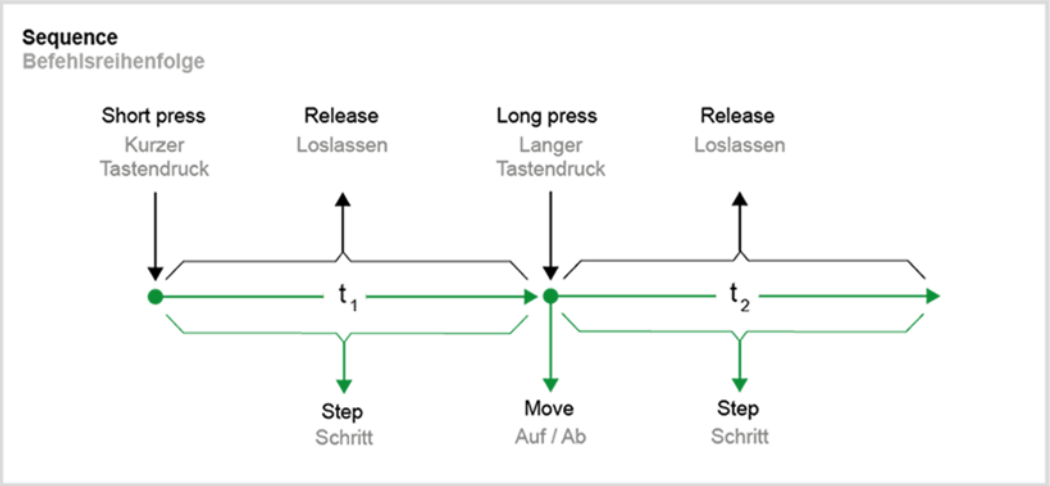


Image 12: "Up/down – Step or step" operating concept

– 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.

### 9.3.1 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<br>DOWN<br>**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**<br>Up/down - Step<br>Step - Up/down<br>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.<br>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.<br>This parameter is not visible for the "command sequence = Step - Up/down" | |

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

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

| Function | **Switching**<br>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.<br>This parameter is only visible if "Full-surface actuation = Active"! | |

| Command | ON<br>OFF<br>**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.<br>This parameter is only visible if "function for full-surface operation = Switching"! | |

| Short button actuation for scene extension | **Recalling scenes**<br>Recall 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.<br>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.<br>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.<br>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 scene number that you can switch between when pressing the full surface of the button is selected here.<br>This parameter is visible only with "function in the event of full-surface operation = scene extension" and the "Switch over scenes" setting. | |

| Long button actuation | **no reaction**<br>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).<br>This parameter is visible only if "function in the event of full-surface operation = scene extension"! | |

### 9.3.2 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 "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 277, 281, ..., 337 | Venetian blind - Short time operation | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 278, 282, ..., 338 | Venetian blind - Long time operation | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 137, 141, ..., 165 | Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 138, 142, ..., 166 | Switching - Status | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 638, 642 ..., 666 | Scene extension - Scene number | TSM/TSEM - 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. | | | | | |

## 9.4 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 "Value adjustment starts x s 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) |
| - Value adjustment starts 5 s after button is pressed |
| - Time between two telegrams = 0.5 s |

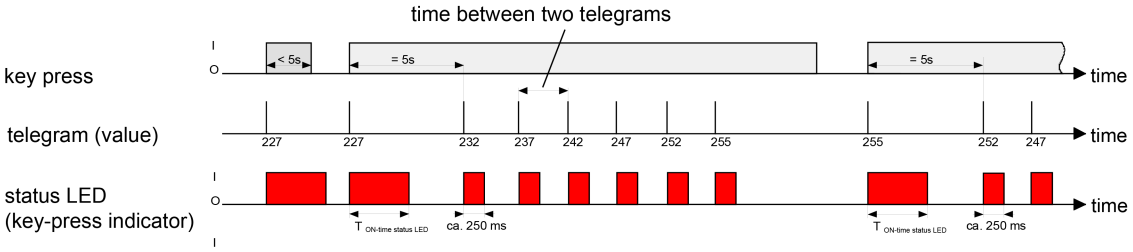


Image 13: Example of value adjustment without value range overflow

| 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) |
| - Value adjustment starts 5 s after button is pressed |

| Example 2: Value adjustment with overflow |
| --- |
| - Time between two telegrams = 0.5 s |

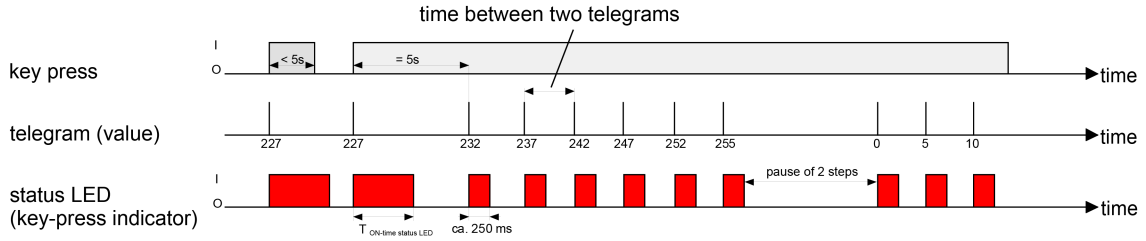


Image 14: Example of value adjustment with value range overflow

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.

