

Pushbutton sensor 4.55 Detect

Art. no. 5055 00, 5056 00, 5057 00



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1 Information on the product

1.1 Product catalogue

Product name	Pushbutton sensor 4.55 Detect, 1-gang Pushbutton sensor 4.55 Detect, 2-gang Pushbutton sensor 4.55 Detect, 3-gang
Ordering no.	5055 00, 5056 00, 5057 00
Use	Sensor
Design	FM (flush-mounted)

1.2 Purpose

General

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

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

Motion detection using high-frequency sensors

The device is fitted with a high-frequency sensor for motion detection. When used in conjunction with the push-button sensor and LED functions, it can be used as a motion detector for rooms and corridors. The detection field can be extended by connecting several devices in parallel as main and extension units.

The motion detection focuses on accuracy or speed. The achievable ranges vary depending on the specific focus of the motion detection. 2 function blocks for motion and brightness evaluation with 2 outputs each can be configured. It is possible to switch between modes, for example for day and night operation.

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 has an integrated scene function. This can be used to control lighting and shading systems or various other units as needed by pressing just a single button. The scene function of the device supports 8 scenes, allowing control of KNX actuators via 8 scene outputs using switching or value telegrams.

The device can be used as a controller extension with operating mode selection, forced operating mode switch over, presence function and setpoint shift.

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

LED function

The device has two multi-colour status LEDs per operating element. These status LEDs can either be switched on or off permanently. The status LEDs can also act as an actuation or status indicator for a button or a rocker. As an alternative, the status LEDs can also be activated via separate communication objects. The status LEDs can either indicate the switching status of an object statically or by flashing, or signal operating states of room temperature controllers. The status LEDs can light up in 8 different colours. The colour of the status LEDs can be configured in the ETS either globally or separately, as required. Optionally a superposed function can be activated via the KNX, in which the colour and display information of individual status LEDs can be changed according to priority.

The colour of the status LED can either be parameterised for all status LEDs together or separately for each status LED.

All status LEDs can additionally be used as orientation lighting or for indicating an alarm.

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

When the application program is discharged and the bus voltage is connected, all status LEDs initially light up white. Whenever a button is actuated, the respective illuminated status LED changes colour (white → red → green → blue → yellow → cyan → orange → violet → white → ...).

In relation to motion detection, the status LED flashes when motion is detected; depending on the settings, this indicator is displayed during normal operation or exclusively during the walk test, which is used to align the sensor and check its functionality.

Measuring brightness

The built-in brightness sensors are used to detect ambient brightness. The brightness value calculated is transmitted to the KNX.

The design of the rockers determines the quality of the brightness measurement. The sensors can be preset either using the rocker set design line used or via an object with a separately measured brightness value. When activating the parameter for sensor calibration via rocker set design line, define the colour of the back of the rocker set used (light / dark). The pre-assembled commissioning rockers must be replaced with the final rocker set to be used for correct brightness measurement.

The measurement can be adjusted as required by means of external calibration using a separately measured reference value. Once the parameters have been set, the brightness value is transmitted in accordance with the parameter settings.

Measurement of the room temperature

As a supplement to the controller extension the device has an integrated temperature sensor that makes it possible to measure and forward the local room temperature. A wired sensor or a temperature value receive via an object can optionally supplement the room temperature measurement performed by the internal temperature sensor to improve the measurement result. The device offers a second temperature measurement via the wired sensor, which is independent from the room temperature measurement, if the sensor is not already used for room temperature measurement.

Measurement of the room humidity

The device has an integrated humidity sensor that can be used to measure and forward the ambient room humidity.

Air quality measurement

The push-button sensor can perform three measurements to determine the air quality.

The device has an integrated VOC sensor, which is used to measure the VOC. With the measured VOC values, the device is able to determine VOC (IAQ) values and eCO₂ values.

1.3 Device components

Front view

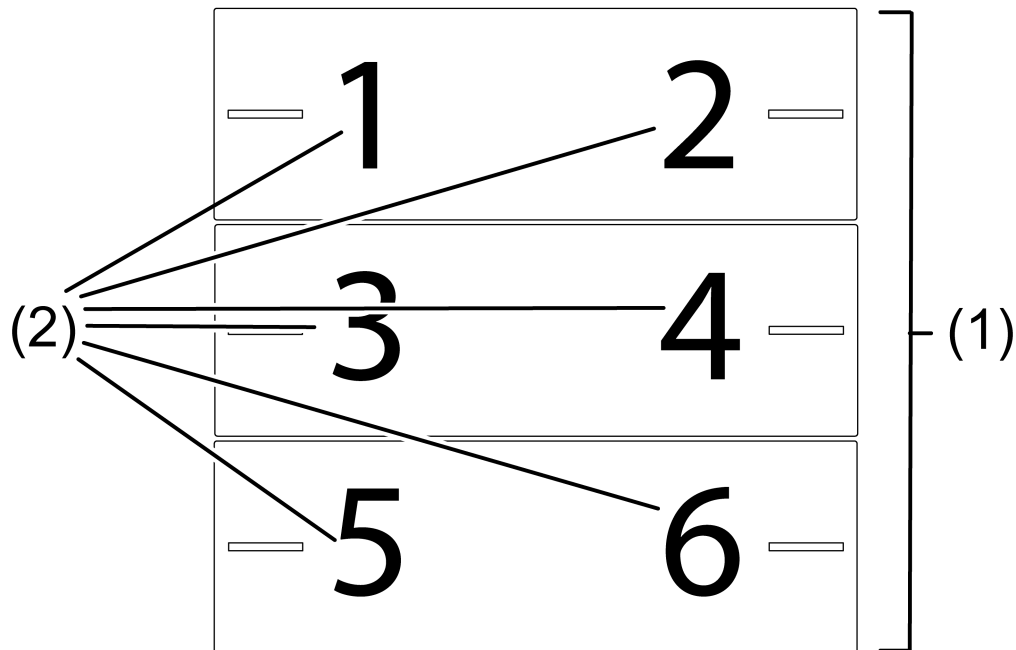


Figure 1: Device components 3-gang

- (1) Operating rockers (accessory)
- (2) Status LED
- 1...6 Push-buttons assignment and status LED

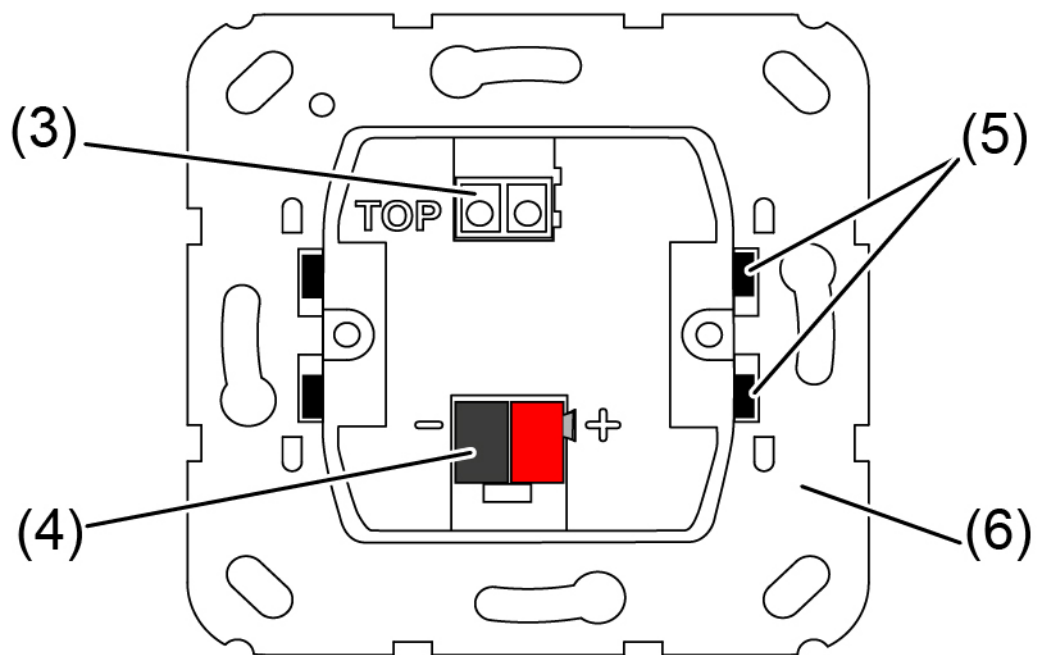
Rear view

Figure 2: Device components - rear side

- (3) Device connection terminal for remote sensor (optional)
- (4) Device connection terminal KNX
- (5) Retaining clips for device fixation at the supporting frame
- (6) Supporting frame

1.4 As-delivered state

In the delivery state, the orientation lighting LED is activated. When the bus voltage is connected, all status LEDs initially light up white. Whenever a button is actuated, the respective illuminated status LED changes colour in the following sequence:

white → red → green → blue → yellow → cyan → orange → violet → white → ...

In the delivery state, the push-button sensor does not send any telegrams to the bus.

1.5 Technical data

KNX

KNX medium TP256

Commissioning mode S mode

Rated voltage DC 21 ... 32 V SELV

Current consumption KNX 8 ... 18 mA

Connection mode KNX Standard device connection terminal

Connecting cable KNX EIB-Y (St)Y 2x2x0.8

Motion detection

Detection angle Up to 120°

Range 6 m

Brightness sensor

Measuring range 10 ... 2000 lx

Accuracy > 80 lx ± 5%

Accuracy ≤ 80 lx ± 10 lx

Temperature sensor

Measuring range -5 ... +55 °C

Accuracy ± 1 K

Humidity sensor

Measuring range 10 ... 95 % rel. humidity.

Accuracy ≤ 3.5%

Installation dimensions (see figure 3)

Construction height A = 11.9 mm

A = 12.5 mm (stainless steel rocker set)

Installation depth B = 13.8 mm

Connection cable remote sensor (see accessories)

Cable type extension NYM-J 3×1.5 or
J-Y(St)Y 2×2×0.8

Total length remote sensor line max. 30 m

Ambient conditions

Ambient temperature -5 ... +45 °C

Storage/transport temperature -20 ... +70 °C

Protection class III

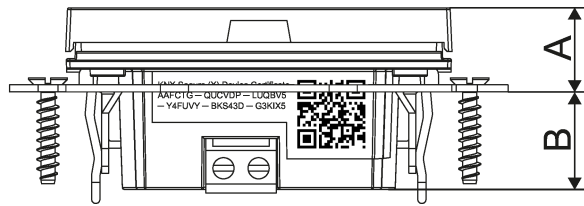


Figure 3: Installation dimensions

1.6 Accessories

i Individually labelled rocker sets are available from the Gira inscription service www.beschriftung.gira.de.

	Art. no.
Rocker set, 1-gang	5751 ..
Rocker set, 1-gang, inscribable	5761 ..
Rocker set, 1-gang, inscribable	5771 ..
Rocker set, 2-gang	5752 ..
Rocker set, 2-gang, inscribable	5762 ..
Rocker set, 2-gang, inscribable	5772 ..
Rocker set, 3-gang	5753 ..
Rocker set, 3-gang, inscribable	5763 ..
Rocker set, 3-gang, inscribable	5773 ..
Remote sensor	1493 00

2 Safety instructions

To avoid potential damage, read and follow the following instructions:



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

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

Danger of electric shock. Comply with the regulations and standards that apply to SELV circuits during the installation and cable routing.

The device is not suitable for use as a burglar alarm or any other alarm.

Do not press the sensor window. Device can be damaged.



The "Stainless Steel" version of the rocker switch set is not suitable for use with the Detect push-button sensor. Reliable operation cannot be guaranteed.

3 Mounting and electrical connection



DANGER!

Electrical shock on contact with live parts in the installation environment.

Electric shocks can be fatal.

Before working on the device, disconnect the power supply and cover up live parts in the working environment!

Mounting and connecting the device

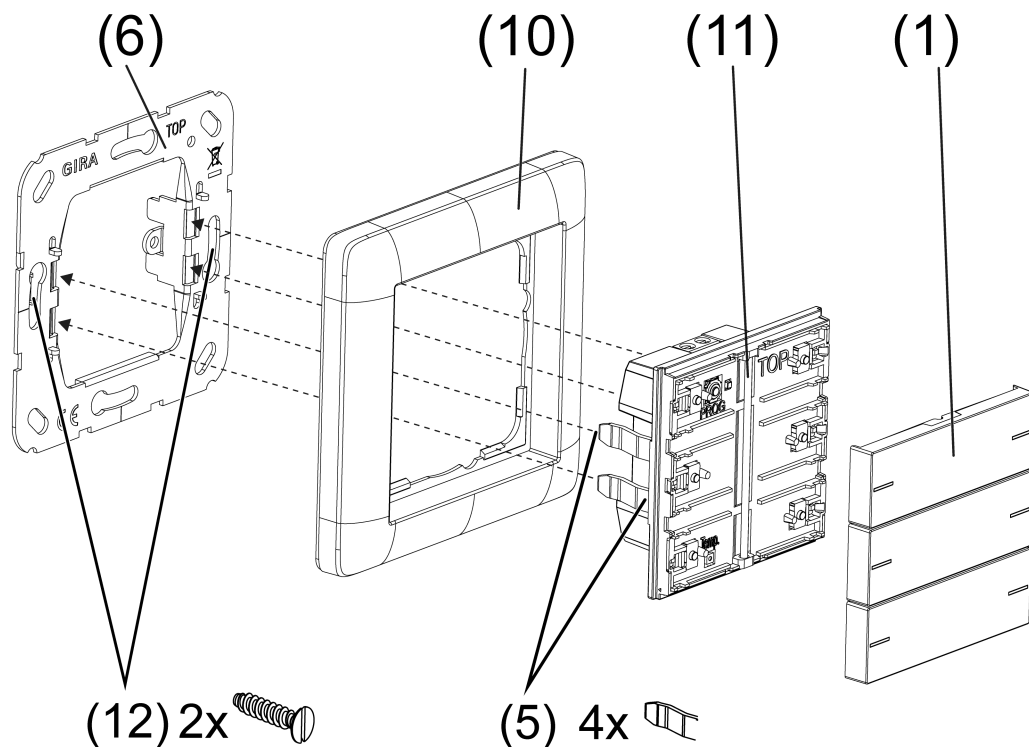


Figure 4: Mount device

- (1) Operating rockers (accessory)
- (5) Retaining clips for device fixation at the supporting frame
- (6) Supporting frame
- (10) Cover frame (accessory)
- (11) Push-button sensor
- (12) Box screws

The device should be used in an air-tight appliance box. Otherwise temperature and humidity reading can be negatively influenced by draughts.

- i** Motion detection: False alarms may occur due to interference. Moving light-weight walls, both as a mounting location and in the field of vision, and moving objects (e.g. houseplants whose leaves are moved by a slight draught, etc.) can lead to false triggering in unfavourable cases.
- i** Several TS4 Detect sensors within the same detection field may interfere with one another, which can lead to false triggers. Setting the "Detection Focus" parameter to "Accuracy" is significantly more robust against false triggers than setting it to "Speed".

Secure operation and simplified ETS commissioning

The device certificate is used for secure commissioning and can also simplify the process of programming the physical address. Recommendation: Enter or scan the device certificate to add it to the ETS project. Use a high resolution camera to scan the QR code. Remove the device certificate from the device during mounting. Document all passwords and keep them safe.

- Mount supporting frame on an appliance box.

- i** Note the TOP marking.

Use the enclosed box screws.

- Pull off commissioning rockers from push-button sensor.

The push-button sensor is delivered with commissioning rockers. The operating rockers suitable for the push-button sensor must be ordered separately (see chapter "Accessories" ► Page 10).

- Connect push-button sensor to the KNX using KNX device connection terminal (red = +, black = -).
- In secure operation: The device certificate must be removed from the device and stored securely.
- Optional: Connect remote sensor (see chapter "Accessories" ► Page 10) to device connection terminal for remote sensor.
- Fit the cover frame flush. The cover frame is fixed via the push-button sensor.
- Attach the push-button sensor with cover frame onto the supporting frame.

Push-button sensor can be put into operation.

Make sure the that the retaining clips properly fit in the supporting frame.

The physical address is programmed (see chapter "Commissioning" ► Page 14) in the next work step. The rockers can then be mounted (see chapter "Mounting the rockers" ► Page 19).

4 Commissioning

Programming the physical address and application program

The programming button is located under the first rocker.

- Switch on the bus voltage.
- Perform commissioning with the ETS.

i As soon as the programming process has been successfully completed, the device switches on and the status LEDs carry out their parameterised function.

When the application program is discharged and the bus voltage is connected, all status LEDs initially light up white. Whenever a button is actuated, the respective illuminated status LED changes colour (white → red → green → blue → yellow → cyan → orange → violet → white → ...).

Testing the detection field

Check the detection field when motion detection is activated.

The device is installed and connected. Physical address is loaded.

Prerequisite: "Use walking test" parameter is selected in the ETS and programmed into the device. Commissioning rockers have been replaced by design rocker set.

- Switch on the walking test.

The motion sensor is active according to the programmed focus of the detection (accuracy or speed).

- Pace off the detection field, paying attention to reliable detection and interference sources.

When the walk test is active, all status LEDs of the push-button sensor light up blue when a movement is identified.

- If necessary, adjust the focus of the detection in the ETS.
- Switch off the walk test.

Detection areas and range

With a total detection field of up to 120°, the **high-frequency signal technology** used in the Detect push-button sensor for motion detection allows for flexible adjustment between detection accuracy and detection speed. The optimum operating point depends heavily on the specific application; for example, on whether the priority is on precise presence detection or rapid motion detection.

The Detect push-button sensor distinguishes between nearby and more distant motion zones. The detection limits depend on the installation height and the direction of movement of people within the detection area.

Movements in the immediate vicinity of the sensor are detected via proximity detection. Close-range detection can be parameterised for various application scenarios. A distinction is made between stair detection right, centre and left.

When close-range detection is enabled, the brightness measurement is interrupted. In this state, no current brightness values are available. This prevents highly distorted measured values from being recorded during device operation due to shadowing.

Gesture control

When gesture control is enabled, the Detect push-button sensor can be controlled by interpreting gestures and movements. Depending on the commands sent, the device reacts differently during and at the end of gesture recognition. The operating distance for gesture control is approximately 10 cm.

Pressing the push-button sensor does not trigger a gesture.

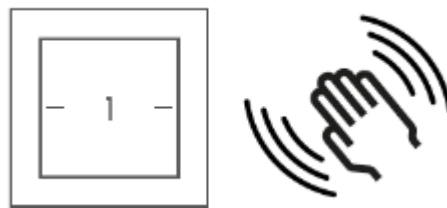


Figure 5: Gesture control

Staircase survey

The sensor is suitable for use in stairwells. With staircase detection (right, centre, left), motion detection is limited to an area of approx. 1 m² to the right, centre or left of the push-button sensor Detect.

Optimal results can be achieved when the tracking is set to prioritise "accuracy" and the maximum tracking distance is set to 2 m or 4 m.

The proximity sensor only reacts to movements in the immediate vicinity (to the right, in the centre or to the left). This function is used, for example, to switch on the staircase lighting automatically when the stairs are in use. People are detected when they enter the stairwell. When 'Stair detection left' or 'Stair detection right' is selected, the detection field can be shifted to the left or right relative to the device to optimise people detection.

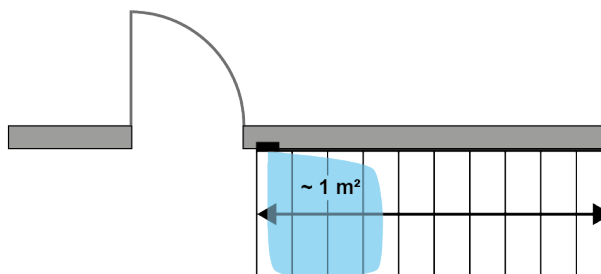


Figure 6: Example of a staircase survey

Detection areas

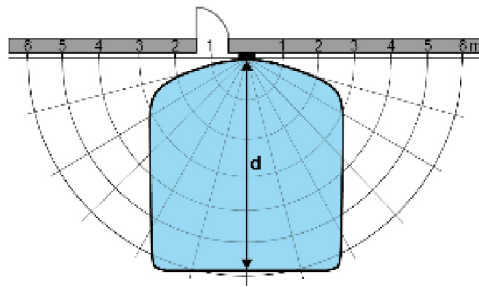


Figure 7: Detection areas

You use detection areas to define the spatial area in which the sensor can detect movement. The achievable ranges vary depending on the specific focus of the motion detection (whether the focus is on speed or accuracy).

The maximum detection range is 6 m to the front and up to 3 m to each side.

4.1 Sensor calibration

Measuring sensors

The design of the rockers determines the quality of the brightness measurement. In low brightness, the LEDs switch off briefly.

The sensor can be preset either using the colour of the rear panel of the rocker set design line used or via an object with a separately measured brightness value. The pre-assembled commissioning rockers must be replaced with the final rocker set to be used for correct brightness measurement.

- When activating the parameter for sensor calibration via rocker set design line, define the colour of the back of the rocker set used (light / dark).

In addition, depending on the parameterisation, adjust the activated measuring functions (temperature measurement, room humidity measurement, air quality, ...).

Following initial commissioning, the air quality sensors must calibrate continuously for at least 24 hours before valid readings are transmitted.

4.2 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 voltage.
- Press and hold down the programming button.
- Switch on voltage.

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

Release the programming button only after the programming LED starts flashing.

Deactivating safe-state mode

- Switch off the voltage or carry out ETS programming.

4.3 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 will deactivate the device security. The device can then be recommissioned with the device certificate.

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

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

Performing a master reset

Prerequisite: safe-state mode is activated.

- Press and hold down the programming button for > 5 seconds until the programming LED starts flashing quickly.
- Release the programming button.

The device performs a master reset. The programming LED is switched on.

The device restarts and is in delivery state.

5 Mounting the rockers

- Slide the side of the rocker into place (see figure 8).

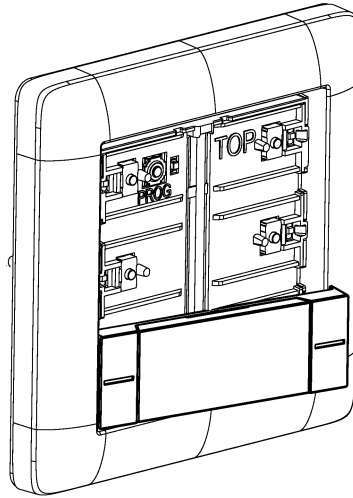


Figure 8: Slide the side of the rocker into place

- Press in the middle of the rocker (see figure 9).

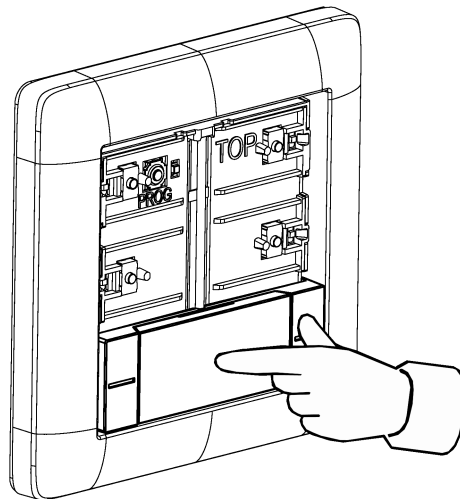


Figure 9: Press lightly in the middle of the rocker

The rocker snaps into place.

Device is ready for operation.

In order to optimise the gap dimensions between the rockers and the cover frame, the rockers can be moved slightly after snapping into place.

6 Dismantling

- Carefully pull the push-button sensor forward together with the cover frame.
- Pull the rockers on one side to loosen them from the push-button sensor.

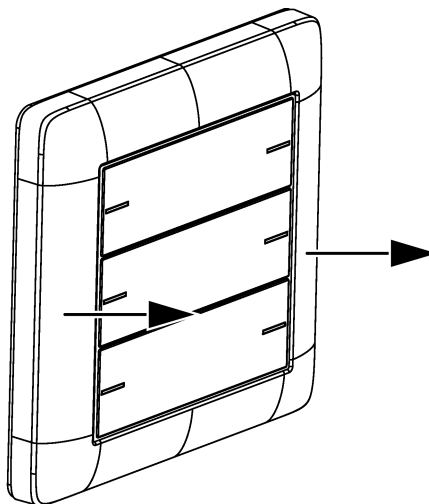


Figure 10: Dismantle the push-button sensor

7 Operation

Operating areas

The device consists of up to 4 operating areas, depending on the device variant. The operating concept of an operating element can be configured in the ETS as a rocker function or as a button function. With the rocker function, an operating element is divided into two actuation pressure points (left/right) with the same basic function. With the button function, an operating element is divided into 2 functionally-separate actuation pressure points located next to each other or one above the other (2 buttons).

When its buttons are actuated, the device sends telegrams to the KNX, depending on the ETS parameter settings (switching, dimming, shading, ...).

Operating element as button function

With the "button function" operating concept, an operating element is divided into two separate and functionally independent buttons. The buttons are configured independently of each other and can fulfil different functions (e.g. switching: TOGGLE – value transmitter: 2-byte temperature value).

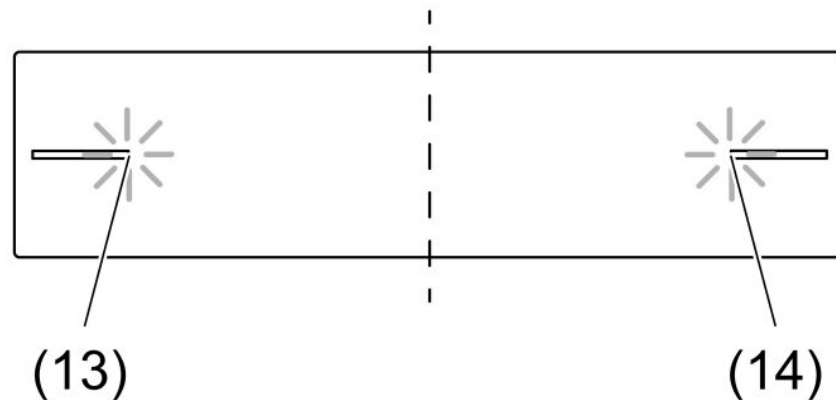


Figure 11: Button actuation

- (13) Left button of the operating element
(Depending on the device variant: button 1, button 3, button 5, button 7)
- (14) Right button of the operating element
(Depending on the device variant: button 2, button 4, button 6, button 8)

Operating element as rocker function

In the "rocker function" operating concept, two adjacent actuation pressure points are used as a rocker. The two pressure points are then termed "left rocker" and "right rocker". Pressing the buttons affect the communication objects assigned to the rocker. Usually, pressing both sides of a rocker can lead to directly opposite reactions (e.g. switching: left ON - right OFF / shading: left UP - right DOWN).

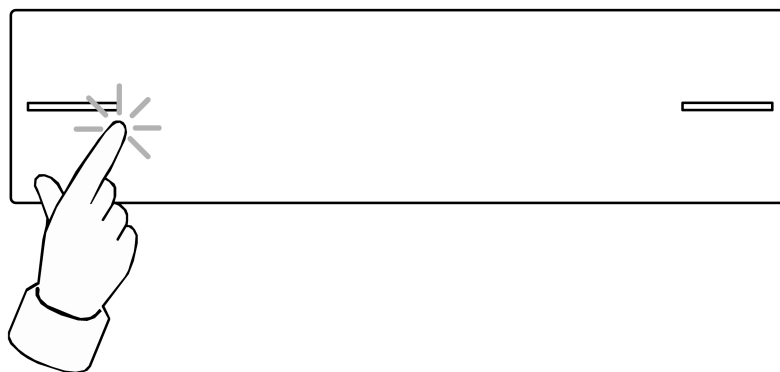


Figure 12: Rocker operation, left

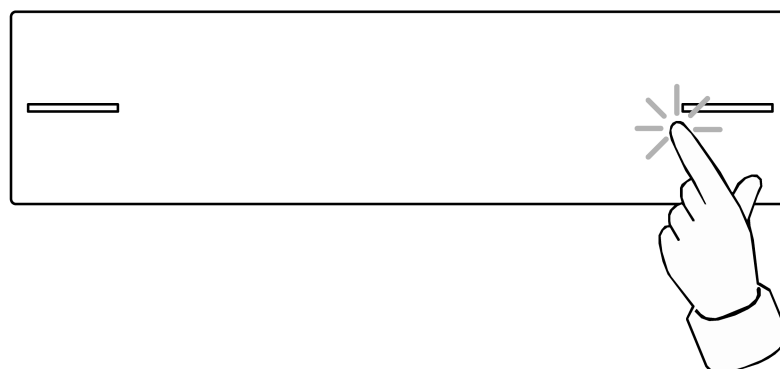


Figure 13: Rocker operation, right

8 Application programs

ETS search paths:	Push-button / push-button, 1-gang / Pushbutton sensor 4.55 Detect, 1-gang
	Push-button / push-button, 2-gang / Pushbutton sensor 4.55 Detect, 2-gang
	Push-button / push-button, 3-gang / Pushbutton sensor 4.55 Detect, 3-gang
Configuration:	S-mode standard

Application program available for Pushbutton sensor 4.55 Detect, 1-gang

Name	Pushbutton sensor 4.55 Detect, 1-gang 119C21
Version	2.1 for ETS versions 5.7.7 and 6.4.0 and higher
From mask version	07B0
Summarized description	Multifunctional push-button sensor application.

Application program available for Pushbutton sensor 4.55 Detect, 2-gang

Name	Pushbutton sensor 4.55 Detect, 2-gang 119B21
Version	2.1 for ETS versions 5.7.7 and 6.4.0 and higher
From mask version	07B0
Summarized description	Multifunctional push-button sensor application.

Application program available for Pushbutton sensor 4.55 Detect, 3-gang

Name	Pushbutton sensor 4.55 Detect, 3-gang 119A21
Version	2.1 for ETS versions 5.7.7 and 6.4.0 and higher
From mask version	07B0
Summarized description	Multifunctional push-button sensor application.

9 Scope of functions

General

- KNX Data Secure compatible
- Firmware updates are possible

Push-button sensor functions

- Operating concept can be configured (rocker function or button function)
- The button function can be configured (switching, dimming and colour temperature, colour control and brightness, shading, value transmitter, scene extension unit, 2-channel operation, controller extension, no function)
- The rocker function can be configured (switching, dimming the brightness and colour temperature, colour control, shading, value transmitter, scene extension unit, 2-channel operation, controller extension)

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.

Colour control: The type of colour control, the colour space and the colour values are adjustable. The command on pressing, the time between switching and the colour sequence / brightness adjustment, the starting value and the step width of the setting, as well as the telegram repetition on long press are adjustable.

Shading: The command on pressing and the operating concept are adjustable. The operating concept can be adjusted in the times for short and long actuation and slat adjustment.

Value transmitter: The operating mode (1-byte, 2-byte, 3-byte or 6-byte value transmitter) and the value is adjustable.

Scene extension unit: The type of scene recall, the operating mode (with or without storage function) and the scene number are adjustable.

2-channel operation: Up to two telegrams can be transmitted to the KNX by one button-press. The operating concept can be adjusted and the time for short and long actuation adapted. The function of the channels is adjustable separately.

Controller extension: The function (operating mode selection, forced operating mode switch-over, presence function and setpoint shift) is adjustable.

- Disabling function can be activated

The rockers or buttons can be disabled via a 1-bit object. The polarity of the disabling object can be set. 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 settable disabling functions.

Controller extension functions

- The controller extension can be configured as a function of a rocker or button
Full control of a room temperature controller (operating modes, presence functions and setpoint shift).
- The displays of the controller extension can be configured as a function of the status LED
Full-featured indication of the controller status via the status LED of the extension unit (heating / cooling reporting, setpoint shift, room temperature, setpoint temperature and current operating mode).
- Temperature measurement can be activated
Measurement of the room temperature with an internal sensor or optionally by determining the measured value of the internally measured temperature with an external temperature.

Status LED

- Function can be configured
The function is selected per status LED
When selecting the function, the following functions can be configured: Always OFF, Always ON, Button-press display, Activation via separate LED object, Operating mode indicator, Controller status indicator, Air quality indicator.
- Optionally a superposed function can be activated via the bus, in which the colour and display information of individual status LEDs can be changed according to priority.
- Colour can be configured
The colour is selected either together for all status LEDs or separately for each status LED of the device.
The status LEDs can light up in red, green, blue, yellow, cyan, orange, violet or white, according to choice.
- Brightness can be configured
The brightness of the status LED can be set to six levels.
Through night reduction, the brightness of the status LED can be reduced at night using a communication object.
- LED alarm signal:
All LEDs of the push-button sensor can flash red simultaneously in the event of an alarm. The following settings are possible: Value of alarm signalling object for the states alarm and no alarm, alarm acknowledge by actuation of a button, transmission of the acknowledge signal to other devices.
- LED orientation lighting:
All LEDs can be switched permanently off or on for the purpose of orientation, display the status of a separate communication object (ON, OFF, flashing) or be switched on by pressing any desired button and switched off again automatically after a delay time has elapsed.
- LED night reduction:

Alternatively, communication object control can be used to change the brightness of all status LEDs. This makes it possible, for example, to reduce the brightness during nighttime hours to a value configured in the ETS.

Motion detection:

- The device is used for presence and motion detection
- The focus of the image can be adjusted. The focus is on measuring accuracy or speed. Even the slightest movements are detected.
- Control via hand detection. When hand detection is active, the sensor detects hand movements at close range.
- Gesture control. Control via the interpretation of gestures and movements.
- Continuous evaluation of the brightness during active motion detection. As a result, the lighting can be switched off when a defined brightness threshold is exceeded e.g. by incoming daylight.
- Motion detection is carried out digitally via a configurable high-frequency motion sensor with a total detection field of up to 120°.
- Brightness sensor for determining the ambient brightness. Determination of effective brightness via sensor calibration within the system.
- Up to two function blocks (FB) that can operate independently of one another, so that a single device can carry out different switching or control tasks affecting different areas of a room.
- Up to two output communication objects are available for each function block, which transmit the switching and control commands to the bus. The data format of these objects is defined separately and adapted to the controllable units of the KNX system, depending on the configured function (switching, staircase function, switching with forced position, dimming value transmitter, scene extension unit, temperature value transmitter, brightness value transmitter, temperature operating mode, other value transmitters).
- Adaptation of a function block to a wide range of control tasks by means of extensive parameters. Thus, in the ETS, for example, settings can be made on the brightness threshold (incl. external specification and teach-in function), on time delays (evaluation delay at the start and run-on time at the end of detection) and on the sensor assignment (high-frequency detection field and brightness sensors).
- Demand-oriented disabling of individual function blocks.
- Manual operation of the actuated KNX actuator and thus deactivation of the motion detector's automatic system is possible.
- The device can be used as a stand-alone unit, as a main unit or as an extension unit. It is possible to use several devices in one room to extend the detection field by combining a device configured as a main unit with several devices configured as extension units.
- Walking test function serves as a guide for the project design and setting of the detection field. The walk test uses the status LED to indicate how the device responds when it detects movement.