### 9.4.1 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%<br>**DPT 5.010 \| 0 ... 255**<br>DPT 5.003 \| 0 ... 360°<br>DPT 5.004 \| 0 ... 255%<br>DPT 6.010 \| -128 ... 127<br>DPT 7.001 \| 0 ... 65535<br>DPT 7.600 \| 1000 ... 10000 K<br>DPT 8.001 \| -32768 ... 32767<br>DPT 9.001 \| 0 ... 40°C<br>DPT 9.004 \| 0 ... 1500 lux<br>DPT 249.600 \| colour temperature value + brightness<br>RGB/HSV with colour wheel sequence (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)<br>RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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)".<br>The value (RGB/HSV) is configured by means of a colour picker.<br>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.<br>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<br>**Inactive** |
|---|---|
| If the value adjustment is activated, the ETS shows further parameters.<br>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.<br>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<br>same as value after last adjustment<br>**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"

| | |
|---|---|
| Start value | **same as configured value**<br>same as value after last adjustment<br>as value from feedback object (1-byte colour hue/H-value)<br>as value from feedback object (1-byte brightness/V-value)<br>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 from 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 from 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<br>downwards<br>**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.<br>This parameter is visible only if "value adjustment = active"!<br>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 -> ...)**<br>Colour sequence in anti-clockwise direction (red -> blue -> green -> red -> ...)<br>Toggling colour sequence (alternating when 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.<br>This parameter is visible only if "value adjustment = active"!<br>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**<br>darker<br>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.<br>This parameter is visible only if "value adjustment = active"!<br>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.<br>This parameter is visible only if "value adjustment = active"!<br>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.<br>This parameter is visible only if "value adjustment = active"!<br>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"!<br>i This selection is available only with the data point type \| value range: "DPT 9.001 \| 0 ... 40 °C". | |

| Step width | 1 ... **500** ... 1000 |
|---|---|
| This parameter is visible only if "value adjustment = active"!<br>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"!<br>This value range is available only with the data point type \| value range: "DPT 9.004 \| 0 ... 1500 lux" | |

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

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

| Value adjustment with overflow | Active<br>**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.<br>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. | |

## 9.4.2 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 "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - 0...100% | TSM/TSEM - Button/rocker *n* - Output | 1-byte | 5.001 | C, R, -, T, A |
| 1-byte object for the transmission of values from 0 to 100%.<br>i These objects are visible only if "data point type \| value range = DPT 5.001 \| 0 ... 100%". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - 0...255 | TSM/TSEM - Button/rocker *n* - Output | 1-byte | 5.010 | C, R, -, T, A |
| 1-byte object for the transmission of values from 0 to 255.<br>i These objects are visible only if "data point type \| value range = DPT 5.010 \| 0 ... 255". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - 0...360° | TSM/TSEM - Button/rocker *n* - Output | 1-byte | 5.003 | C, R, -, T, A |
| 1-byte object for the transmission of values from 0 to 360°.<br>i These objects are visible only if "data point type \| value range = DPT 5.003 \| 0 ... 360°". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - 0...255% | TSM/TSEM - Button/rocker *n* - Output | 1-byte | 5.004 | C, R, -, T, A |
| 1-byte object for the transmission of values from 0 to 255%.<br>i These objects are visible only if "data point type \| value range = DPT 5.004 \| 0 ... 255%". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter -128...127 | TSM/TSEM - Button/rocker *n* - Output | 1-byte | 6.010 | C, R, -, T, A |
| 1-byte object for the transmission of values from -128 to 127.<br>i These objects are visible only if "data point type \| value range = DPT 6.010 \| -128 ... 127". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - 0...65535 | TSM/TSEM - Button/rocker *n* - Output | 2-byte | 7.001 | C, R, -, T, A |

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

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

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - Colour temperature value | TSM/TSEM - Button/rocker *n* - Output | 2-byte | 7.600 | C, R, -, T, A |

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

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

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter -32768...32767 | TSM/TSEM - Button/rocker *n* - Output | 2-byte | 8.001 | C, R, -, T, A |

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

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

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - Temperature value | TSM/TSEM - Button/rocker *n* - Output | 2-byte | 9.001 | C, R, -, T, A |

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

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

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - Brightness value | TSM/TSEM - Button/rocker *n* - Output | 2-byte | 9.004 | C, R, -, T, A |

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

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

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - RGB/HSV (colour wheel sequence) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 350, 362, ..., 530 | Value transmitter - Colour hue (H) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 351, 363, ..., 531 | Value transmitter - Saturation (S) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 352, 364, ..., 532 | Value transmitter - brightness value (V) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 353, 365, ..., 533 | Value transmitter - White value (W) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - RGB/HSV (brightness adjustment) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - RGBW | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 355, 367, ..., 535 | Value transmitter - Brightness value (V) - Status | TSM/TSEM - Button/rocker *n* - Input | 1-byte | 5.001 | C, -, W, -, U |
| 1-byte object for receiving the brightness value.<br>i These objects are only visible with the following configuration:<br>- Data point type \| value range: RGB/HSV with brightness adjustment (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)<br>- "Starting value" parameter = same as value from feedback object (1-byte brightness/V value) | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 349, 361, ..., 529 | Value transmitter - Colour hue (H) - Status | TSM/TSEM - Button/rocker *n* - Input | 1-byte | 5.003 | C, -, W, -, U |
| 1-byte object for receiving the colour hue.<br>i These objects are only visible with the following configuration:<br>- 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)<br>- "Starting value" parameter = same as value from feedback object (1-byte/colour hue/H value) | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 355, 367, ..., 535 | Value transmitter - RGB - Status | TSM/TSEM - Button/rocker *n* - Input | 3-byte | 232.600 | C, -, W, -, U |
| 3-byte object for receiving 3-byte colour information.<br>i These objects are only visible with the following configuration:<br>- 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).<br>- "Starting value" parameter = same as value from feedback object (3-byte RGB) | | | | | |

## 9.5 Scene extension

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 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 recall scenes stored in other devices.

Setting options when button is pressed briefly:

- Recall scene: results in simply recalling the scene.
- Switch over scene: The input option for a second scene number (1…64) appears. The two entered scene numbers are switched to and from each time the button is briefly pressed.

Setting options when button is pressed and held:

- No reaction
- Storage function: A storage command is generated by pressing the button 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.

### 9.5.1 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 actuation | **Recalling scenes**<br>Switch scenes |
|---|---|
| This parameter defines the functionality of the scene extension.<br>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. | |

| 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. | |

| 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.<br>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.<br>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 actuation | **No reaction**<br>Memory function |
|---|---|
| This parameter defines the functionality of the scene extension.<br>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. | |

### 9.5.2 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 "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 566, 570, ..., 626 | Scene extension - Scene number | TSM/TSEM - 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. | | | | | |

## 9.6 Short and long button actuation

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.

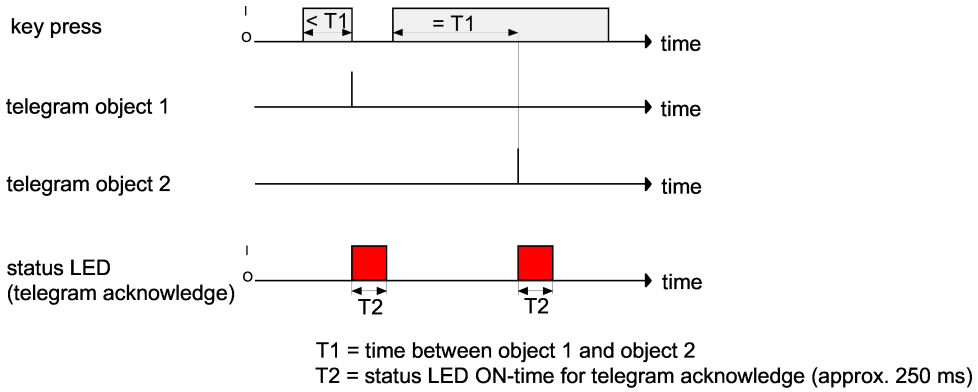


Image 15: Example of "object 1 or object 2" operating concept

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.

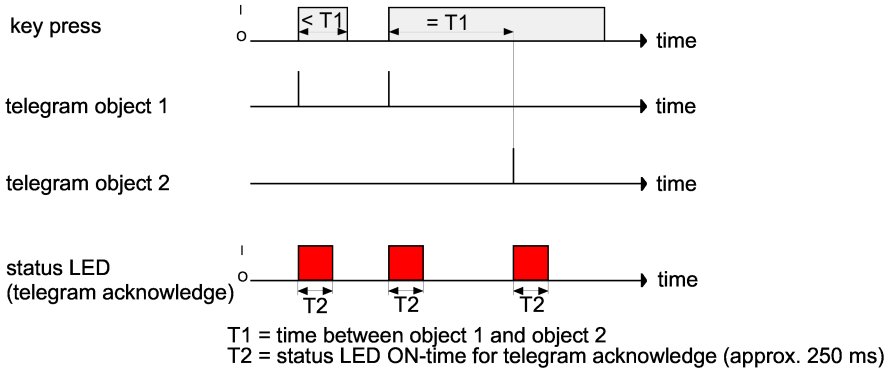


Image 16: Example of "object 1 and object 2" operating concept

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.

### 9.6.1 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<br>**DPT 1.001 \| Switching**<br>DPT 5.001 \| 0 ... 100%<br>DPT 5.010 \| 0 ... 255<br>DPT 5.003 \| 0 ... 360°<br>DPT 5.004 \| 0 ... 255%<br>DPT 6.010 \| -128 ... 127<br>DPT 7.001 \| 0 ... 65535<br>DPT 8.001 \| -32768 ... 32767<br>DPT 9.001 \| 0 ... 40°C<br>DPT 9.004 \| 0 ... 1500 lux<br>DPT 18.001 \| Call up scene (externally)<br>RGB/HSV (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)<br>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<br>**DPT 1.001 \| Switching**<br>DPT 5.001 \| 0 ... 100%<br>DPT 5.010 \| 0 ... 255<br>DPT 5.003 \| 0 ... 360°<br>DPT 5.004 \| 0 ... 255%<br>DPT 6.010 \| -128 ... 127<br>DPT 7.001 \| 0 ... 65535<br>DPT 8.001 \| -32768 ... 32767<br>DPT 9.001 \| 0 ... 40°C<br>DPT 9.004 \| 0 ... 1500 lux<br>DPT 18.001 \| Call up scene (externally)<br>RGB/HSV (RGB: DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001)<br>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)<br>Long button actuation (object 2) | ON<br>OFF<br>**TOGGLE** |
|---|---|
| This parameter defines the object value transmitted to the bus when the button is pressed.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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 actuation 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<br>**Inactive** |
|---|---|
| When the full-surface operation is activated, the ETS shows the following parameters.<br>Full-surface operation can be configured only if "operating concept = rocker function"! | |

| Function | **Switching**<br>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.<br>This parameter is only visible if "Full-surface actuation = Active"! | |

| Command | ON<br>OFF<br>**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.<br>This parameter is visible only if "function = switching"! | |

| Short button actuation | **Recalling scenes**<br>Recall 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.<br>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.<br>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.<br>This parameter is only visible if "function for full-surface operation = scene recall ..."!<br>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.<br>This parameter is only visible if "function for full-surface operation = scene recall ..."!<br>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 actuation | **no reaction**<br>Memory function |
|---|---|
| It can be set here whether the scene is to be stored when a button is pressed and held.<br>This parameter is visible only if "function = scene extension"! | |