General functions

- **Disabling function:**
The operating areas can be disabled via a 1-bit object. 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 settable disabling functions.
- **Scene function:**
Internal storage of up to eight scenes with eight output channels, recall of internal scenes by means of a settable scene number, selection of object types for the output channels; for each scene, the storage of the individual output values and the transmission of the output values can be permitted or inhibited; the individual channels can be delayed during scene recall; as scene extension unit, 64 scenes can be recalled and stored.
- **Temperature measurement:**
Up to two temperature measurements possible via internal sensor, wired sensor, internal and wired sensor, as well as internal and external sensor.
- **Room humidity measurement:**
Room humidity measurement possible via internal sensor.
- **Air quality:**
Measuring VOC concentrations and setting up alarms, including defining the transmission behaviour when concentrations exceed or fall below specified thresholds.
- **Brightness:**
Measurement of brightness and sensor calibration (using the rocker switch design line or an object with a separately measured brightness value), Defining the behaviour in the event of failed calibration (do not send the brightness value or send an invalid brightness value) and the transmission behaviour of the brightness value (on change, cyclically, or on change and cyclically).

10 Notes on the software

Unloading the application program

After the application program has been unloaded by the ETS, the device behaves in a neutral manner. The device does not react anymore to movements or bus telegrams. The delivery state described cannot be restored by unloading with the ETS.

ETS project design and commissioning

The project design and commissioning of the device is performed using the ETS from version 5.7.7 or 6.4.0.

11 General settings

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

The mounting height of the push-button sensor is defined on the parameter page "General -> Installation position".

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

11.1 Installation position

The push-button sensor must be fitted horizontally (installation position: "standard installation position"). The installation position of the device cannot be configured.

Two buttons next to each other are combined into one rocker.

11.2 Basic settings

Operating concepts

The operating concepts of all device buttons are configured in the basic settings. The ETS indicates the arrangement of the buttons and rockers with graphics and icons in accordance with the set operating concept. You can also enable or disable gesture control here.

Status LED

General settings of the status LED can be configured in the basic settings. These settings apply to all status LEDs of the device.

Times

A delay time after the bus voltage returns can be parameterised in the basic settings.

To reduce telegram traffic after switch-on of the supply voltage or after an ETS programming operation, it is possible to delay actively sending status messages. For this purpose, a delay can be specified for the device (parameter "Delay after bus voltage return"). Only after the configured time elapses are status messages transmitted to the KNX.

All status and alarm messages on air quality are delayed.

-  The delay after the bus voltage returns does not affect the transmission of temperature and humidity values.
-  A setting of "0 min | 0 s" for the delay after the bus voltage returns fully deactivates the time delay. In this case, any messages, if actively transmitted, will be transmitted to the KNX without any delay.

Enabled functions

The following functions can be enabled in the basic settings:

- Gesture control
- Motion detection
- LED alarm signal
- LED orientation lighting
- LED night reduction
- Disabling function
- Scene function
- Temperature measurement
- Room humidity measurement
- Air quality
- VOC measurement
- VOC (IAQ) measurement

- eCO2 measurement

These functions are configured on separate parameter pages.

Rocker and button function

The rocker and button functions are configured on the Rocker *n* and Button *m* parameter pages. The following functions are available for selection:

- Switching
- Dimming and colour temperature
- Colour control and brightness
- Shading
- Value transmitter
- Scene extension unit
- 2-channel operation
- Controller extension

11.2.1 "Basic Settings" parameter table

The following parameter is available on the "General -> Basic settings" parameter page under the "Operating concept" header.

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

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

Function	Switching Dimming and colour temperature Colour control and brightness Shading Value transmitter Scene extension unit 2-channel operation Controller extension
Each rocker or button can perform one of these functions. Corresponding to this selection, the ETS compiles the appropriate parameters and objects for the function.	
Gesture control	Active Inactive
At this point, the device's gesture control can be enabled centrally. If "Active", the ETS shows further communication object and parameters.	

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

Colour	Red Green Blue Yellow Cyan Orange Violet White Colour selection per status LED
--------	---

The colour of the status LED can be selected here. In the colour configuration a distinction is made between whether all of the status LEDs of the push-button sensor have the same colour or whether alternatively various colours can be configured for the LEDs ("Colour selection per status LED" setting). With colour selection per rocker or button it is possible to set the colour on the parameter pages of the individual status LEDs.

Brightness	Level 0 (OFF) Level 1 (dark) Level 2 Level 3 Level 4 Level 5 (bright)
------------	---

The brightness level for all status LEDs is defined at this point.

Light duration of status LED for button-actuation display	1 s 2 s 3 s 4 s 5 s
---	--

This parameter defines the switch-on time the status LED is lit up to indicate actuation. The setting concerns all status LEDs whose function is set to "Button-actuation display".

The following parameters are available on the "General -> Basic settings" parameter page under the "Times" header.

Delay after bus voltage return	0...59 min 0... 17 ...59 s
To reduce telegram traffic after switch-on of the supply voltage or after an ETS programming operation, it is possible to delay actively sending status messages. For this purpose, a delay time can be defined here. Only after the configured time elapses are status messages transmitted to the KNX. All status and alarm messages on air quality are delayed.	

The following parameters are available on the "General -> Basic settings" parameter page under the "Enabled functions" header.

Motion detection	Active Inactive
At this point, the device's motion detection can be enabled centrally. If "Active", the ETS shows further communication object and parameters.	
LED alarm signal	Active Inactive
The LED alarm signalling of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters.	
LED orientation lighting	Active Inactive
The LED orientation lighting of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters.	
LED night reduction	Active Inactive
The LED night reduction of the status LED can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters.	
Disabling function	Active Inactive
With this parameter, the disabling function of the device can be centrally activated. If "Active", the ETS shows further communication object and parameters.	
Scene function	Active Inactive
The scene function of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters.	
Temperature measurement	Active Inactive
The temperature measurement of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters.	
Room humidity measurement	Active Inactive
The room humidity measurement of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters.	

Air quality	Active Inactive
At this point, the air quality measurements are released centrally by the device. When "Active" is selected, the ETS displays the three possible measurements for enabling.	
VOC measurement	Active Inactive
The VOC measurement of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters. This parameter is only available when air quality measurement is enabled	
VOC (IAQ) measurement	Active Inactive
The VOC (IAQ) measurement of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters. This parameter is only available when air quality measurement is enabled	
eCO2 measurement	Active Inactive
The eCO2 measurement of the device can be centrally enabled at this point. If "Active", the ETS shows further communication object and parameters. This parameter is only available when air quality measurement is enabled	

12 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)

12.1 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.

12.1.1 Table of parameters "Switching"

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

Command on pressing	No reaction ON OFF TOGGLE
This parameter defines the reaction when the operating element is pressed.	
Command on releasing	No reaction ON OFF TOGGLE
This parameter defines the reaction when the operating element is released.	

12.1.2 Object list "Switching"

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

Function	Name	Type	DPT	Flag
Switching	Button/rocker <i>n</i> - output	1-bit	1,001	C, -, W, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				
Function	Name	Type	DPT	Flag
Switching feedback	Button/rocker <i>n</i> - input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

12.2 Dimming and colour temperature

For each rocker or button with the function set to "dimming and colour control", the ETS indicates 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 needed by the device to detect an actuation as a long actuation can be set in the parameters. The brightness or the colour temperature can be dimmed.

Feedback

If an actuator is controlled from multiple control elements, the actuator must report its switching status to the 1-bit object "Switching feedback" 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 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 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 time that can be set (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.

12.2.1 Brightness

In the standard parameterisation, the brightness is dimmed, which is why the "Colour temperature control" parameter is set to inactive.

- i** Even with "colour temperature control" activated, the brightness can be dimmed.

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.

12.2.2 Colour temperature

When "Colour temperature control" is activated, the colour temperature can be dimmed.

- i** Even with "colour temperature control" activated, the brightness can be dimmed.

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
Increase (ON)	Increase / Reduce (TOGGLE)
Reduce (OFF)	Increase (TOGGLE)
	Reduce (TOGGLE)

With dual-area operation, the device transmits a telegram for switching on or off after a brief press, and a telegram for increasing or decreasing the colour temperature after a long press.

With single-area operation, the device transmits ON and OFF telegrams in an alternating pattern ("TOGGLE") for each brief press of the respective button, and "increase colour temperature" and "decrease colour temperature" telegrams in an alternating pattern for long actuations.

12.2.3 Brightness and colour temperature

If "colour temperature control" is activated, both the brightness and the colour temperature can be dimmed.

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 + Increase (ON)	Brighter + Increase / Darker + Reduce (TOGGLE)
Darker + Reduce (OFF)	Brighter + Increase (TOGGLE)
	Darker + Reduce (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 / colour temperature or dimming the brightness / colour temperature after a long actuation.

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

12.2.4 Parameter table: "Dimming and colour temperature"

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.

Colour temperature control	Inactive Active
This parameter activates the variable colour temperature control and thus the Tunable White function. Additional parameters appear.	
Communication	Individual objects Combi object
With colour temperature control activated, either the brightness or the colour temperature can be dimmed via an individual object or the brightness and colour temperature can be controlled together via a combination object.	
Adjustment of	Brightness Colour temperature
For communication via individual objects, this parameter sets whether the brightness or the colour temperature is dimmed via an individual object.	
Brightness on pressing	No reaction Brighter (ON) Darker (OFF) Brighter/darker (TOGGLE) Brighter (TOGGLE) Darker (TOGGLE)
<p>This parameter defines the reaction when a button is pressed.</p> <p>If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked.</p> <p>This parameter is only visible with:</p> <ul style="list-style-type: none"> – "Colour temperature control =Inactive" or – "Colour temperature control = Active" and – "Communication = Individual objects" and – "Adjustment of = Brightness" 	

Colour temperature on pressing	No reaction Increase (ON) Reduce (OFF) Increase / Reduce (TOGGLE) Increase (TOGGLE) Reduce (TOGGLE)
<p>This parameter defines the reaction when a button is pressed. If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked.</p> <p>This parameter is only visible with:</p> <ul style="list-style-type: none"> – "Colour temperature control = Active" and – "Communication = Individual objects" and – "Adjustment of = Colour temperature" 	
Brightness + colour temperature on pressing	No reaction Brighter + Increase (ON) Darker + Reduce (OFF) Brighter + Increase / Darker + Reduce (TOGGLE) Brighter + Increase (TOGGLE) Darker + Reduce (TOGGLE)
<p>This parameter defines the reaction when a button is pressed. If the device is to toggle on a brief press, the corresponding switching objects of other sensors with the same function must be interlinked.</p> <p>This parameter is only visible with:</p> <ul style="list-style-type: none"> – "Colour temperature control = Active" and – "Communication = Combi object" 	
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.	
Extended settings	Active Inactive
When the advanced parameters are activated, the ETS shows the following parameters.	

Dimming brightness by	1.5 %
	3 %
	6 %
	12.5 %
	25 %
	50 %
	100 %

This parameter sets the relative dimming level when the brightness is increased. On each button actuation, the brightness is changed at maximum by the configured step width.

It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").

Dimming darker by	1.5 %
	3 %
	6 %
	12.5 %
	25 %
	50 %
	100 %

This parameter sets the relative dimming level when the brightness is reduced. On each button actuation, the brightness is changed at maximum by the configured step width.

It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").

Increase colour temperature by	1.5 %
	3 %
	6 %
	12.5 %
	25 %
	50 %
	100 %

This parameter sets the relative dimming level when the colour temperature is increased. On each button actuation, the brightness is changed at maximum by the configured step width.

It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").

Reduce colour temperature by	1.5 % 3 % 6 % 12.5 % 25 % 50 % 100 %
<p>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.</p> <p>It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").</p>	
Stop telegram	Active Inactive
<p>On "Active" the device transmits a telegram for stopping the dimming process when the button is released.</p> <p>i When the device transmits telegrams for dimming in smaller levels, the stop telegram is generally not needed.</p>	
Telegram repetition	Active Inactive
<p>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.</p>	
Time between two telegrams	200 ms 300 ms 400 ms 500 ms 750 ms 1 s 2 s
<p>This parameter defines the interval at which the dimming telegrams are automatically repeated in the telegram repetition mode.</p> <p>This parameter is only visible if "Telegram repetition = active"!</p>	

12.2.5 Object list "Dimming and colour temperature"

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

Function	Name	Type	DPT	Flag
Switching	Button/rocker <i>n</i> - output	1-bit	1,001	C, -, W, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Dimming brightness	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, W, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Dimming brightness + colour temperature	Button/rocker <i>n</i> - output	3-byte	250,600	C, -, W, T, -
3-byte object for sending dimming telegrams for adjusting the brightness and the colour temperature in combination.				

Function	Name	Type	DPT	Flag
Switching feedback	Button/rocker <i>n</i> - input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Dimming colour temperature	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, W, T, -
4-bit object for sending relative dimming telegrams to adjust the colour temperature.				

12.3 Colour control and brightness

For each rocker or button with the function set to "colour control and brightness", the ETS indicates up to 10 objects. Generally, the device transmits a switching telegram (ON, OFF, TOGGLE) after a brief press to the bus, and cyclical telegrams for colour control after a long press. Either a colour sequence or a brightness adjustment can be achieved.

- i** The time needed by the device to detect an actuation as a long actuation can be set in the parameters.

The colour control is performed after parameterisation either in the colour space RGB or HSV. The colour space can be optionally expanded to include the white component. The bus communication can be performed either via individual objects or a combi object (only for RGB and RGBW). Using the parameters "Colour space" and "Communication" the data types of the communication objects are adjusted automatically.

Feedback

If an actuator is controlled from multiple control elements, the actuator must report its switching status and its colour values to the feedback objects 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 its switching status or colour value accordingly.

Advanced configuration options

The device has advanced parameters for the colour control. If necessary, these advanced parameters can be activated and thus be made visible. The advanced parameters determine the source of the start value, the step width and the time between two telegrams of a value adjustment on a long press.

With the colour sequence, the step width is configured in degrees. The value adjustment takes place without a stop. As soon as the device reaches the lower or upper range limit, the device sends the value of this range limit and then inserts a pause whose duration corresponds to two steps. Thereafter, the device transmits a telegram with the value of the other range limit and continues the value adjustment in the same direction.

With the brightness adjustment, one step width for increase and one step width for reduction of brightness is parameterised as a percentage value. The brightness adjustment is done with stop.

- i** With hidden switched parameters ("Advanced parameters = deactivated"), the following default values are loaded to the device:
- Start value = same as the value from the feedback object
 - Step width = 4° (only for colour sequence)
 - Increase brightness = 2% (only for brightness adjustment)
 - Reduce brightness = 2% (only for brightness adjustment)

- Time between two telegrams = 200 ms

12.3.1 Colour sequence

The colour sequence performs a value adjustment of the colour hue (H) in the range from 0 to 360°.

- i** For the set colour space "RGB" or "RGBW", an adjustment of the colour hue (H) is converted internally in the device.

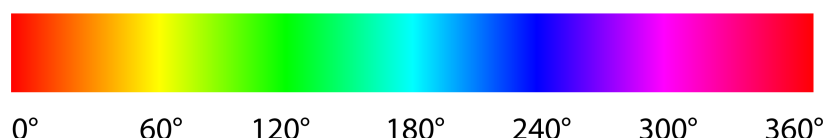


Figure 14: Colour scale (Colour hue H)

The colour sequence is realised according to the adjustment direction ("Command on pressing") and the step width via bus telegrams. During a colour sequence with a long actuation, the device cyclically sends new values to the bus, whereby the colour wheel is run through.

- Colour space HSV and HSVW: The colour hue (H) changes cyclically by the parameterised step width. The saturation (S) and the brightness value (V) remain unaffected by a colour pass.
- Colour space RGB and RGBW: Depending on the start position at the beginning of the adjustment, the values R, G or B change cyclically.

Colour sequence - Colour picker

Using the colour picker of the ETS, the colour wheel sequence can be traced by adjusting the slider of the H value from 0° to 360°.