## 9.6.2 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 "Name of ... parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value 0...100% | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value 0...100% | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value 0...255 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value 0...255 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value 0...360° | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value 0...360° | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value 0...255% | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value 0...255% | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value -128...127 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value -128...127 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value 0...65535 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value 0...65535 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Value -32768...32767 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Value -32768...32767 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Temperature value | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Temperature value | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Brightness value | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Brightness value | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Scene number 1...64 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Scene number 1...64 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Colour value (RGB) | TSM/TSEM - 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).<br>This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Colour value (RGB) | TSM/TSEM - 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).<br>This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 669, 685 ..., 909 | Short and long button actuation - Object 1 - Colour value (RGBW) | TSM/TSEM - 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).<br>This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 670, 686 ..., 910 | Short and long button actuation - Object 2 - Colour value (RGBW) | TSM/TSEM - 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).<br>This object is visible only if "colour control = combi object: RGB or combi object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 671, 687 ..., 911 | Short and long button actuation - Object 1 - Red colour value | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 675, 691 ..., 915 | Short and long button actuation - Object 2 - Red colour value | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 672, 688 ..., 912 | Short and long button actuation - Object 1 - Green colour value | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 676, 692 ..., 916 | Short and long button actuation - Object 2 - Green colour value | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 673, 689 ..., 913 | Short and long button actuation - Object 1 - Blue colour value | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 677, 693 ..., 917 | Short and long button actuation - Object 2 - Blue colour value | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: RGB or individual object: RGBW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 671, 687 ..., 911 | Short and long button actuation - Object 1 - Colour hue (H) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 675, 691 ..., 915 | Short and long button actuation - Object 2 - Colour hue (H) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 672, 688 ..., 912 | Short and long button actuation - Object 1 - Saturation (S) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 676, 692 ..., 916 | Short and long button actuation - Object 2 - Saturation (S) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 673, 689 ..., 913 | Short and long button actuation - Object 1 - Brightness value (V) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 677, 693 ..., 917 | Short and long button actuation - Object 2 - Brightness value (V) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSV or individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 674, 690 ..., 914 | Short and long button actuation - Object 1 - White value (W) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 678, 694 ..., 918 | Short and long button actuation - Object 2 - White value (W) | TSM/TSEM - 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).<br>This object is visible only if "colour control = individual object: HSVW" was selected. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 137, 141 ... 165 | Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 138, 142 ... 166 | Switching - Status | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 638, 642 ... 666 | Scene extension - Scene number | TSM/TSEM - 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. | | | | | |

## 9.7 Room temperature controller 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.
- Target temperature shift:
  Adjustment of the target 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.

### 9.7.1 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 parameterized 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.

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.

### 9.7.2 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").

### 9.7.3 Target 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 target temperature difference when pressed" or "Reduce target 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 "RTR 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 "RTR 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.

### 9.7.4 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**<br>Forced oper. mode switchover<br>Presence function<br>Target 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**<br>Standby<br>Night<br>Frost/heat protection<br>Switchover: comfort/standby<br>Switchover: comfort/night<br>Switchover: standby/night<br>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.<br>This parameter is only visible if "Function = operating mode switchover". | |

| | |
|---|---|
| When pressed | Auto<br>(Normal operating mode switchover)<br>**Comfort**<br>Standby<br>Night<br>Frost/heat protection<br>Switchover: comfort/standby<br>Switchover: comfort/night<br>Switchover: standby/night<br>Switchover: comfort/standby/night<br>Switchover: auto/comfort<br>Switchover: auto/standby<br>Switchover: auto/night<br>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.<br>This parameter is only visible if "Function = Forced operating mode switchover". | |

| | |
|---|---|
| When pressed | Presence ON<br>Presence OFF<br>**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.<br>This parameter is only visible if "Function = presence function". | |

| | |
|---|---|
| Target temperature shift | **via relative temperature value**<br>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.<br>This parameter is visible only if "function = target temperature shift". | |

| | |
|---|---|
| When pressed | +2 K<br>+1.5 K<br>+1 K<br>**+0.5 K**<br>-0.5 K<br>-1 K<br>-1.5 K<br>-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 "RTR control point - Target temperature shift" and "RTR control point - Target temperature shift - Status".
The communication object "RTR 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 "RTR 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<br>**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 "RTR control point - Target temperature shift" and "RTR control point - Target temperature shift - Status".
The communication object "RTR 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 "RTR control point - Target temperature shift".

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

### 9.7.5 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 "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 958, 963, ..., 1033 | RTR control point - Operating mode | TSM/TSEM - Button/rocker 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.<br>This object is only visible if "Function = operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 959, 964, ..., 1034 | RTR control point - Operating mode - Status | TSM/TSEM - Button/rocker n - Input | 1-byte | 20.102 | C, -, W, -, U |
| 1-byte object for receiving the operating mode of a room temperature controller.<br>This object is only visible if "Function = operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 958, 963, ..., 1033 | RTR control point - Operating mode - Forced | TSM/TSEM - Button/rocker 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.<br>This object is only visible if "Function = forced operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 959, 964, ..., 1034 | RTR control point - Operating mode - Forced - Status | TSM/TSEM - Button/rocker n - Input | 1-byte | 20.102 | C, -, W, -, U |
| 1-byte object for receiving the operating mode of a room temperature controller.<br>This object is only visible if "Function = forced operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 958, 963, ..., 1033 | RTR control point - Presence | TSM/TSEM - Button/rocker n - Output | 1-bit | 1.018 | C, R, -, T, A |
| 1-bit object for changing over the presence status of a room temperature controller.<br>This object is only visible if "Function = presence function". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 959, 964, ..., 1034 | RTR control point - Presence - Status | TSM/TSEM - Button/rocker n - Input | 1-bit | 1.018 | C, -, W, -, U |
| 1-bit object for receiving the presence status of a room temperature controller.<br>This object is only visible if "Function = presence function". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 958, 963, ..., 1033 | RTR control point - Target temperature shift | TSM/TSEM - Button/rocker n - 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.<br>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 |
|---|---|---|---|---|---|
| 959, 964, ..., 1034 | RTR control point - Target temperature shift - Status | TSM/TSEM - Button/rocker n - Input | 2-byte | 9.002 | C, -, W, -, U |
| 2-byte object for receiving the status of the current target temperature shift in Kelvin.<br>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 |
|---|---|---|---|---|---|
| 958, 963, ..., 1033 | RTR control point - Target temperature shift | TSM/TSEM - Button/rocker n - 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.<br>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 |
|---|---|---|---|---|---|
| 959, 964, ..., 1034 | RTR control point - Target temperature shift - Status | TSM/TSEM - Button/rocker n - Input | 1-byte | 6.010 | C, -, W, -, U |
| 1-byte object to receive the status of the current target temperature shift.<br>This object is visible only if "function = target temperature shift" and "type of target temperature shift = above meter value". | | | | | |

## 9.8 Status LED

### Functions of the status LED

Each operating area on the push-button sensor basic device or on the extension module has a three-colour status LED. The functions available differ slightly depending on the settings of the rockers or buttons.

In order to keep the complexity of the ETS product database within limits, the ETS always offers all function settings for the status LED – regardless of the set function of the respectively corresponding rocker or button. In every case in which the combination of button/rocker switch functions and the LED function do not result in a sensible display, the LED remains switched off permanently.
The LED functions configurable for each set button/rocker function are written as information text on the parameter pages "Status LED".

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

### 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 display
- 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 display
- Telegram acknowledgment
- Status indication
- Inverted status display
- Presence status indication

- Inverted presence status indication
- Setpoint value shift display

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

## 9.8.1 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 display"

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

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 for button-actuation indicator" on the parameter page "TSM/TSEM - Configuration" 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 and colour temperature", 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 display"**

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) | ☒ |
| Standby mode | ✓ (bit 1) | ☒ |
| Night mode | ✓ (bit 2) | ☒ |
| Frost/heat protection mode | ✓ (bit 3) | ☒ |

| Status LED ON with | Object "controller status" | Object "controller status addition" |
|---|---|---|
| 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 display"**

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".

## 9.8.2 Brightness settings and colour settings

The brightness of all status LEDs, operation LEDs and the labelling field illumination is defined in the ETS. The "Brightness" parameter on the "TSM/TSEM -> TSM/TSEM - Configuration" parameter page can be used to jointly set the regular brightness of the LEDs in 6 levels (level 0 = OFF, level 1 = dark, ..., level 5 = bright).

### Brightness reduction

Optionally, the brightness of the status LED, operation LED and labelling field illumination can be changed during operation of the push-button sensor, controlled by the brightness reduction. This occurs separately for the push-button sensor basic module and the push-button extension module.
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 "TSM/TSEM - Configuration" parameter page. In this case, the "TSM/TSEM - 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" configured in the ETS ("TSM/TSEM - Brightness reduction" parameter page). If a "0" telegram is received via the object, the push-button sensor switches back to regular brightness. The setting of the polarity can be configured as inverted as desired. Brightness reduction

### User-defined colour setting

The colour of the status LEDs can be adjusted. If no 3-colour individual control is configured in the parameterisation, red, green and blue can be selected from for the status LED colours in the ETS. In the colour configuration, a distinction is made between whether all of the status LEDs of the basic device or extension module have the same colour (common colour setting), or whether alternatively different colours can be configured for the LEDs (separate colour setting). The difference is as follows...

- All status LEDs have the same colour.
  If common colour setting is desired, then the "Colour" parameter on parameter page "TSM/TSEM - Configuration" must be configured to the settings "red", "green" or "blue". The status LEDs light up later during operation of the push-button sensor basic device or the extension module unchangeably in the configured colour, if they are switched on.
- The status LEDs have various colours.
  If the separate colour setting is desired, then the parameter "Colour" on parameter page "TSM/TSEM . Configuration" must be configured to the setting "Colour selection per status LED". In this case additional parameters become visible on the parameter pages of the individual status LEDs. The parameters "Colour of the status LED" can then be used individually to define the desired colour for each status LED. The LED lights up in the configured colour if it is

subsequently switched on regularly in operation, in accordance with the basic configuration "Function of the status LED".

### Superposed function

In addition, with separate colour setting it is possible to configure a superposed function separately for each status LED. The superposed function can be used change the colour of a status LED via a communication object during operation of the device. It is also possible here to change the display function.
The superposed function of a status LED is enabled when the parameter with the same name is activated on the corresponding parameter page.
When an activated function is enabled, additional parameters and a communication object become visible in the ETS. It is thus possible to configure which colour the status LED should have when a superposed function is active, and which display function is then executed.
The parameter "Selection of the superposed LED function" defines the display function, and thus the data format of the object. The following selections are available: "Control via separate LED object (1-bit)" or alternatively "Comparator without/with sign (1-byte)". The fundamental function of these superposed display functions is the same as the functions of the basic display of a status LED.
In accordance with the selection of the display function and the parameter configuration resulting from it, the superposed function can be switched on or off via the 1-bit or 1-byte object. The status LED will only light up in the superposed colour when a function is switched on. When a superposed function is switched off the status LED will be activated according to its basic configuration (regular colour and display function).

The superposed function is initially always inactive after a device reset. The superposed function is only executed when a telegram is received via the corresponding object.

Regardless of the basic configuration of the status LED and the superposed function, the LEDs always flash red when an alarm message indication is active. An alarm message has a higher priority and thus overrides the basic display and the superposed function. After deactivation of the alarm signalling, all LEDs will immediately return to the state corresponding to their configuration and communication objects.