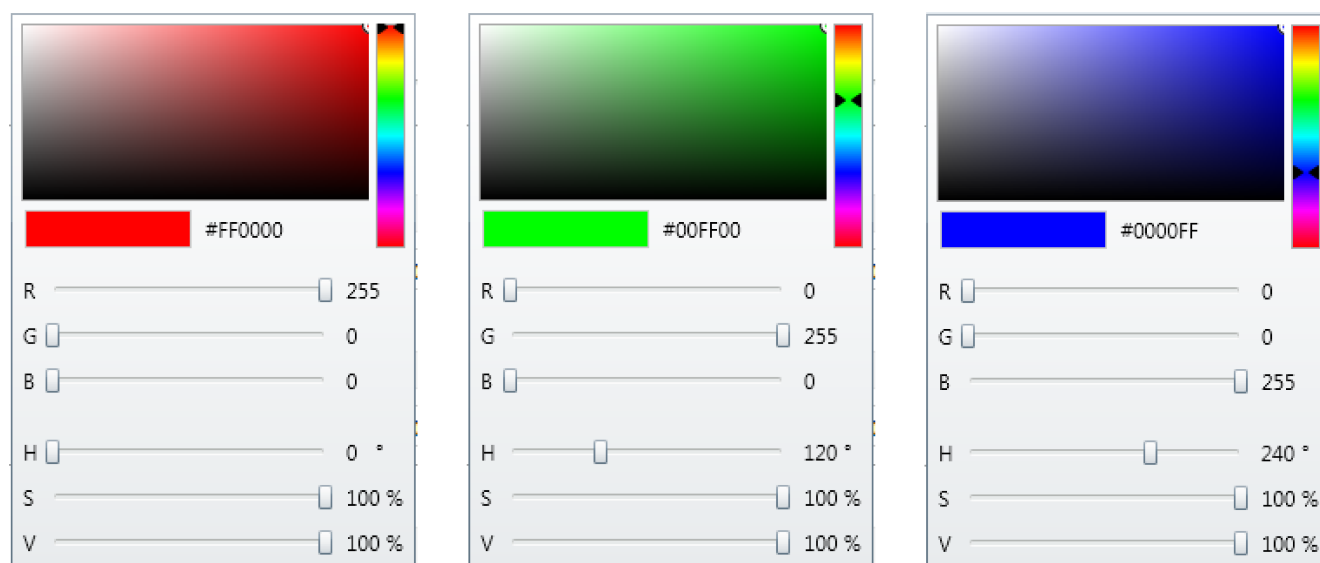


Figure 15: Examples of colour adjustment using the ETS colour picker

Examples of HSV-RGB conversion:

Example	HSV values	RGB values	Colour
1	0°, 100%, 100%	255, 0, 0	Red
2	120°, 100%, 100%	0, 255, 0	Green
3	240°, 100%, 100%	0, 0, 255	Blue
4	360°, 0%, 100%	255, 255, 255	White
5	360°, 0%, 0%	0, 0, 0	Black

- i** With "Saturation (S) = 0%" and "Brightness (V) = 100%", a change in the colour hue (H) has no effect on the RGB values and thus no effect on the colour (see example 4).
- i** With "Saturation (S) = 0%" and "Brightness (V) = 0%", a change in the colour hue (H) has no effect on the RGB values and thus no effect on the colour (see example 5).

Colour sequence - Operation of the function

When operating the colour sequence, the device differentiates between dual-area operation and single-area operation. The parameter "Command on pressing" defines the single-area or dual-area operation principle.

Dual-area operation	Single-area operation
Colour sequence in anti-clockwise direction (ON)	Toggle colour sequence (TOGGLE)
Colour sequence in clockwise direction (OFF)	Colour sequence in anti-clockwise direction (TOGGLE)
	Colour sequence in clockwise direction (TOGGLE)

- i** With dual-area operation, the device transmits a telegram for switching on or off after a brief press, and a colour sequence telegram after a long press.
- i** With single-area operation, the device transmits ON and OFF telegrams in an alternating pattern ("TOGGLE") for each brief press of the respective button, and a colour sequence telegram for a long actuation.

12.3.2 Brightness adjustment

The brightness adjustment performs a value adjustment of the brightness value (V) in the range from 0 to 100%.

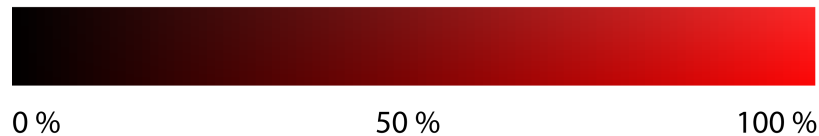


Figure 16: Brightness scale (brightness value V) - example red

The brightness adjustment is realised according to the adjustment direction ("Command on pressing") and the step width ("Increase brightness" or "Reduce brightness") via bus telegrams. When adjusting the brightness, a long press causes the device to cyclically send new values to the bus, which changes the brightness.

- i** The brightness adjustment due to a long press ends automatically, either when the brightness is increased to 100 per cent or when the brightness is decreased to 0 per cent.
- Colour space HSV and HSVW: The brightness value (V) changes cyclically by the parameterised step width ("Increase brightness" or "Reduce brightness"). The colour hue (H) and the saturation (S) remain unaffected by a brightness adjustment.
- Colour space RGB and RGBW: Depending on the start position at the beginning of the adjustment, the values R, G or B change cyclically.

Brightness adjustment - Colour picker

Using the colour picker of the ETS, the brightness adjustment can be reproduced by adjusting the slider of the V-value between 0% and 100%.

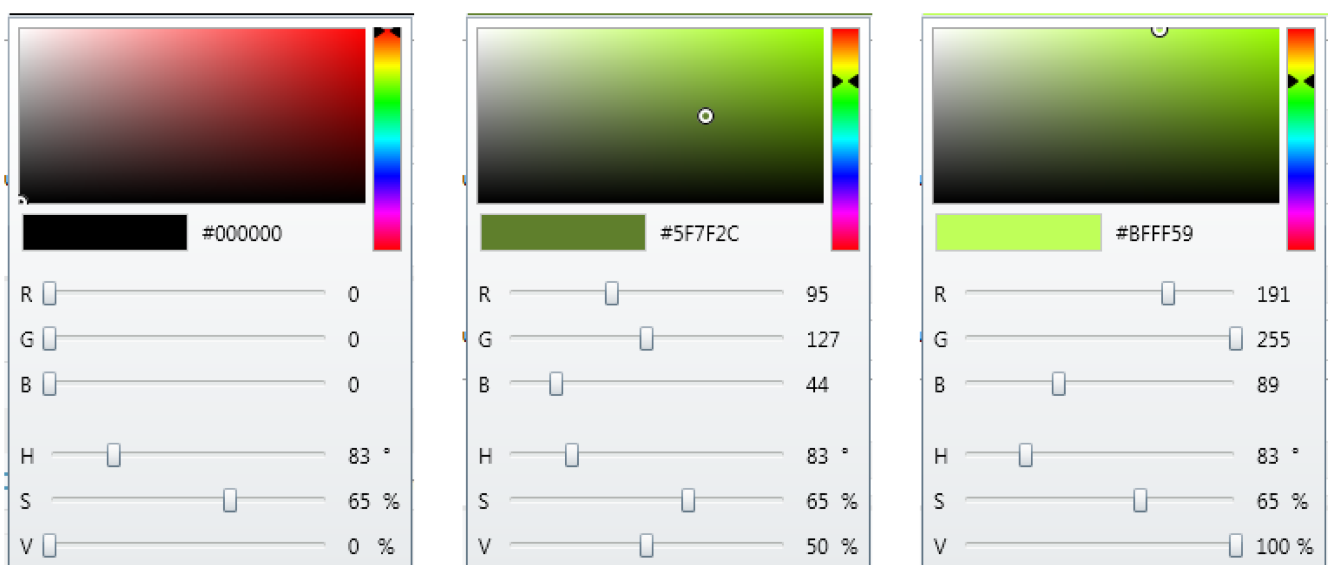


Figure 17: Examples of brightness adjustment using the colour picker of the ETS

Examples of HSV-RGB conversion:

Example	HSV values	RGB values	Colour
1	83°, 65%, 0%	0, 0, 0	Black
2	83°, 65%, 50%	95, 127, 44	Dark green
3	83°, 65%, 100%	191, 255, 89	Light green

- i** With "Brightness (V) = 0%", a change in the colour hue (H) or the saturation (S) has no effect on the RGB values and thus no effect on the colour (see example 1).

Brightness adjustment - Operating the function

When operating the brightness adjustment, the device differentiates between dual-area operation and single-area operation. The parameter "Command on pressing" defines the single-area or dual-area operation principle.

Dual-area operation	Single-area operation
Brightness adjustment brighter (ON)	Brightness adjustment brighter / darker (TOGGLE)
Brightness adjustment darker (OFF)	Brightness adjustment brighter (TOGGLE)
	Brightness adjustment darker (TOGGLE)

- i** With dual-area operation, the device transmits a telegram for switching on or off after a brief press, and brightness adjustment telegrams after a long press.
- i** With single-area operation, the device transmits ON and OFF telegrams in an alternating pattern ("TOGGLE") for each brief press of the button, and telegrams for brightness adjustment for a long actuation.

12.3.3 Parameter table: "Colour control and brightness"

Type of colour control	Colour sequence Brightness adjustment
This parameter sets whether a colour circle run or a brightness adjustment is performed. Depending on this setting, all further parameters are automatically adjusted. <ul style="list-style-type: none"> – The colour sequence performs a value adjustment of the colour hue (H) in the range from 0 to 360°. – The brightness adjustment performs a value adjustment of the brightness value (V) in the range from 0 to 100%. This function is unsuitable for combination with DALI operating devices. In this case, the brightness adjustment should be implemented with the function "Dimming and colour temperature" (DPT 3.007). 	
Colour space	RGB RGBW HSV HSVW
This parameter defines the colour space of the function. With the colour spaces RGB and RGBW, communication can take place via individual objects or via a combination object. With the colour spaces HSV and HSVW, communication takes place via individual objects.	
Communication	Individual objects Combi object
Only when the colour space is set to RGB or RGBW, can communication via the bus take place either via individual objects (red, green, blue, white*) or via a combination object (RGBW). The parameter defines input and output objects in the same way. *Only for RGBW	
Value (RGB/HSV)	#000000 ... #FF0000 ... #FFFFFF
This parameter determines the object values (communication via individual objects) or the object value (communication via combination object) when the button is pressed. The value (RGB/HSV) is configured by means of a colour picker. The W-value is parameterised using a separate slider.	
Value (W)	0 ... 255 or 0 ... 100%
This parameter defines the white value for the object when the button is pressed. When the colour space has been configured to "RGBW" the W-value is set from 0 to 255. When the colour space has been parameterised to "HSVW" the W-value is set between 0 and 100%.	

Command on pressing	No reaction Colour sequence in anti-clockwise direction (ON) Colour sequence in clockwise direction (OFF) Toggle colour sequence (TOGGLE) Colour sequence in anti-clockwise direction (TOGGLE) Colour sequence in clockwise direction (TOGGLE)
<p>When the button is actuated briefly, the device sends a switching telegram according to the parameterisation (ON, OFF or TOGGLE).</p> <p>With a long press, the device can either vary the values always in the same direction or it stores the direction of the last adjustment and reverses it on the next button-press.</p> <p>The device adjusts the values in the same direction with the options:</p> <ul style="list-style-type: none"> – Colour sequence in anti-clockwise direction (ON) – Colour sequence in clockwise direction (OFF) – Colour sequence in anti-clockwise direction (TOGGLE) – Colour sequence in clockwise direction (TOGGLE) <p>The device inverts the adjustment direction with the following option:</p> <ul style="list-style-type: none"> – Toggle colour sequence (TOGGLE) <p>This parameter is only visible if the "Type of colour control = Colour sequence" has been parameterised</p>	

Command on pressing	No reaction Brightness adjustment brighter (ON) Brightness adjustment darker (OFF) Brightness adjustment brighter / darker (TOGGLE) Brightness adjustment brighter (TOGGLE) Brightness adjustment darker (TOGGLE)
<p>When the button is actuated briefly, the device sends a switching telegram according to the parameterisation (ON, OFF or TOGGLE).</p> <p>With a long press, the device can either vary the values always in the same direction or it stores the direction of the last adjustment and reverses it on the next button-press.</p> <p>The device adjusts the values in the same direction with the options:</p> <ul style="list-style-type: none"> – Brightness adjustment brighter (ON) – Brightness adjustment darker (OFF) – Brightness adjustment brighter (TOGGLE) – Brightness adjustment darker (TOGGLE) <p>The device inverts the adjustment direction with the following option:</p> <ul style="list-style-type: none"> – Brightness adjustment brighter / darker (TOGGLE) <p>This parameter is only visible if the "Type of colour control = Brightness adjustment" has been parameterised</p>	
Time between switching and colour sequence	0 ... 50 s 100 ... 400 ... 990 ms
<p>This parameter defines how long the button must be pressed for a colour sequence to be started.</p> <p>This parameter is only visible if the "Type of colour control = Colour sequence" has been parameterised</p>	
Time between switching and brightness adjustment	0 ... 50 s 100 ... 400 ... 990 ms
<p>This parameter defines how long the button must be pressed for a brightness adjustment to be started.</p> <p>This parameter is only visible if the "Type of colour control = Brightness adjustment" has been parameterised</p>	
Extended settings	Active Inactive
<p>When the advanced parameters are activated, the ETS shows the following parameters, depending on the parameter "Type of colour control".</p>	

Start value	same as configured value same as value after last adjustment same as value from feedback object
-------------	--

Value adjustment can begin with different starting values.

With "same as configured value": After each long press, the device always starts with the value configured in the ETS.

With "same as value after last adjustment": After a long press, the device starts with the value transmitted by itself or by another device with this group address as the last value.

With "same as value from feedback object": After each long press, the device starts with the value that it or another device with this group address transmitted as the last value.

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.

Increment	1° 2° 4° 5° 10° 20° 25° 30° 50° 60°
-----------	---

This parameter defines the step width with which the device adjusts the colour when a button is pressed for a long time and telegram repetition is activated.

In a value adjustment, the device determines the new telegram value from the previous value and the preset step width. If the value falls below the lower limit of the adjustment range or if it exceeds the upper limit, the sensor adapts the step width of the last step automatically.

This parameter is only visible if the "Type of colour control = Colour sequence" has been parameterised

Increase brightness	1%
	2%
	3%
	4%
	5%
	6%
	7%
	8%
	9%
	10%

This parameter defines the step width with which the device increases the brightness when a button is pressed for a long time and telegram repetition is activated.

In a value adjustment, the device determines the new telegram value from the previous value and the preset step width. If the value falls below the lower limit of the adjustment range or if it exceeds the upper limit, the sensor adapts the step width of the last step automatically.

This parameter is only visible if the "Type of colour control = Brightness adjustment" has been parameterised

Reduce brightness	1%
	2%
	3%
	4%
	5%
	6%
	7%
	8%
	9%
	10%

This parameter defines the step width with which the device reduces the brightness when a button is pressed for a long time and telegram repetition is activated.

In a value adjustment, the device determines the new telegram value from the previous value and the preset step width. If the value falls below the lower limit of the adjustment range or if it exceeds the upper limit, the sensor adapts the step width of the last step automatically.

This parameter is only visible if the "Type of colour control = Brightness adjustment" has been parameterised

Telegram repetition	Active
The telegram repetition for colour control is always active. The device cyclically sends operating telegrams (in the parameterised step width) to the bus if the button is pressed for a long time.	

Time between two telegrams	0.5 s 1 s 2 s 5 s 10 s
<p>This parameter determines how fast the telegrams for operating the colour sequence are automatically repeated in the telegram repetition mode.</p> <p>This parameter is only visible if "Type of colour control = Colour sequence" and "Telegram repetition = active" have been parameterised!</p>	
Time between two telegrams	200 ms 300 ms 400 ms 500 ms 750 ms 1 s 2 s
<p>This parameter determines how fast the telegrams for operating the brightness adjustment are automatically repeated in the telegram repetition mode.</p> <p>This parameter is only visible if "Type of colour control = Brightness adjustment" and "Telegram repetition = active" have been parameterised!</p>	

12.3.4 Object list "Colour control and brightness"

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

Function	Name	Type	DPT	Flag
Switching	Button/rocker <i>n</i> - output	1-bit	1,001	C, -, -, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Switching feedback	Button/rocker <i>n</i> - input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Colour value RGB	Button/rocker <i>n</i> - output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the RGB colour values. This object is only visible with "Colour space = RGB" and "Communication = Combi object".				

Function	Name	Type	DPT	Flag
Colour value RGBW	Button/rocker <i>n</i> - output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the RGBW colour values. This object is only visible with "Colour space = RGBW" and "Communication = Combi object"				

Function	Name	Type	DPT	Flag
Colour value Red	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the red colour value. This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects".				

Function	Name	Type	DPT	Flag
Colour hue (H)	Button/rocker <i>n</i> - output	1-byte	5,003	C, -, -, T, -
1-byte object for transmitting the colour hue. This object is only visible with "Colour space = HSV or HSVW".				

Function	Name	Type	DPT	Flag
Colour value Green	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the green colour value. This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects".				

Function	Name	Type	DPT	Flag
Saturation (S)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation. This object is only visible with "Colour space = HSV or HSVW".				

Function	Name	Type	DPT	Flag
Colour value Blue	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the blue colour value. This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"				

Function	Name	Type	DPT	Flag
Brightness (V)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value. This object is only visible with "Colour space = HSV or HSVW".				

Function	Name	Type	DPT	Flag
Colour value White	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white colour value. This object is only visible with "Colour space = RGBW" and "Communication = Individual objects"				

Function	Name	Type	DPT	Flag
White value (W)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white level. This object is only visible with "Colour space = HSVW".				