During colour configuration it must be ensured that different colours are configured for the basic display and the superposed function. If this is not done (the colours are the same), then when the display is static it is not possible to determine which display function is being indicated.

When the superposed function is activated via a 1-bit object it is possible to have the status LED flash in the superposed colour. During flashing the status LED switches cyclically between the "switched-on" and "switched-off" states. No colour change is performed between the regular colour and the superposed colour.

The configuration of user-defined colours of the status LED and the superimposed functions is only possible in the described manner when the 3-colour individual control is not parameterised.

### Automatic colour change

For the user-defined colour settings, an automatic colour change can be configured for the LED functions "Operating mode display", "Display of controller status", "Set-point shift" and "Comparator". In this case, the colour of the corresponding status LED does not depend on the user specification via ETS parameter or communication object (superimposed function). Instead, the device then automatically decides which in colour the status LED should light up, based on the function value. The parameter "Status LED = ON for" indicates the colour which is set in dependence on the function value. This parameter cannot be changed.

### 3-colour individual control with separate communication objects

Each status LED can visualise statuses completely separately from the buttons, using three separate communication objects. In this case, a 1-bit object can be configured in the ETS for each colour, whereby each status LED can be statically switched on or off via the received object value, or also activated as flashing. At the same time, the colour of the LED is predefined by the actuated object.
The colour, in which the LED should light up, depends on which of the three objects of the LED concerned last receives a value. If two or all of the three objects of a LED are associated with a group address, no receiving sequence is recognisable. In this case, it is stipulated that the sequence green -> blue -> red then applies.

For a 3-colour individual control, the telegram polarity of the LED control can be configured on the parameter page of a status LED as follows:

- 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

A flashing LED always changes between the active colour and the OFF state. Flashing between several colours, e.g. red and green, is not possible.

The configuration of the 3-colour individual control as described is only possible when no user-defined colour configuration has been parameterised.

### 9.8.3 Table of parameters

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

| | |
|---|---|
| Function of status LED | always OFF<br>always ON<br>**Button-actuation display**<br>Telegram acknowledgment<br>Status indication<br>Inverted status display<br>Control via separate LED object<br>Operating mode display<br>Controller status indication<br>Setpoint value shift display<br>Presence status indication<br>Inverted presence status indication<br>Comparator without sign (1-byte)<br>Comparator with sign (1-byte)<br>Logic link<br>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<br>always ON<br>Control via separate LED object<br>Operating mode display<br>Controller status indication<br>Comparator without sign (1-byte)<br>Comparator with sign (1-byte)<br>Logic link<br>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 parameterised **in addition** to the basic functions for the rocker or button functions "Switching" and "Dimming and colour temperature".

| Function of status LED | Button-actuation display<br>Status indication<br>Inverted status display |
|---|---|
| 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.<br>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.<br>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 display<br>Presence status indication<br>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.<br>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.<br>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 value shift display".

| Function of status LED | Button-actuation display<br>Setpoint value shift display |
|---|---|
| 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.<br>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**<br>1 = LED static OFF / 0 = LED static ON<br>1 = LED flashes / 0 = LED static OFF<br>1 = LED static OFF / 0 = LED flashes |
|---|---|
| This parameter defines the telegram polarity of the 1-bit object "status LED".<br>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<br>**Comfort mode**<br>Standby mode<br>Night mode<br>Frost/heat protection mode |
|---|---|
| The values of a communication object with data type 20.102 "HVAC Mode" are defined as follows:<br>0 = Automatic<br>1 = Comfort<br>2 = Standby<br>3 = Night<br>4 = Frost/heat protection<br>The value "Automatic" is used only by the "forced operating mode switch-over" objects.<br>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 display".

| Controller status | **KNX compliant**<br>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 display" function of the status LED to the status message's status format of the room temperature controller.<br>The selection options of the "Status LED ON with" parameter as well as the available communication objects adapt depending on this setting.<br>In the "KNX-compliant" setting, the device provides the three communication objects "RHCC controller status", "RTSM controller status" and "RTC controller status".<br>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**<br>Operating mode (Heating = 1 / Cooling = 0)<br>Controller disabled (dew point operation)<br>Frost alarm<br>Heat alarm<br>Controller inactive (deadband operation)<br>Comfort mode extension<br>Open window<br>Additional level active |
|---|---|
| This parameter is only visible if "Controller status = KNX compliant".<br>The status LED shows the information of the controller status according to the parameterization. | |

| | |
|---|---|
| Status LED ON with | **Comfort mode**<br>Standby mode<br>Night mode<br>Frost/heat protection mode<br>Controller disabled<br>Heating / Cooling (Heating = 1 / Cooling = 0)<br>Controller inactive (deadband operation)<br>Frost alarm<br>Normal/Forced operating mode<br>Comfort mode extension<br>Open window<br>Additional level active<br>Dew point alarm |
| This parameter is only visible if controller status = controller general.<br>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**<br>Reference value less than received value<br>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**<br>Reference value less than received value<br>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**<br>AND<br>XOR |
|---|---|
| The status LED indicates whether the parameterised logic behaviour is fulfilled.<br>If "OR", the status LED lights up as soon as an input is true ("1").<br>If "AND", the status LED lights up when all inputs are true ("1").<br>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**<br>AND |
|---|---|
| The status LED indicates whether the parameterised linking behaviour is fulfilled.<br>If "OR", the status LED lights up as soon as an input is true ("1").<br>If "AND", the status LED lights up when all inputs are true ("1"). | |