Function	Name	Type	DPT	Flag
Colour value RGB feed-back	Button/rocker <i>n</i> - input	3-byte	232,600	C, -, W, -, U
3-byte object for receiving feedback telegrams (RGB colour values). This object is only visible with "Colour space = RGB" and "Communication = Combi object"				

Function	Name	Type	DPT	Flag
Colour value RGBW feedback	Button/rocker <i>n</i> - input	6-byte	251,600	C, -, W, -, U
6-byte object for receiving feedback telegrams (RGBW colour values). This object is only visible with "Colour space = RGBW" and "Communication = Combi object"				

Function	Name	Type	DPT	Flag
Colour value Red feed-back	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (red colour value).

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Colour hue (H) feed-back	Button/rocker <i>n</i> - input	1-byte	5,003	C, -, W, -, U

1-byte object for receiving feedback telegrams (colour hue H).

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value Green feedback	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (green colour value).

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Saturation (S) feedback	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (saturation S).

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value Blue feed-back	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (blue colour value).

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Brightness (V) feedback	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (brightness value V).

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value White feedback	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (white colour value).

This object is only visible with "Colour space = RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
White level (W) feed-back	Button/rocker <i>n</i> - input	1-byte	5,001	C, -, W, -, U
1-byte object for receiving feedback telegrams (white value W). This object is only visible with "Colour space = HSVW".				

12.4 Shading

For each rocker or each button with the function set to "Shading", the ETS indicates the two 1-bit objects "Short-time operation" and "Long-time operation".

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

With an operating element as a rocker, the double-surface Venetian blind function is preset. This means that the push-button sensor transmits a telegram for an upward movement, for example after actuation of the left actuation point and a telegram for a downward movement after an actuation of the right actuation point.

In the case of an operating element as buttons, the device is preprogrammed for single-surface Venetian blind function. In this case, the push-button sensor 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.

If the actuator can be controlled from several sensors, a faultless single-area operation requires that the long time objects of the push-button sensors are interlinked. The push-button sensor 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 concepts for the shading function

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

The different operating concepts are described in detail in the following chapter.

Operating concept "short – long – short":

In the operating concept "short – long – short", the push-button sensor shows the following behaviour:

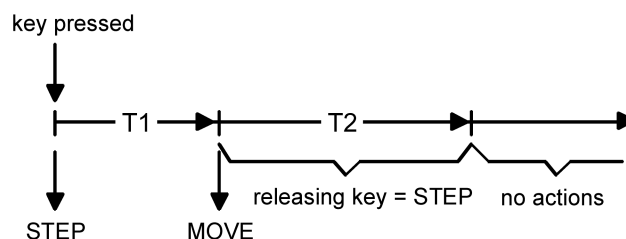


Figure 18: Operating concept "short – long – short"

- Immediately on pressing the button, the push-button sensor transmits a short time telegram. Pressing the button stops a running drive and starts time T1 ("time between short time and long time command"). No other telegram will be transmitted, if the key is released within T1. This short time serves the purpose of stopping a continuous movement.

The "time between short and long-time command" in the push-button sensor should be selected shorter than the short-time operation of the actuator to prevent a jerky movement of the Venetian blind.

- If the button is kept depressed longer than T1, the push-button transmits a long time telegram after the end of T1 for starting up the drive and time T2 ("slat adjusting time") is started.
- If the button is released within the slat adjusting time, the push-button sensor sends 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 adjusting time" should be chosen as required by the drive for a complete rotation of the slats. If the "slat adjusting time" is selected longer than the complete running time of the drive, a push button 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 longer than T2, the push-button sensor transmits no further telegram. The drive remains on until the end position is reached.

Operating concept "long – short":

In the operating concept "short – long – short", the push-button sensor shows the following behaviour:

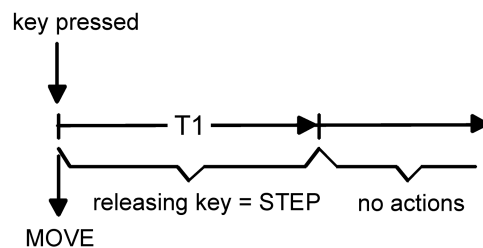


Figure 19: Operating concept "long – short"

- Immediately on pressing the button, the push-button sensor transmits a long time telegram. The drive begins to move and time T1 ("slat adjusting time") is started.
 - If the button is released within the slat adjusting time, the push-button sensor transmits 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 adjusting time" should be chosen as required by the drive for a complete rotation of the slats. If the "slat adjusting time" is selected longer than the complete running time of the drive, a push button 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 longer than T1, the push-button sensor transmits no further telegram. The drive remains on until the end position is reached.

Operating concept "short – long":

In the operating concept "short – long", the push-button sensor shows the following behaviour:

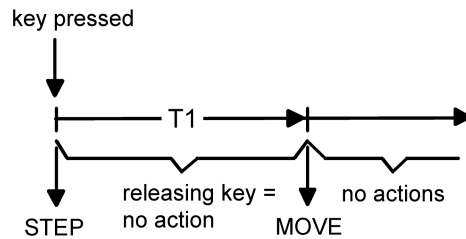


Figure 20: Operating concept "short – long"

- Immediately on pressing the button, the push-button sensor transmits a short time telegram. Pressing the button stops a running drive and starts time T1 ("time between short time and long time command"). No other telegram will be transmitted, if the key is released within T1. This short time serves the purpose of stopping a continuous movement. The "time between short and long-time command" in the push-button sensor should be selected shorter than the short-time operation of the actuator to prevent a jerky movement of the Venetian blind.
- If the button is kept depressed longer than T1, the push-button transmits a long time telegram after the end of T1 for starting the drive.
- No further telegram is transmitted when the push-button is released. The drive remains on until the end position is reached.

Operating concept "long – short or short":

In the operating concept "long – short or short", the push-button sensor shows the following behaviour:

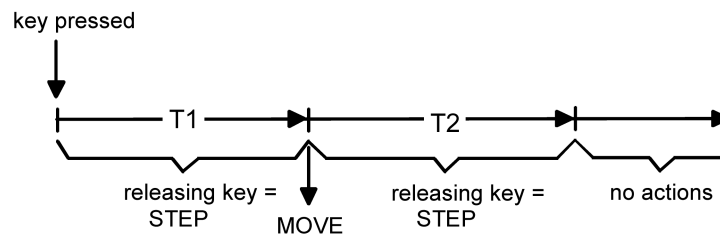


Figure 21: Operating concept "long – short or short"

- Immediately on pressing the button, the push-button sensor starts time T1 ("time between short and long time command") and waits. If the button is released again before T1 has elapsed, the push-button sensor transmits 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 has elapsed, the push-button sensor transmits a long time telegram and starts time T2 ("slat adjusting time").
- If the button is released within T2, the push-button sensor sends 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 adjusting time" should be chosen as required by the drive for a complete rotation of the slats. If the "slat adjusting time" is selected longer than the complete running time of the drive, a push button 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 longer than T2, the push-button sensor transmits no further telegram. The drive remains on until the end position is reached.

12.4.1 "Shading" parameter table

The following parameters are available for the individual buttons or for the left and right sides of the rockers, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Command on pressing (Only for "button function" operating concept)	UP DOWN TOGGLE
This parameter defines the running direction of a drive after a button actuation. If the setting is "TOGGLE", the direction is changed after each long time command. If several push-buttons are to control the same drive, the long time objects of the push-buttons must be interlinked for a correct change of the running direction.	
Command on pressing (For "rocker function" operating concept and "standard installation position")	Left rocker: UP / Right rocker: DOWN Left rocker: DOWN / Right rocker: UP Left rocker: TOGGLE / Right rocker: TOGGLE
This parameter defines the running direction of a drive after a rocker actuation. If the setting is "TOGGLE", the direction is changed after each long time command. If several push-buttons are to control the same drive, the long time objects of the push-buttons must be interlinked for a correct change of the running direction.	
Command on pressing (For "rocker function" operating concept and "turned by -90°" installation position)	Rocker top: UP / Rocker bottom: DOWN Rocker top: DOWN / Rocker bottom: UP Rocker top: TOGGLE / Rocker bottom: TOGGLE
This parameter defines the running direction of a drive after a rocker actuation. If the setting is "TOGGLE", the direction is changed after each long time command. If several push-buttons are to control the same drive, the long time objects of the push-buttons must be interlinked for a correct change of the running direction.	
Operating concept	short – long – short Long – short Short – long Long – short or short
For shading control, four different operating concepts can be selected. For these concepts, the ETS shows further parameters.	

Time between short-time and long-time command	100 ... 400 ... 300000
<p>This parameter sets the time in 100 millisecond increments after which the long-time operation will be evaluated on pressing the operating element.</p> <p>This parameter is not visible with "Operating concept = long – short"!</p>	
Slat adjusting time	0 ... 500 ... 300000
<p>This is used to set the time in 100 millimetre increments during which a transmitted MOVE telegram can be terminated by releasing the operating element (STEP). This function serves to adjust the slats of a venetian blind.</p> <p>This parameter is not visible with "Operating concept = short - long"!</p>	

12.4.2 Object list "Shading"

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

Function	Name	Type	DPT	Flag
Short-time operation	Button/rocker <i>n</i> - output	1-bit	1,007	C, -, -, T, -
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.				
Function	Name	Type	DPT	Flag
Long-time operation	Button/rocker <i>n</i> - output	1-bit	1,008	C, -, W, T, -
1-bit object for the transmission of telegrams with which a venetian blind or shutter drive motor can be moved upwards or downwards.				

12.5 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 twelve different value ranges. Depending on the application, the parameters "Function" and "Value range" determine which value range the value transmitter uses:

Function	Functionality	Lower numerical limit	Upper numerical limit
1-byte value transmitter	0...255	0	255
1-byte value transmitter	0...100%	0%	100%
1-byte value transmitter	-128...127	-128	127
1-byte value transmitter	0...255%	0%	255%
2-byte value transmitter	0...65535	0	65535
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
2-byte value transmitter	Colour temperature value	1000 K	10000 K
3-byte value transmitter	Colour value RGB/HSV	#000000	#FFFFFF
6-byte value transmitter	Colour value RGBW/HSVW	#000000 + 0	#FFFFFF + 255
6-byte value transmitter	Colour temperature value + brightness	1000 K 0%	10000 K 100%

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

12.5.1 1-byte value transmitter

The 1-byte value transmitter is available in the following four variants:

- 0 ... 255
- 0 ... 100%
- -128 ... 127
- 0 ... 255%

For each rocker or button, ETS indicates an object for sending out the parameterised value. On pressing a button, the configured value is transmitted to the bus. In case of a rocker function, different values can be configured for both buttons.

12.5.2 2-byte value transmitter

The 2-byte value transmitter is available in the following five variants:

- 0 ... 65535
- -32768 ... 32767
- Temperature value (0 ... 40 °C)
- Brightness value (0, 50, ..., 1500 lux)
- Colour temperature value (1000, 1100, ..., 10000)

For each rocker or button, ETS indicates an object for sending out the parameterised value. On pressing a button, the configured value is transmitted to the bus. In case of a rocker function, different values can be configured for both buttons.

12.5.3 3-byte value transmitter

The 3-byte value transmitter is available in the following variant:

- Colour value RGB/HSV

For each rocker or button, ETS indicates up to three objects for sending out the parameterised values. The parameterised values are sent to the bus at the touch of a button. In case of a rocker function, different values can be configured for both buttons.

In the parameters, the colour space of this function can be defined. With the colour space RGB, communication can take place via individual objects or via a combination object. With the colour space HSV, communication takes place via individual objects.

The object values to be transmitted are parameterised via a colour picker.

12.5.4 6-byte value transmitter

The 6-byte value transmitter is available in the following two variants:

- Colour value RGBW/HSVW
- Colour temperature value + brightness

For each rocker or button, ETS indicates up to four objects for transmitting the parameterised values. The parameterised values are sent to the bus at the touch of a button. In case of a rocker function, different values can be configured for both buttons.

With the value range "Colour value RGBW/HSVW", the colour space of this function can be defined in the parameters. With the colour space RGBW, communication can take place via individual objects or via a combination object. With the colour space HSVW, communication takes place via individual objects.

The RGB or HSV object values to be transmitted are parameterised via a colour picker. The object value W is parameterised using a separate slider.

With the value range "Colour temperature value + brightness", the object values to be transmitted for colour temperature and brightness as well as a time window are defined in the parameters. The device packs all three pieces of information together in one communication object and sends them to the bus. The receiving actuator converts this information, according to DPT 249.600 and sets the colour temperature and brightness in the parameterised time window.

12.5.5 Object list "Value transmitter"

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.

Functionality	no function 1-byte 2-byte 3-byte 6-byte
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The "value transmitter" function distinguishes between 1-byte, 2-byte 3-byte and 6-byte values.

Value range	1-byte (0...255) 1-byte (0...100%) 1-byte (-128...127) 1-byte (0...255%)
-------------	--

The 1-byte value transmitter offers these value ranges for setting.

The other parameters and objects of the function are based on the setting of this parameter.

Value range	2-byte (0...65535) 2-byte (-32768...32767) 2-bytes temperature value 2-byte brightness value 2-bytes colour temperature value
-------------	--

The 2-byte value transmitter offers these value ranges for setting.

The other parameters and objects of the function are based on the setting of this parameter.

Value range	3-bytes colour value RGB/HSV
-------------	-------------------------------------

The 3-byte value transmitter offers these value ranges for setting.

The other parameters and objects of the function are based on the setting of this parameter.

Colour space	RGB HSV
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This parameter defines the colour space of the function. With RGB, communication can take place via individual objects or via a combination object. With HSV, communication takes place via individual objects.

This parameter is only visible if "Value range = 3-byte colour value RGB/HSV"

Communication	Individual objects Combi object
<p>When the colour space is set to RGB, communication via the bus can take place either via individual objects (red, green, blue) or via a combination object (RGB).</p> <p>This parameter is only visible if "Value range = 3-byte colour value RGB/HSV"</p>	
Value range	6-bytes colour value RGBW/HSVW 6-bytes colour temperature value + brightness
<p>The 6-byte value transmitter offers these value ranges for setting.</p> <p>The other parameters and objects of the function are based on the setting of this parameter.</p>	
Colour space	RGBW HSVW
<p>This parameter defines the colour space of the function. With RGBW, communication can take place via individual objects or via a combination object. With HSVW, communication takes place via individual objects.</p> <p>This parameter is only visible if "Value range = 6-byte colour value RGBW/HSVW"</p>	
Communication	Individual objects Combi object
<p>When the colour space is set to RGBW, communication via the bus can take place either via individual objects (red, green, blue, white) or via a combination object (RGBW).</p> <p>This parameter is only visible if "Value range = 6-byte colour value RGBW/HSVW"</p>	
Value (0...255)	0...255
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 1-byte" and "Value range = 1-byte (0...255)".</p>	
Value (0...100 %)	0...100
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 1-byte" and "Value range = 1-byte (0...100%)".</p>	
Value (-128...127)	-128...0...127
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 1-byte" and "Value range = 1-byte (-128...127)".</p>	

Value (0...255%)	0...255
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 1-byte" and "Value range = 1-byte (0...255%)".</p>	
Value (0...65535)	0...65535
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte (0...65535)".</p>	
Value (-32768...32767)	-32768...0...32767
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte (-32768...32767)".</p>	
Temperature value (0...40 °C)	0...20...40
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte temperature value".</p>	
Brightness value (0, 50, ..., 1500 lux)	0, 50, ..., 300, ..., 1500
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte brightness value".</p>	
Colour temperature (1000, 1100, ..., 10000 K)	1000, 1100, ..., 2700, ..., 10000
<p>This parameter defines the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte temperature value".</p>	
Value (RGB/HSV)	#000000 ... #FFFFFF
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Colour value transmitter red", "Colour value transmitter green", "Colour value transmitter blue" or – "Colour value transmitter RGB", "Colour value transmitter RGBW" <p>or</p> <ul style="list-style-type: none"> – "Colour hue (H)", "Saturation (S)", "Brightness (V)" <p>The parameter is visible with "Function = 3-byte RGB/HSV" or "Function = 6-byte RGBW/HSVW".</p> <p>The value (RGB/HSV) is configured by means of a colour picker.</p> <p>With the "6-byte RGBW / HSVW" function, the W value is configured using a separate slider.</p>	

Value (W)	0 ... 255
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Colour value transmitter White" or – "Colour value transmitter RGBW" <p>Visible only if "Function = 6-byte RGBW/HSVW" and "Colour space = RGBW".</p>	
Value (W)	0 ... 100 %
<p>This parameter is used to determine the object values of the following output object when the button is pressed:</p> <ul style="list-style-type: none"> – "White level (W)" <p>Visible only if "Function = 6-byte RGBW/HSVW" and "Colour space = HSVW".</p>	
Colour temperature (1000, 1100, ..., 10000 K)	1000, 1100, ..., 2700 , ..., 10000
<p>This parameter determines the colour temperature of the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 6-byte" and "Value range = 6-byte temperature value + brightness".</p>	
Brightness	0 ... 100 %
<p>This parameter determines the brightness of the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 6-byte" and "Value range = 6-byte temperature value + brightness".</p>	
Time window	0 ... 100 min 0 ... 1 ... 59 s 0 ... 900 ms
<p>This parameter determines the time period in which the actuator adjusts the colour temperature and brightness after the button has been pressed.</p> <p>This parameter is only visible if "Function = 6-byte" and "Value range = 6-byte temperature value + brightness".</p>	

12.5.6 Object list "Value Transmitters"

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

Function	Name	Type	DPT	Flag
Value transmitter 0...255	Button/rocker <i>n</i> - output	1-byte	5,010	C, -, -, T, -

1-byte object for the transmission of values from 0 to 255.

These objects are only visible when:

- "Function = 1-bytes" and
- "Value range = 1-bytes (0...255)"

Function	Name	Type	DPT	Flag
Value transmitter 0... 100 %	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -

1-byte object for the transmission of values from 0 to 100%.

These objects are only visible when:

- "Function = 1-bytes" and
- "Value range = 1-byte (0...100%)"

Function	Name	Type	DPT	Flag
Value transmitter -128...127	Button/rocker <i>n</i> - output	1-byte	6,010	C, -, -, T, -

1-byte object for the transmission of values from -128 to 127.

These objects are only visible when:

- "Function = 1-bytes" and
- "Value range = 1-bytes (-128...127)"

Function	Name	Type	DPT	Flag
Value transmitter 0... 255 %	Button/rocker <i>n</i> - output	1-byte	5,004	C, -, -, T, -

1-byte object for the transmission of values from 0 to 255%.

These objects are only visible when:

- "Function = 1-bytes" and
- "Value range = 1-byte (0...255%)"

Function	Name	Type	DPT	Flag
Value transmitter 0...65535	Button/rocker <i>n</i> - output	2-byte	7,001	C, -, -, T, -
2-byte object for the transmission of values from 0 to 65535. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 2-bytes" and - "Value range =2-bytes (0...65535)" 				

Function	Name	Type	DPT	Flag
Value transmitter -32768...32767	Button/rocker <i>n</i> - output	2-byte	8,001	C, -, -, T, -
2-byte object for the transmission of values from -32768 to 32767. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 2-bytes" and - "Value range =2-bytes (-32768...32767)" 				

Function	Name	Type	DPT	Flag
Temperature value transmitter	Button/rocker <i>n</i> - output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values from 0 to 40 °C. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 2-bytes" and - "Value range = 2-byte temperature value" 				

Function	Name	Type	DPT	Flag
Brightness value transmitter	Button/rocker <i>n</i> - output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values from 0 to 1500 Lux. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 2-bytes" and - "Value range = 2-byte brightness value" 				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter	Button/rocker <i>n</i> - output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 2-bytes" and - "Value range = 2-byte colour temperature value" 				

Function	Name	Type	DPT	Flag
Colour value transmitter RGB	Button/rocker <i>n</i> - output	3-byte	232,600	C, -, -, T, -
<p>3-byte object for transmitting the colour information red, green and blue in one communication object.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 3-byte", - "Value range = 3-byte colour value RGB/HSV", - "Colour space = RGB" and - "Communication = Combi object" 				

Function	Name	Type	DPT	Flag
Colour value transmitter RGBW	Button/rocker <i>n</i> - output	6-byte	251,600	C, -, -, T, -
<p>6-byte object for sending the colour information red, green, blue and white in one communication object.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 6-byte", - "Value range = 6-byte colour value RGBW/HSVW", - "Colour space = RGBW" and - "Communication = Combi object" 				

Function	Name	Type	DPT	Flag
Colour value transmitter Red	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
<p>1-byte object for transmitting the red colour value from 0 to 100 per cent.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 3-byte or 6-byte", - "Value range = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW", - "Colour space = RGB or RGBW" and - "Communication = Individual objects" 				

Function	Name	Type	DPT	Flag
Colour value transmitter Green	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
<p>1-byte object for transmitting the green colour value from 0 to 100 per cent.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 3-byte or 6-byte", - "Value range = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW", - "Colour space = RGB or RGBW" and - "Communication = Individual objects" 				

Function	Name	Type	DPT	Flag
Colour value transmitter Blue	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
<p>1-byte object for transmitting the blue colour value from 0 to 100 per cent.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 3-byte or 6-byte", - "Value range = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW", - "Colour space = RGB or RGBW" and - "Communication = Individual objects" 				

Function	Name	Type	DPT	Flag
Colour value transmitter White	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
<p>1-byte object for transmitting the white colour value from 0 to 100 per cent.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 6-byte", - "Value range = 6-byte colour value RGBW/HSVW", - "Colour space = RGBW" and - "Communication = Individual objects" 				

Function	Name	Type	DPT	Flag
Colour hue (H)	Button/rocker <i>n</i> - output	1-byte	5,003	C, -, -, T, -
<p>1-byte object for sending the colour hue (H) from 0 ... 360°.</p> <p>These objects are only visible when:</p> <ul style="list-style-type: none"> - "Function = 3-byte or 6-byte", - "Value range = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW" and - "Colour space = HSV or HSVW" 				

Function	Name	Type	DPT	Flag
Saturation (S)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 3-byte or 6-byte", - "Value range = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW" and - "Colour space = HSV or HSVW" 				

Function	Name	Type	DPT	Flag
Brightness (V)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness (V) from 0 to 100 per cent. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 3-byte or 6-byte", - "Value range = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW" and - "Colour space = HSV or HSVW" 				

Function	Name	Type	DPT	Flag
White value (W)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 6-byte", - "Value range = 6-byte colour value RGBW/HSVW" and - "Colour space = HSVW" 				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter + brightness	Button/rocker <i>n</i> - output	6-byte	249,600	C, -, -, T, -
6-byte object for sending the time window, colour temperature and brightness. These objects are only visible when: <ul style="list-style-type: none"> - "Function = 6-bytes" and - "Value range = 6-byte colour temperature value + brightness" 				

12.6 Scene extension unit

For each rocker or button whose function is set to "scene extension unit", the recall of an external scene (1...64) or an internal scene (1...8) can be parameterised.

i The internal scene recall works when the scene function is enabled (parameter page "General -> Basic settings").

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

In the function as scene extension unit, the device can either call up scenes or toggle scenes with a short press of a button.

Depending on the parameterised scene recall, the scene extension unit either works with one of the eight device-internal scenes or the device sends preset scene numbers (1...64) to the bus via the "Scene extension unit - scene number" communication object. This makes it possible to call or switch over scenes stored in other devices.

Setting options for short button press:

- Call up scene: Calls up an internal scene (1...8) or an external scene (1...64)
- Toggle scene: Toggle between the two to eight scene numbers entered each time a button is pressed briefly.

Setting options for long button press for "Short button press = call up scene":

- No reaction: A long button-press has no further or additional effect.
- Storage function: A storage command is generated by a button actuation for more than five seconds. In the scene extension unit function, a storage telegram is in this case transmitted to the bus. The internal scene is saved and the internal scene control module will then request the current scene values for the actuator groups used from the bus.

Setting option for long button press for "Scene recall = external" and "Short button press = toggle scene":

- No reaction: A long button-press has no further or additional effect.
No reaction
- Storage function: A storage command is generated by a button actuation for more than five seconds. In the scene extension unit function, a storage telegram is in this case transmitted to the bus.
- Dimming function: A button actuation that is longer than the parameterised "Time between scene recall and dimming" causes the parameterised dimming function to be executed via individual objects or via a collective object.

i With the parameter setting "Long button press = memory function", an actuation between one and five seconds is discarded as invalid.

- i** With the parameter setting "Long button press = dimming function", an actuation between one second and the parameterised "Time between scene recall and dimming" is rejected as invalid.

12.6.1 "Scene Extension Unit" parameter table

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.

Delay scene	external Internal
<p>The device provides the scene extension unit functions with the "external" option and the retrieval of an internal scene with the "internal" option.</p> <p>i The enabled scene function on the "General -> Basic settings" parameter page is a prerequisite for calling up an internal scene.</p>	
Short button operation	Recall scene Scene toggling
<p>This parameter defines the functionality of the scene extension unit during a short press of the button. A short press of the button is less than one second.</p> <p>Recall scene with "Scene recall = external": When a scene is recalled, the device sends a telegram with the respective scene number via the "Scene extension unit" object.</p> <p>Call up scene with "Scene recall = internal": When a scene is recalled, the device calls up the internal scene.</p> <p>Scene toggling with "Scene recall = external": Each time a new button is pressed, the device sends a telegram with the next scene number via the "Scene extension unit" object. The scenes are switched through one after the other. The number of scenes can be parameterised.</p> <p>Scene toggle for "Scene recall = internal": Each time a new button is pressed, the device recalls the next internal scene. The scenes are switched through one after the other. The number of scenes can be parameterised.</p>	
Toggle direction	Next scene Previous scene
<p>With "Short button press = toggle scene", the scenes are switched through one after the other.</p> <p>Next scene: Switching through the scenes starts at scene 1. The direction of switching through is according to the number of scenes from scene 1 to scene n.</p> <p>Previous scene: Switching through the scenes starts at scene n. The direction of switching through is according to the number of scenes from scene n to scene 1.</p> <p>i With "Button function", the toggle direction is preset to "Next scene".</p>	
Long button operation	No reaction Memory function Dimming functions

<p>This parameter defines the functionality of the scene extension unit during a long press of the button.</p> <p>With activated storage function, the device transmits a telegram with the respective scene number via the extension object of the button.</p> <p>When the dimming function is activated, the device performs the parameterised dimming function via individual objects or via a collective object. Additional dimming parameters are displayed.</p> <p>i The "Dimming function" selection option is available for "Scene recall = external" and "Short press = toggle scene".</p>	
Scene number	1...64
<p>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.</p> <p>i This parameter is available for "Scene recall = external" and "Short press = recall scene".</p>	
Scene number	1...8
<p>In accordance with the KNX standard, objects with data type 18.001 "Scene Control" can retrieve or store up to 8 internal scenes by their numbers. The parameter defines the scene number to be transmitted when the button is pressed.</p> <p>i This parameter is available for "Scene recall = internal" and "Short press = recall scene".</p>	
Number of scenes	2...8
<p>The number of scenes can be parameterised for scene toggling. The scenes are switched through during operation according to this setting. The scene configuration in the parameters automatically adapts to the number of scenes.</p>	
Number of scenes can be changed via object	<p>Active</p> <p>Inactive</p>
<p>The parameterised number of scenes can be changed via the "Scene extension unit - Number of scenes" communication object if this parameter is set to active.</p> <p>The parameterised number of scenes cannot be changed if this parameter is set to inactive.</p> <p>i When active, the scene numbers and the colours of the status LED for scenes 1 to 8 are fixed in the scene configuration.</p>	
Overwrite the number during ETS programming operation	<p>Active</p> <p>Inactive</p>

In the event that the number of scenes can be changed via the "Scene extension unit - Number of scenes" communication object, this parameter determines which value of the number is valid after an ETS programming operation.

With Active, the value parameterised in the ETS applies after an ETS programming operation.

If Inactive, the last value specified at running time via object applies after an ETS programming operation.

Scene configuration

The scene number and the colours of the status LED are configured in the Scene configuration table.

Depending on the previously parameterised number of scenes, the scene configuration offers 2 to 8 scenes for configuration.

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 scene numbers to be sent when a button is pressed during scene toggling are defined in the scene configuration.

With "Scene recall = external", a scene number from 1 to 64 can be parameterised for each scene.

With "Scene recall = internal", a scene number from 1 to 8 can be parameterised for each scene.

-  Each scene should be assigned a unique number.
-  If the number of scenes can be changed via KNX, the scene numbers and the corresponding colours of the status LED are fixed.

Number	1...64
These parameters define the scene numbers from scene 1 to scene 8 if external scene recall is configured.	
Number	1...8
These parameters define the scene numbers from scene 1 to scene 8 if the internal scene recall is configured.	
Colour of the status LED	Off Red Green Blue Yellow Cyan Orange Violet White
These parameters define the colour of the status LED from scene 1 to scene 8 in which the status LEDs light up if the function of the status LED is configured to "scene extension unit indication with toggle function".	
Time until restart for scene 1	0 min 0 s ... 0 min 10 s ...4 min 0 s
<p>When toggling a scene, a timer starts internally each time a button is pressed. A countdown up to a maximum of 4 minutes can be parameterised.</p> <p>The next scene is called up each time the button is pressed during the period of the parametrised time until scene 1 is restarted.</p> <p>When a button is pressed after the parametrised time until restart at scene 1 has elapsed, scene toggling restarts.</p>	
Transmission delay	0 ms 200 ms 300 ms 400 ms 500 ms 750 ms 1000 ms 2000 ms
The time parametrised here in milliseconds is the transmission delay after a button is pressed. After a button is pressed, the device waits for the parametrised transmission delay and only calls up the scene number after the delay time has elapsed. The transmission delay can be parametrised as an option.	
Illumination length	Like light duration for button-actuation display as time until restart for scene 1 permanently ON

This parameter defines the light duration of the status LED when it executes the "scene extension unit indication with toggle function" function.

With "as light duration for actuation display", the status LED lights up for 1 to 5 seconds in the configured colour according to the parameter setting of the "Light duration for actuation display" parameter (parameter page "General -> Basic settings").

With "as time until restart for scene 1", the status LED lights up for a maximum of 4 minutes in the parametrised colour according to the parameter setting of the "Time until restart for scene 1" parameter (parameter page "Button *n* -> Button *n* - Function").

When "permanently ON", the status LED lights up permanently in the configured colour.

Dimming

A dimming function is executed with a long button-press if the parameter "Long button-press = dimming function" is parametrised.

The dimming function is parametrised on the parameter page "Button *n* -> Button *n* - Function" under the scene configuration.

Individual objects per scene	Active Inactive
<p>The device can perform a dimming function in the "Scene extension unit" button function with a long press of the button. A separate individual object or a collective object can be unlocked for each scene.</p> <p>With "Active", the ETS offers up to eight "Scene extension unit dimming scene <i>n</i>" communication objects. Up to eight scene-orientated dimming functions are executed.</p> <p>If "Inactive", the ETS offers a "Scene extension unit dimming scenes" communication object. A scene-independent dimming function is performed.</p>	
Brightness on pressing	No reaction Brighter (scene toggle) Darker (scene toggle) Lighter / Darker (scene toggle)
This parameter determines the reaction when a button is pressed for the duration of the "Time between scene recall and dimming".	
Time between scene recall 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.	
Extended settings	Active Inactive
When the advanced parameters are activated, the ETS shows the following parameters.	
Dimming brightness by	1.5 % 3 % 6 % 12.5 % 25 % 50 % 100 %
<p>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.</p> <p>It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").</p>	

Dimming darker by	1.5 % 3 % 6 % 12.5 % 25 % 50 % 100 %
<p>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.</p> <p>It is recommended that the device repeats the dimming telegrams automatically, particularly with a small dimming level (see "Telegram repetition").</p>	
Telegram repetition	Active Inactive
<p>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.</p>	
Time between two telegrams	200 ms 300 ms 400 ms 500 ms 750 ms 1 s 2 s
<p>This parameter defines the interval at which the dimming telegrams are automatically repeated in the telegram repetition mode.</p> <p>This parameter is only visible if "Telegram repetition = active"!</p>	

12.6.2 Object list "Scene extension unit"

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

Function	Name	Type	DPT	Flag
Scene extension unit	Button/rocker <i>n</i> - output	1-byte	18,001	C, -, -, T, -
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor. This object is only visible if the scene extension function is set to "scene extension without storage function" or "scene extension unit with storage function".				

Function	Name	Type	DPT	Flag
Scene extension unit dimming Scenes	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 1	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 2	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 3	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 4	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 5	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 6	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 7	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit for dimming scene 8	Button/rocker <i>n</i> - output	4-bit	3,007	C, -, -, T, -
4-bit object for sending relative dimming telegrams to adjust the brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit - Number of scenes	Button/rocker n - input	4-bit	5,010	C, -, W, -, -

This communication object can be used to specify a new value for the number of scenes (2...8) via the bus to the device. Received values outside the value range 2 to 8 are discarded as invalid.

Function	Name	Type	DPT	Flag
Scene extension unit - Feedback - Number of scenes	Button/rocker n - output	4-bit	5,010	C, -, -, T, -

The device uses this communication object to report a newly received value for the number of scenes (2...8) back to the bus.

12.7 2-channel operation

The "2-channel operation" function allows two function channels to be operated with a single press of a 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 channels, the parameters "Function channel 1" and "Function channel 2" can be used to determine the communication object types to be used.

The following functions are available for selection:

- 1-bit switching
- 1-byte value transmitter (0...255)
- 1-byte value transmitter (0...100%)
- 1-byte value transmitter (-128...127)
- 1-byte value transmitter (0...255%)
- 2-byte value transmitter (0...65535)
- 2-byte value transmitter (-32768...32767)
- Value transmitter 2-byte temperature value
- Value transmitter 2-byte brightness value
- Value transmitter 2-byte colour temperature value
- Value transmitter 3-byte colour value RGB/HSV
- Value transmitter 6-byte colour value RGBW/HSVW
- Value transmitter 6-byte colour temperature value + brightness
- Recalling scene (external)

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

The "1-bit switching" type permits selecting whether an ON or an OFF telegram is to be transmitted or whether the object value is to be switched over (TOGGLE) and transmitted on the press of a button.

With parameterization as a value transmitter ("1-byte ..." or "2-byte ...") the object value can be selected within the value range.

With parameterization as a value transmitter ("3-byte ...") the RGB or HSV object values can be set via a colour picker.

With parameterization as a value transmitter (6-byte colour value ...) the RGB or HSV object values can be set via a colour picker. The object value W is parameterised using a separate slider.