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

### 9.8.4 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 "Name of ..." parameter.

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | Switching | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | Operating mode display | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | RHCC controller status - KNX-compliant | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1057, 1069, ..., 1237 | Controller status RTSM - KNX-compliant | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1059, 1070, ..., 1238 | Controller status RTC - KNX-compliant | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | Controller status - controller general | TSM/TSEM - Status LED *n* - Input | 1-byte | | C, -, W, -, - |
| 1-byte object for activation of the status LED. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1057, 1069, ..., 1237 | Controller status addition - controller general | TSM/TSEM - Status LED *n* - Input | 1-byte | | C, -, W, -, - |
| 1-byte object for activation of the status LED. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | Value (0...255) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | Value (-128...127) | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1049, 1061, ..., 1229 | Logic link input 1 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1050, 1061, ..., 1229 | Logic link input 2 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1051, 1062, ..., 1230 | Logic link input 3 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1052, 1063, ..., 1231 | Logic link input 4 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1053, 1064, ..., 1232 | Logic link input 5 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1054, 1065, ..., 1233 | Logic link input 6 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1055, 1066, ..., 1234 | Logic link input 7 | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1056, 1067, ..., 1235 | Logic link input 8 | TSM/TSEM - 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. | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1047, 1059, ..., 1227 | Bit-coded evaluation | TSM/TSEM - 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 |
|---|---|---|---|---|---|
| 1048, 1060, ..., 1228 | Superposed function | TSM/TSEM - Status LED *n* - Input | 1-bit | 1.001 | C, -, W, -, - |
| 1-bit object for activation of the status LED according to the parameter setting. | | | | | |

# 10 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) |

## 10.1 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 "TSM/TSEM - Configuration" parameter page and configured on the "TSM/TSEM - 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 "TSM/TSEM - 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.

### 10.1.1 Table of parameters

"TSM/TSEM - Configuration" parameter page

| | |
|---|---|
| Temperature measurement | Active<br>**Inactive** |
| This parameter activates the temperature measurement. Additional parameters and objects become visible. | |

"TSM/TSEM - Room temperature measurement" parameter page

| | |
|---|---|
| Temperature measurement by | **Internal sensor**<br>Internal sensor and ext. value via bus |
| The "Temperature measurement by" parameter specifies the sensors used to measure the room temperature.<br>"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.<br>"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%<br>20% to 80%<br>30% to 70%<br>40% to 60%<br>**50% to 50%**<br>60% to 40%<br>70% to 30%<br>80% to 20%<br>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.<br>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. | |

| 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.<br>This parameter is only visible when the temperature detection system requires an external sensor. | |

| Transmit actual temperature | **on change**<br>cyclical<br>on change and cyclical |
|---|---|
| Here, the transmission behaviour of the temperature value is defined for the measured room temperature. | |

| 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. | |

| Actual temperature without calibration | Active<br>**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. | |

## 10.1.2 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 |
|---|---|---|---|---|---|
| 1289, 1295 | Temperature sensor - Actual temperature - Status | TSM/TSEM - 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.<br>The temperature value is always output in the format "°C". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1290, 1296 | Temperature sensor - External value | TSM/TSEM - 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.<br>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 |
|---|---|---|---|---|---|
| 1292, 1298 | Temperature sensor - Actual temperature without calibration - Status | TSM/TSEM - 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.<br>The temperature value is always output in the format "°C". | | | | | |

## 10.2 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 – in other words, by all status LEDs, operation LEDs and labelling field illumination. 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 LEDs are always flashing 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 signalling 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 alarm signal indication is active, the LEDs of the device always flash with the regular brightness, parameter "Brightness (status LED, operation LED and labelling field illumination)". 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 alarm signal 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 pressing 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 "Active" has been selected, alarm signalling can only be deactivated via 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 alarm signalling 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.

## 10.2.1 Table of parameters

"General" parameter page

| LED alarm signalling | Active<br>**Inactive** |
|---|---|
| This parameter can be used to enable alarm signal indication.<br>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**<br>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**<br>Inactive |
|---|---|
| If this parameter is set to "Active", the active alarm signal indication can be deactivated by pressing a button on the device.<br>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.<br>If "Active" has been selected, alarm signalling can only be deactivated via the alarm signalling object. A button actuation will always execute the configured button function. | |

| Alarm acknowledgement object | Active<br>**Inactive** |
|---|---|
| If alarm signalling 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<br>**OFF telegram** |
|---|---|
| This parameter sets the polarity of the "Alarm signalling acknowledge" object.<br>This parameter presetting depends on the selected polarity of the alarm message object. | |

## 10.2.2 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). | | | | | |

## 10.3 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 "TSM/TSEM - Configuration" parameter page. In this case, the "TSM/TSEM - Brightness reduction - Input" 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" configured in the ETS ("TSM/TSEM - 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 LED applies equally to the status LED, the operation LED and the labelling field illumination. The brightness for the push-button sensor basic module and the push-button extension module can be set separately.

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.

## 10.3.1 Table of parameters

"TSM/TSEM - Configuration" parameter page

| | |
|---|---|
| Brightness reduction | activated<br>**deactivated** |
| The brightness reduction can be enabled here.<br>If the brightness reduction is enabled, the ETS will show further parameters and another communication object. | |

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

| | |
|---|---|
| Object polarity | **1 = active / 0 = not active**<br>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 "TSM/TSEM - Activate/ deactivate brightness reduction" object. | |

| | |
|---|---|
| Reduced brightness | Level 0 (OFF)<br>Level 1 (dark)<br>**Level 2**<br>Level 3<br>Level 4<br>Level 5 (bright) |
| The brightness of all status LEDs, operation LEDs and the labelling field illumination of the push-button sensor can be defined on the parameter page "TSM/TSEM - Configuration". The illumination brightness of all LEDs with active brightness reduction can be set here in 6 levels. The info box provides information about the current value set (not reduced) for brightness. | |

## 10.3.2 Object list

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 7, 21 | Activate/deactivate | TSM/TSEM - 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). | | | | | |

## 10.4 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 parameterize 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.