When parameterising as a value transmitter (6-byte colour temperature value + brightness), the object values colour temperature and brightness as well as a time window can be set.

"Recalling scene (...)" can be used to set the scene number to be transmitted to the bus when a button is pressed.

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.

Operating concept channel 1 or channel 2

In this operating concept, exactly one telegram will be transmitted on each press of a button.

- A brief press causes the device to transmit the telegram channel 1.
- A long press causes the device to transmit the telegram for channel 2.

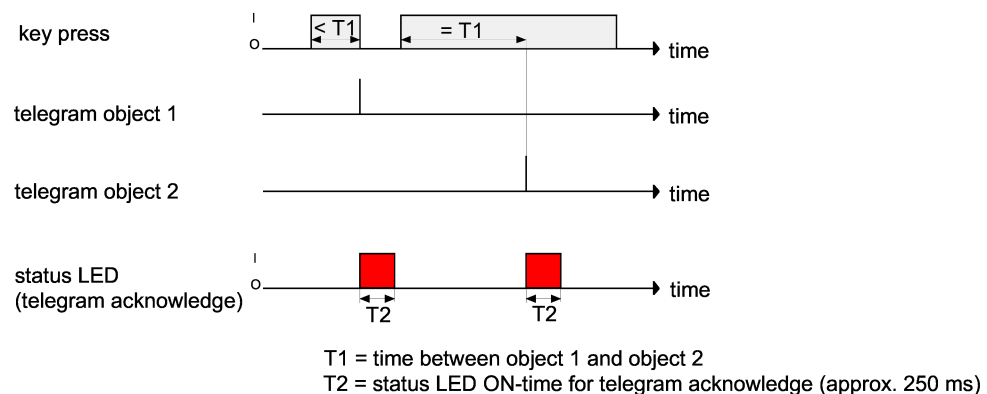


Figure 22: Example of operating concept "Channel 1 or Channel 2"

The time required for distinguishing between a short and a long operation is defined by the parameter "Time between channel 1 and channel 2". If the button is pressed for less than the configured time, only the telegram to channel 1 is transmitted. If the length of the button-press exceeds the time between channel 1 and channel 2, only the telegram to channel 2 will be transmitted. This concept provides the transmission of only one channel. 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.

Operating concept channel 1 and channel 2

With this operating concept, one or alternatively two telegrams can be transmitted on each button-press.

- A brief press causes the device to transmit the telegram channel 1.
- A long press causes the device to transmit first the telegram for channel 1 and then the telegram for channel 2.

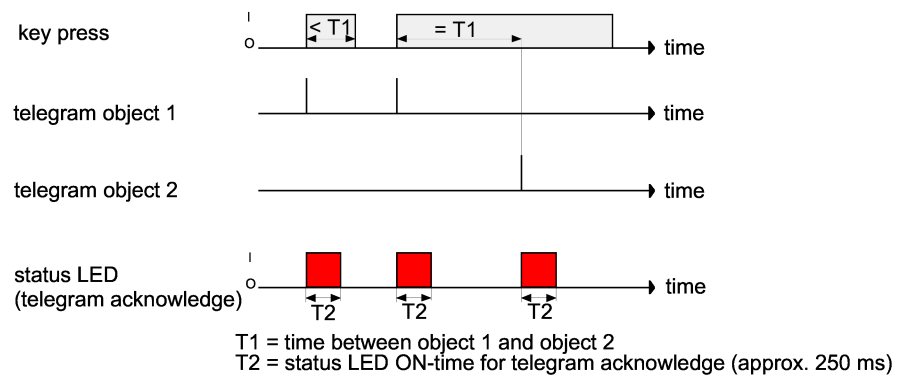


Figure 23: Example for operating concept "Channel 1 and channel 2"

The time required for distinguishing between a short and a long operation is defined by the parameter "Time between channel 1 and channel 2". In this operating concept, a button-press sends this telegram immediately to channel 1. If the button is held depressed for the configured time, the telegram for the second channel 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").

12.7.1 Parameter table: "2-channel operation"

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.

Operating concept	Channel 1 or channel 2 Channel 1 and channel 2
<p>This is where the 2-channel operating concept is defined.</p> <p>If the setting "channel 1 or channel 2" is selected, the device decides dependent on the button-press duration, which of the channels will be used.</p> <p>If the setting "channel 1 and channel 2" is selected, the device transmits only the telegram of channel 1 on a short button-press and both telegrams on a sustained button-press.</p>	
Function channel 1 (Function channel 2)	no function 1-bit switching 1-byte (0...255) 1-byte (0...100%) 1-byte (-128...127) 1-byte (0...255%) 2-byte (0...65535) 2-byte (-32768...32767) 2-bytes temperature value 2-byte brightness value 2-bytes colour temperature value 3-bytes colour value RGB/HSV 6-bytes colour value RGBW/HSVW 6-bytes colour temperature value + brightness Recalling scene (external)
<p>This parameter defines the channel function and specifies which other parameters and which communication objects are to be displayed for channel 1 or channel 2 respectively.</p>	
Colour space	RGB HSV
<p>This parameter defines the colour space of the function. With RGB, communication can take place via individual objects or via a combination object. With HSV, communication takes place via individual objects.</p> <p>Visible only if "Function channel 1 (2) = 3-byte colour value RGB/HSV".</p>	

Communication	Single object Combi object
When the colour space is set to RGB, communication via the bus can take place either via individual objects (red, green, blue) or via a combination object (RGB). Visible only if "Function channel 1 (2) = 3-byte colour value RGB/HSV".	
Colour space	RGBW HSVW
This parameter defines the colour space of the function. With RGBW, communication can take place via individual objects or via a combination object. With HSVW, communication takes place via individual objects. Visible only if "Function channel 1 (2) = 6-byte colour value RGBW/HSVW".	
Communication	Single object Combi object
When the colour space is set to RGBW, communication via the bus can take place either via individual objects (red, green, blue, white) or via a combination object (RGBW). Visible only if "Function channel 1 (2) = 6-byte colour value RGBW/HSVW".	
Time between channel 1 and channel 2	0... 3 ...25 s 0...990 ms
Depending on the selected operating concept, this parameter defines the interval at which the device transmits the telegram for channel 1 and the telegram for channel 2. A time from 100 ms to 25.5 s can be set.	
Command for channel 1 (2)	ON OFF TOGGLE
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 1-bit switching".	
Value (0...255) for channel 1 (2)	0 ...255
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 1-byte (0...255)".	
Value (0...100%) for channel 1 (2)	0 ...100
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 1-byte (0...100%)".	
Value (-128...127) for channel 1 (2)	-128... 0 ...127
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 1-byte (-128...127)".	

Value (0...255%) for channel 1 (2)	0...255
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 1-byte (0...255%)".	
Value (0...65535) for channel 1 (2)	0...65535
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 2-byte (0...65535)".	
Value (-32768...32767) for channel 1 (2)	-32768...0...32767
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 2-byte (-32768...32767)".	
Temperature value (0...40 °C) for channel 1 (2)	0... 20 ...40
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 2-byte temperature value".	
Brightness value (0, 50, ..., 1500 lux) for channel 1 (2)	0... 300 ...1500
This parameter defines the object value transmitted to the bus when the button is pressed. Visible only if "Function channel 1 (2) = 2-byte brightness value".	
Value (1000, 1100, ..., 10000) for channel 1 (2)	1000, 1100, ... 2700 ,..., 10000
This parameter determines the colour temperature of the object value when the button is pressed. It is only visible with "Function channel 1 (2) = 2-byte colour temperature value".	

Value (RGB/HSV) for channel 1 (2)	#000000 ... #FFFFFF
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Channel <i>n</i> colour value transmitter red", "Channel <i>n</i> colour value transmitter green", "Channel <i>n</i> colour value transmitter blue" or – "Channel <i>n</i> colour value transmitter RGB", "Channel <i>n</i> colour value transmitter RGBW" or – "Channel <i>n</i> colour hue (H)", "Channel <i>n</i> saturation (S)", "Channel <i>n</i> brightness (V)" <p>The parameter is only visible with "Function channel 1 (2) = 3-byte colour value RGB/HSV or 6-byte colour value RGBW/HSVW".</p> <p>The value (RGB/HSV) is configured by means of a colour picker.</p> <p>With the "6-byte colour value RGBW / HSVW" function, the W-value is configured using a separate slider.</p>	

Value (W) for channel 1 (2)	0 ... 255
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Channel <i>n</i> colour value transmitter white" or – "Channel <i>n</i> colour value transmitter RGBW" <p>The parameter is only visible with "Function channel 1 (2) = 2-byte colour temperature value".</p>	

Value (W) for channel 1 (2)	0 ... 100 %
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Channel <i>n</i> white value (W)" <p>The parameter is only visible with "Function channel 1 (2) = 2-byte colour temperature value".</p>	

Colour temperature	1000, 1100, ..., 2700 , ..., 10000
<p>This parameter determines the colour temperature of the object value when the button is pressed.</p> <p>The parameter is only visible with "Function channel 1 (2) = 6-byte colour temperature value + brightness".</p>	

Brightness	0 ... 100 %
<p>This parameter determines the brightness of the object value when the button is pressed.</p> <p>The parameter is only visible with "Function channel 1 (2) = 6-byte colour temperature value + brightness".</p>	

Time window	0 ... 100 min 0 ... 1 ... 59 s 0 ... 900 ms
<p>This parameter determines the time period in which the actuator adjusts the colour temperature and brightness after the button has been pressed.</p> <p>The parameter is only visible with "Function channel 1 (2) = 6-byte colour temperature value + brightness".</p>	
Scene number (1...64) for channel 1 (2)	1...64
<p>This parameter defines the object value transmitted to the bus when the button is pressed.</p> <p>It is only visible if "Function channel 1 (2) = Recalling scene (external)".</p>	

12.7.2 Object list "2-channel control"

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

Function	Name	Type	DPT	Flag
Channel 1 switching	Button/rocker <i>n</i> - output	1-bit	1,001	C, -, W, T, U
1-bit object for transmitting switching telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 switching	Button/rocker <i>n</i> - output	1-bit	1,001	C, -, W, T, U
1-bit object for transmitting switching telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...255	Button/rocker <i>n</i> - output	1-byte	5,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...255	Button/rocker <i>n</i> - output	1-byte	5,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...100 %	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...100 %	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value -128...127	Button/rocker <i>n</i> - output	1-byte	6,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value -128...127	Button/rocker <i>n</i> - output	1-byte	6,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...255 %	Button/rocker <i>n</i> - output	1-byte	5,004	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...255 %	Button/rocker <i>n</i> - output	1-byte	5,004	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...65535	Button/rocker <i>n</i> - output	2-byte	7,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...65535	Button/rocker <i>n</i> - output	2-byte	7,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value -32768...32767	Button/rocker <i>n</i> - output	2-byte	8,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value -32768...32767	Button/rocker <i>n</i> - output	2-byte	8,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 temperature value	Button/rocker <i>n</i> - output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 temperature value	Button/rocker <i>n</i> - output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 brightness value	Button/rocker <i>n</i> - output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 brightness value	Button/rocker <i>n</i> - output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter	Button/rocker <i>n</i> - output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter	Button/rocker <i>n</i> - output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter RGB	Button/rocker <i>n</i> - output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in a communication object on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter RGB	Button/rocker <i>n</i> - output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in a communication object on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter RGBW	Button/rocker <i>n</i> - output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the colour information red, green, blue and white in a communication object on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter RGBW	Button/rocker <i>n</i> - output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the colour information red, green, blue and white in a communication object on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Red	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value red from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Red	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value red from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Green	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value green from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Green	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value green from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Blue	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value blue from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Blue	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value blue from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter White	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value white from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter White	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value white from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour hue (H)	Button/rocker <i>n</i> - output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360° on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour hue (H)	Button/rocker <i>n</i> - output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360° on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 saturation (S)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 saturation (S)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 brightness (V)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 brightness (V)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 white level (W)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 white level (W)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter + brightness	Button/rocker <i>n</i> - output	6-byte	249,600	C, -, -, T, -
6-byte object for transmitting the time window, colour temperature and brightness on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter + brightness	Button/rocker <i>n</i> - output	6-byte	249,600	C, -, -, T, -
6-byte object for transmitting the time window, colour temperature and brightness on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 scene (external) 1...64	Button/rocker <i>n</i> - output	1-byte	18,001	C, -, -, T, -
1-byte object for transmitting scene values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 scene (external) 1...64	Button/rocker n - output	1-byte	18,001	C, -, -, T, -
1-byte object for transmitting scene values on channel 2 if 2-channel operation is activated.				

12.8 Controller extension

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

The controller extension itself is not involved in the regulating process. With it, the user can operate the single-room regulation from different places in the room. It can also be used to adjust central heating control devices which are located, for instance, 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 status:
Signalling the presence of a person in a room. The signalling may also be combined with a configured switchover in the mode of operation.
- Setpoint shift:
Adjustment of the setpoint temperature via a temperature offset (DPT 9.002) or via levels (DPT 6.010).

The controller extension is operated using the push button functions of the device. In this way, it is possible to completely control a room temperature controller by changing the operating mode, by predefining the presence function or by readjusting the setpoint shift.

In addition, the push-button sensor can – independent of the controller extension 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 controller extension functions "Setpoint shift" or "Presence function", the status LEDs can also signal the state of the corresponding functions directly.

12.8.1 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 mode
- Standby mode
- Night mode
- Frost/heat protection mode

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

- Auto (normal operating mode switchover)
- Comfort mode
- Standby mode
- Night mode
- Frost/heat protection mode

The operating mode transmitted to the bus on a button press of the controller extension is defined by the parameter "Operating mode on pressing". Depending on the parameterised operating concept, either pressing a button activates one of the above modes (with the "rocker function" and "button function" operating concepts), or each button actuation toggles between two or three modes (only with the "rocker function" operating concept).



Notes on multiple selection:

In order to ensure that a change-over from one operating mode to another works properly even from different locations, the operating mode objects of the controller and those of all controller extensions must be interlinked and have their "Write" flag set. In the objects concerned, this flag is set by default.

By checking the linked operating mode switchover feedback object, the controller extension knows which of the possible operating modes is active. Based on this information, the device switches over into the next operating mode in sequence when a button is actuated. In the event that none of the possible operating modes is active, the next operating mode in the sequence is activated. As far as switching over between the forced operating modes and "Auto" is concerned, the device switches into the "Auto" operating mode when none of the configured operating modes is active.



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.

12.8.2 Presence function

All operating areas with a function set to "Presence function" have the two communication objects "Presence function" and "Presence function feedback". The parameter "Presence function on pressing" defines the object value transmitted to the bus on actuating a button.

In order to ensure that the object value transmitted in the "Presence TOGGLE" setting is always the correct one, the presence object of the room temperature controller and the feedback objects of the controller extensions must be interlinked and have their "Write" flag set. In the extension objects concerned, this flag is set by default.

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

12.8.3 Setpoint shift

The setpoint shift is another available function of the controller extension. 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 extension function allows shifting of the basic setpoint for the temperature on a room temperature controller by pressing a button. Operation of the extension unit is generally the same as the operation of the main controller. A button configured as a setpoint shifting button reduces or increases the setpoint shift value on each press by one step respectively. The direction of the value adjustment is defined by the parameters "Temperature difference on pressing" or "Setpoint shift on pressing".

The status LED of a setpoint shifting button can directly indicate the setpoint shifting status (setting "Setpoint value shift indicator").

Type of setpoint shift

The push-button sensor provides two options for setpoint shifting. Depending on the setting of the parameter "Type of setpoint shift", the shift takes place via the 2-byte communication object "Setpoint shift specification" (acc. to KNX DPT 9.002) or via the 1-byte-communication object "Setpoint shift specification" (acc. to KNX DPT 6.010).

The setting "Via offset (DPT 9.002)" defines the temperature difference in Kelvin by which the setpoint temperature will be shifted up or down when the button is pressed. For a setpoint value shift, the controller extension makes use of the two communication objects "Setpoint shift specification" and "Current setpoint shift". The "Current setpoint shift" communication object informs the extension unit about the current state of the room temperature controller. Based on this value and the respective parameter, the controller extension determines the new level size which it transmits via the "Setpoint shift specification" communication object to the room temperature controller.

With the "Via levels (DPT 6.010)" setting, only the direction of the setpoint shift on the extension unit is defined. For a setpoint value shift, the controller extension makes use of the two communication objects "Setpoint shift specification" and "Current set-

point shift". The "Current setpoint shift" communication object informs the extension unit about the current state of the room temperature controller. Based on this value and the respective parameter, the controller extension determines the new level size which it transmits via the "Setpoint shift specification" communication object to the room temperature controller.

Communication with main controller

In order to enable the push-button sensor to effect a setpoint shift in a room temperature controller, the controller must have input and output objects for setpoint shifting. In this case, the output object of the controller must be linked with the input object of the extension unit and the input object of the controller must be linked with the output object of the extension unit via an independent group address.

All objects are of the same datapoint type and have the same value range. A setpoint 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 setpoint shift has been activated.

Via the "Current setpoint shift" object of the controller extensions, which is linked with the room temperature controller, the extensions are enabled to determine the current setpoint shift position. Starting from the value of the communication object, each button-press on an extension unit will adjust the setpoint in the configured direction. Each time the setpoint is adjusted, the new shift is transmitted to the room temperature controller via the "Controller extension setpoint value specification" object of the controller extension. The controller itself checks the received value for the minimum and maximum temperature limits (see controller documentation) and adjusts the new setpoint shift if the values are valid. When the new count value is accepted as valid, the controller transfers this value to its output object for setpoint shifting and retransmits the value to the extension as feedback.