## 10.4.1 Table of parameters

"General" parameter page

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

"Disable function" parameter page

| | |
|---|---|
| Polarity of disabling object | 1 = disable / 0 = enable<br>**0 = disable / 1 = enable** |
| 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**<br>Reaction as button *>>X<<* when pressed<br>Reaction as button *>>X<<* when released<br>Reaction as disabling function 1 when pressed<br>Reaction as disabling function 1 when released<br>Reaction as disabling function 2 when pressed<br>Reaction as disabling function 2 when released |
| 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.<br>This function can:<br>– correspond to the function assigned to any button in the non-disabled state ("Reaction as button *>>X<<* …") and<br>– be defined on the following parameter pages ("Reaction as disabling function 1 or 2 when pressed or released"). | |

| Behaviour during active disabling | **all buttons without function**<br>all buttons behave as<br>individual buttons without function<br>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.<br>"All buttons have no function": The disabled buttons do not respond when pressed.<br>"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.<br>"All buttons behave 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<br>**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**<br>Button n …<br>(Selection depends on device variant!)<br>Disabling function 1<br>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.<br>The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions.<br>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**<br>Button n …<br>(Selection depends on device variant!)<br>Disabling function 1<br>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 parameterized here.<br>The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions.<br>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**<br>Reaction as button *>>Y<<* when pressed<br>Reaction as button *>>Y<<* when released<br>Reaction as disabling function 1 when pressed<br>Reaction as disabling function 1 when released<br>Reaction as disabling function 2 when pressed<br>Reaction as disabling function 2 when released |
| Besides disabling of rocker and button functions, the push-button sensor can also trigger a special function immediately at the end of disabling.<br>This function can:<br>– correspond to the function assigned to any button in the non-disabled state ("Reaction as button *>>Y<<* …") and<br>– be defined on the following parameter pages ("Reaction as disabling function 1 or 2 when pressed or released"). | |

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).

## 10.4.2 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 |
|---|---|---|---|---|---|
| 129, 133 | 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 |
|---|---|---|---|---|---|
| 130, 134 | 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 |
|---|---|---|---|---|---|
| 265, 271 | 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 |
|---|---|---|---|---|---|
| 266, 272 | 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 |
|---|---|---|---|---|---|
| 268, 274 | Dimming - Colour temperature | 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 |
|---|---|---|---|---|---|
| 266, 272 | 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 |
|---|---|---|---|---|---|
| 341, 345 | 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 |
|---|---|---|---|---|---|
| 342, 346 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 541, 553 | 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 |
|---|---|---|---|---|---|
| 542, 554 | 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 |
|---|---|---|---|---|---|
| 543, 555 | 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 |
|---|---|---|---|---|---|
| 544, 556 | 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 |
|---|---|---|---|---|---|
| 545, 557 | 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 |
|---|---|---|---|---|---|
| 630, 634 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 937, 953 | 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 |
|---|---|---|---|---|---|
| 938, 954 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 925, 941 | 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 |
|---|---|---|---|---|---|
| 926, 942 | 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 |
|---|---|---|---|---|---|
| 927, 943 | 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 |
|---|---|---|---|---|---|
| 931, 947 | 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 |
|---|---|---|---|---|---|
| 928, 944 | 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 |
|---|---|---|---|---|---|
| 932, 948 | 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 |
|---|---|---|---|---|---|
| 929, 945 | 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 |
|---|---|---|---|---|---|
| 933, 949 | 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 |
|---|---|---|---|---|---|
| 927, 943 | 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 |
|---|---|---|---|---|---|
| 931, 947 | 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 |
|---|---|---|---|---|---|
| 928, 944 | 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 |
|---|---|---|---|---|---|
| 932, 948 | 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 |
|---|---|---|---|---|---|
| 929, 945 | 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 |
|---|---|---|---|---|---|
| 933, 949 | 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 |
|---|---|---|---|---|---|
| 930, 946 | 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 |
|---|---|---|---|---|---|
| 934, 950 | 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 |
|---|---|---|---|---|---|
| 1038, 1043 | RTR 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.<br>This object is only visible if "Function = operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1039, 1044 | RTR control point - 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.<br>This object is only visible if "Function = operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1038, 1043 | RTR control point - Operating mode - Forced | 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.<br>This object is only visible if "Function = forced operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1039, 1044 | RTR 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.<br>This object is only visible if "Function = forced operating mode switchover". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1038, 1043 | RTR control point - 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.<br>This object is only visible if "Function = presence function". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1039, 1044 | RTR control point - 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.<br>This object is only visible if "Function = presence function". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1038, 1043 | RTR control point - Target temperature 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.<br>This object is visible only if "function = target temperature shift". | | | | | |

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 1039, 1044 | RTR control point - Target temperature 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.<br>This object is visible only if "function = setpoint shift". | | | | | |

## 10.5 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 control surfaces 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.

## 10.5.1 Table of parameters

"General" parameter page

| | |
|---|---|
| Energy saving mode | Active<br>**Inactive** |
| The energy saving mode can be enabled here.<br>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**<br>automatically by time<br>automatically by time or by object |
| This parameter defines how the energy saving mode is activated in the device.<br>Firstly, the device can be set to the energy saving mode by a group telegram via a communication object designated for this purpose.<br>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<br>**automatically on operation or via object** |
| This parameter defines how the energy saving mode is deactivated in the device.<br>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.).<br>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<br>**1 = activate / 0 = deactivate** |
| This parameter defines the telegram polarity for the object for activating or deactivating the energy saving mode. | |

| | |
|---|---|
| Time to activate energy saving mode | 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. | |

## 10.5.2 Object list

| Object no. | Function | Name | Type | DPT | Flag |
|---|---|---|---|---|---|
| 63 | 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