Due to the standard data point type used as the output and input object of the controller extension, each extension unit is able to determine whether a shift took place, in which direction it took place and by which value (DPT 9.002) or by how many levels (DPT 6.010) the setpoint was shifted.

-  In "Via levels (DPT 6.010)" function, the weighting of the respective level is done by the controller itself.
-  This requires that the communication objects are connected on all controller extensions and the controller. The feedback information from the controller enables the extension unit to continue the adjustment anytime at the right point.

12.8.4 Parameter table: "Controller sub-station"

The following parameters are available for the individual buttons or for the left and right sides of the rockers, depending on the set operating concept. The default settings change in accordance with the set operating concept.

Functionality	Operating mode switchover Forced operating mode switchover Presence function Setpoint shift
A controller extension can optionally switch over the operating mode with normal or high priority (forced), change the presence state or change the current room temperature setpoint value. With regard to the setting of this parameter, the ETS shows further parameters.	
Operating mode on pressing	Comfort mode Standby mode Night mode Frost/heat protection mode Comfort mode -> Standby mode -> Comfort mode -> Night mode -> Standby mode -> Night mode -> Comfort mode -> Standby mode -> Night mode ->
If the controller extension is to change over the operating mode of the room temperature controller with normal priority, the extension can – when operated – either switch on a defined operating mode or change over between different operating modes. This parameter is only visible if "Function = operating mode switchover". * Only for operating concept = button function The options "Comfort mode -> Standby mode ->", "Comfort mode -> Night mode ->", "Standby mode -> Night mode ->" and "Comfort mode -> Standby mode -> Night mode ->" are only available if the operating concept is set to button function.	
<div>  Toggling between operating modes (identified by "->") is only possible if the object value has been received via the "Operating mode switchover feedback" object. </div>	

Forced operating mode on pressing	Auto (Normal operating mode switchover) Comfort mode Standby mode Night mode Frost/heat protection mode Comfort mode -> Standby mode ->* Comfort mode -> Night mode ->* Standby mode -> Night mode ->* Comfort mode -> Standby mode -> Night mode ->* Auto -> Comfort mode -> Auto -> Standby mode -> Auto -> Night mode -> Auto -> Frost/heat protection mode ->
<p>If the controller extension is to change over the operating mode of the room temperature controller with high priority, the extension can – when operated – either enable change-over with normal priority (Auto), switch on a defined operating mode with high priority or change over between different operating modes.</p> <p>This parameter is only visible if "Function = forced operating mode switchover".</p> <p>* Only for operating concept = button function</p> <p>The options "Comfort mode -> Standby mode ->", "Comfort mode -> Night mode ->", "Standby mode -> Night mode ->", "Comfort mode -> Standby mode -> Night mode ->", "Auto -> Comfort mode ->", "Auto -> Standby mode ->", "Auto -> Night mode ->" and "Auto -> Frost/heat protection mode ->" are only available if the operating concept is set to button function.</p> <p> Toggling between forced object operating modes (identified by "->") is only possible if the object value has been received via the "Forced object operating mode feedback" object.</p>	

Presence function on pressing	Presence OFF Presence ON Presence TOGGLE
<p>On pressing a button, the controller extension can switch the presence state of the room temperature controller either on or off in a defined way or change over between both states ("Presence TOGGLE").</p> <p>This parameter is only visible if "Functionality = presence function".</p>	

Type of setpoint shift	Via offset (DPT 9.002) Via levels (DPT 6.010)
<p>Depending on the setting of the parameter "Type of setpoint shift", the shift takes place via the 2-byte communication object "Setpoint shift specification" (acc. to KNX DPT 9.002) or via the 1-byte-communication object "Setpoint shift specification" (acc. to KNX DPT 6.010).</p> <p>This parameter is only visible if "Function = Setpoint shift".</p>	
Temperature difference on pressing	-2 K -1.5 K -1 K -0.5 K 0.5 K 1 K 1.5 K 2 K
<p>The temperature difference is defined in Kelvin here by which the setpoint temperature will be shifted up or down when the button is pressed.</p> <p>For a setpoint value shift, the controller extension makes use of the two communication objects "Setpoint shift specification" and "Current setpoint shift".</p> <p>The "Current setpoint shift" communication object informs the extension unit about the current state of the room temperature controller. Based on this value and the respective parameter, the controller extension determines the new level size which it transmits via the "Setpoint shift specification" communication object to the room temperature controller.</p> <p>This parameter is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via offset".</p>	
Setpoint shift on pressing	Reduce setpoint value (level size) Increase setpoint (level size)
<p>This parameter defines the direction of the setpoint shift on the extension unit.</p> <p>For a setpoint value shift, the controller extension makes use of the two communication objects "Setpoint shift specification" and "Current setpoint shift".</p> <p>The "Current setpoint shift" communication object informs the extension unit about the current state of the room temperature controller. Based on this value and the respective parameter, the controller extension determines the new level size which it transmits via the "Setpoint shift specification" communication object to the room temperature controller.</p> <p>This parameter is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via levels".</p>	

12.8.5 Object list "Controller sub-station"

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

Function	Name	Type	DPT	Flag
Operating mode switchover	Button/rocker n - controller extension - output	1-byte	20,102	C, -, -, T, -
1-byte object for switching a room temperature controller between the Comfort, Standby, Night and Frost/heat protection operating modes. This object is only visible if "Functionality = operating mode switchover".				

Function	Name	Type	DPT	Flag
Operating mode switchover feedback	Button/rocker n - controller extension - input	1-byte	20,102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Functionality = operating mode switchover".				

Function	Name	Type	DPT	Flag
Operating mode forced-control	Button/rocker n - controller extension - output	1-byte	20,102	C, -, -, T, -
1-byte object for switching a room temperature controller under forced control between the Automatic, Comfort, Standby, Night and Frost / heat protection operating modes. This object is only visible if "Functionality = forced operating mode switchover".				

Function	Name	Type	DPT	Flag
Forced object operating mode feedback	Button/rocker n - controller extension - input	1-byte	20,102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Functionality = forced operating mode switchover".				

Function	Name	Type	DPT	Flag
Presence function	Button/rocker n - controller extension - output	1-bit	1,018	C, -, -, T, -
1-bit object for changing over the presence status of a room temperature controller. This object is only visible if "Functionality = presence function".				

Function	Name	Type	DPT	Flag
Presence function feedback	Button/rocker n - controller extension - input	1-bit	1,018	C, -, W, -, U
1-bit object for receiving the presence status of a room temperature controller. This object is only visible if "Functionality = presence function".				

Function	Name	Type	DPT	Flag
Preset setpoint shifting	Button/rocker n - controller extension - output	2-byte	9,002	C, -, -, T, -
<p>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 -670760 K and 670760 K.</p> <p>This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via offset (DPT 9.002)".</p>				

Function	Name	Type	DPT	Flag
Current setpoint shifting	Button/rocker n - controller extension - input	2-byte	9,002	C, -, W, -, U
<p>2-byte object for receiving the feedback from the current basic setpoint shift in Kelvin.</p> <p>This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via offset (DPT 9.002)".</p>				

Function	Name	Type	DPT	Flag
Preset setpoint shifting	Button/rocker n - controller extension - output	1-byte	6,010	C, -, -, T, -
<p>1-byte object for presetting a basic setpoint 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.</p> <p>This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via levels (DPT 6.010)".</p>				

Function	Name	Type	DPT	Flag
Current setpoint shifting	Button/rocker n - controller extension - input	1-byte	6,010	C, -, W, -, U
<p>1-byte object for receiving the feedback from the current basic setpoint shift.</p> <p>This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via levels (DPT 6.010)".</p>				

12.9 Status LED

A rocker on the push-button sensor is always associated with two status LEDs. Accordingly, each status LED is assigned to a button.

The "Function of status LED" parameter on the "Button n - status LED" or "Rocker n - status LED" parameter pages defines the basic functions of this status LED. Depending on the button or rocker function set, the status LED functions that can be selected differ slightly.

- i** The parameter pages for the status LED are arranged downstream of the rocker or button pages and include the respective status LEDs assigned to the rockers or buttons (for buttons only one status LED each / for rockers two status LEDs each).

Priorities of the status LED

The status LEDs operate according to a defined order of priorities.

Priority	Function
1	LED alarm signal
2	Superposed function
3	Basic function (e.g. always ON, status display, ...)
4	LED orientation lighting

- i** Exception: A status LED will also indicate actuation if the status LED is controlled by the superposed function.

12.9.1 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-press display" or "Telegram acknowledgement"

A status LED used as button-press display is switched on by the push-button sensor each time the corresponding rocker or button is pressed. The parameter "ON time of status LEDs as actuation indicators" on the parameter page "General" specifies for how long the LED is switched on in common for all status LEDs. Even if the push-button sensor only transmits a telegram when released, the status LED lights up anyway when the rocker or button is pressed.

With the function "2-channel operation" the option "Button-press display" is replaced by "Telegram acknowledge". In this case the status LED is illuminated when both channels are transmitted for about 250 ms each.

This setting cannot be selected for the rocker/button function "No function".

A status LED will also indicate actuation if the status LED is controlled by the superposed function.

"Scene extension unit indication with toggle function"

The status LED lights up according to the colour configured in the scene configuration. The light duration of the status LED can also be parameterised. The scene configuration and the lighting duration are carried out on the "Button/rocker *n* - Function" parameter page. The following parameter settings "Function = scene extension unit" and "Short press = toggle scene" are required.

"Status display", "Inverted status display" and "Control via separate LED object"

In the rocker or button functions "switching" and "dimming", the status LEDs can also be linked internally to the "Switching feedback" object and thus signal the current switching state of the actuator group.

Alternatively 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.

Both for the status indication of the LED object and also for the status indication of the switching object 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".

The settings "Status display" and "Inverted status display" can only be selected for the rocker/button functions "Switching" and "Dimming".

"Operating mode indication"

In this configuration the status LED has its own 1-byte communication object. For switching over between different modes of operation, new room temperature controller can make use of two communication objects of the 20.102 "HVAC-Mode" data type. One of these objects can switch over with normal priority between the "Comfort", "Standby", "Night", "Frost/heat protection" operating modes. The second object has a higher priority. It permits switching over between "Automatic", "Comfort", "Standby", "Night", "Frost/heat protection". Automatic means in this case that the object with the lower priority is active. 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 which 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 indicates the controller status in the "KNX-compliant" data format. 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
- Operation (Heating = 1 / Cooling = 0)
- Controller disabled (dew point operation)
- 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" operation 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.)
- 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 RTC - DPT22.103
Controller error status	✓ (bit 0)	✓ (bit 0)
Operation	✓ (bit 8)	✓ (bit 1)
Controller disabled	✓ (bit 12)	✓ (bit 2)

Status LED ON with	Object RHCC - DPT22.101	Object RTC - DPT22.103
Frost alarm	✓ (bit 13)	✓ (bit 3)
Heat alarm	✓ (bit 14)	✓ (bit 4)
Controller inactive	✗	✓ (bit 5)
Additional level active	✗	✓ (bit 6)

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

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

This setting can only be selected for the rocker/button functions "Controller extension - Presence function".

"Setpoint value shift indication"

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.

This setting can only be selected for the rocker/button functions "Controller extension - Setpoint shift".

Besides the functions that can be set separately for each status LED, all status LEDs are also used for LED alarm signalling. If this is active, all LEDs of the push-button sensor flash simultaneously. After deactivation of the alarm signal, all LEDs will immediately return to the state corresponding to their parameters and communication objects (see chapter "LED alarm signal" ► Page 300).

Besides the functions that can be set separately for each status LED, all status LEDs are also used for LED orientation lighting. Depending on the configuration, the LED orientation lighting function will be executed with low priority (see chapter "LED orientation lighting" ► Page 304).

"Air quality indication"

The status LED indicates the air quality in the colours green (good), yellow (medium) and red (poor). The limit values are parameterised on the "Air quality -> VOC measurement -> VOC - Air quality indication" parameter page.

12.9.2 Colour settings

The colour of the status LEDs can be adjusted. The colour in the ETS can be selected from red, green, blue, yellow, cyan, orange, violet and white. In the colour configuration a distinction is made between whether all of the status LEDs of the push-button sensor have the same colour (common colour setting), or whether alternatively various colours can be configured for each status LED (separate colour setting). The difference is as follows:

- All status LEDs have the same colour.

If common colour setting is desired, then the parameter "Colour selection of all status LEDs" on parameter page "General" must be configured. The status LEDs light up in the configured colour when they are subsequently switched on in normal operation of the push-button sensor in accordance with the basic configuration "Function of the status LED".

The status LEDs may light up in a different colour if they are overridden by the superposed function of if LED alarm signalling or LED orientation lighting is activated.

- The status LEDs have various colours.

If separate colour setting is desired, then the parameter "Colour selection of all status LEDs" on parameter page "General" must be configured to the setting "Colour selection per rocker/button". 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 status LED lights up in the configured colour when it is subsequently switched on in normal operation of the push-button sensor in accordance with the basic configuration "Function of the status LED".

Superposed function

Additionally, a superposed function can be enabled for each status LED. The superposed function allows for a colour change of the status LED during device operation. It is also possible here to change the display function.

A status LED will also indicate actuation if the status LED is controlled by the superposed function.

The superposed function of a status LED is controlled by a separate communication object. The device provides the two following options for controlling the superposed function:

- Control via separate LED object (1-bit)
- Control via separate LED object (1-byte)

Depending on the superposed function selected, the device provides either a 1-bit object or a 1-byte object.

If control via the 1-bit object is selected, the superimposed function is defined in the ETS parameters. You can use the parameters to set whether the superposed function will be switched on or off via a 1-telegram or a 0-telegram, and whether the

status LED will statically be switched on or flash with the superposed function switched on. You can additionally set a separate colour for the superposed function in which the status LED will light up when the superposed 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).

If control via the 1-byte object is selected, the superposed function is defined by the bit coding of the 1-byte communication object. No other parameters are available in the in the ETS. The bit coding of the 1-byte communication object "Superposed function" is shown in the table below.

Value of the telegram	Superposed function of the status LED
0 _{dec}	Superposed function is deactivated. Status LED has standard colours and display function.
1 _{dec}	Lights up red
2 _{dec}	Flashes red
3 _{dec}	Lights up green
4 _{dec}	Flashes green
5 _{dec}	Lights up blue
6 _{dec}	Flashing blue
7 _{dec}	Lights up white
8 _{dec}	Flashes white
9 _{dec}	Lights up yellow
10 _{dec}	Flashes yellow
11 _{dec}	Lights up cyan
12 _{dec}	Flashes cyan
13 _{dec}	Lights up orange
14 _{dec}	Flashes orange
15 _{dec}	Lights up violet
16 _{dec}	Flashes violet

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 LED alarm message is active. An LED alarm message has a higher priority and thus overrides the basic display and the superposed function. After deactivation of the alarm signal, all LEDs will immediately return to the state corresponding to their parameters and communication objects.

The status LED (blue) is also activated during the motion sensor walk test.

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.

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.

12.9.3 Brightness settings

The brightness of all status LEDs is defined in the ETS. The "Brightness of all status LEDs" parameter on the "General" parameter page can be used to set the regular brightness of all status LEDs in 6 levels (level 0 = OFF, level 1 = dark, ..., level 5 = bright).

Optionally the brightness can be changed during operation of the push-button sensor, controlled by the LED night reduction (see chapter "LED night reduction" ▶ Page 307).

12.9.4 Table of parameters "Status LED"

"General" parameter page

Colour selection of all status LEDs	Red Green Blue Yellow Cyan Orange Violet White Colour selection per rocker/button
The colour of the status LED can be selected here. In the colour configuration a distinction is made between whether all of the status LEDs of the push-button sensor have the same colour or whether alternatively various colours can be configured for the LEDs ("Colour selection per rocker/button" setting). With colour selection per rocker or button, it is possible to set the colour on the parameter pages of the individual status LEDs.	
Brightness of all status LEDs	Level 0 (OFF) Level 1 (dark) Level 2 Level 3 Level 4 Level 5 (bright)
The brightness of all status LEDs of the push-button sensor can be defined. The regular illumination brightness of all LEDs can be set here in 6 levels.	

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

The following parameter is exclusively visible with "Function of status LED = indication via separate LED object".

Control of the status LED via object value	1 = LED static ON / 0 = LED static OFF
	1 = LED static OFF / 0 = LED static ON
	1 = LED flashes / 0 = LED static OFF
	1 = LED static OFF / 0 = LED flashes
If the "Function of status LED" is set to "Control via separate LED object", this parameter can be used to specify the telegram polarity of the 1-bit object "Status LED - Input". The status 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 exclusively visible with "Function of status LED = Operating mode display".

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

The following parameter is exclusively visible with "Function of status LED = Controller status indication".

Status LED ON with	Controller error status Operation (Heating = 1 / Cooling = 0) Controller disabled (dew point operation) Frost alarm Heat alarm
This parameter is used to define which information about the controller status is to be indicated by the LED.	

DPT controller status	RHCC (DPT 22.101) RTC (DPT 22.103)
This parameter provides the communication object for receiving the controller status in the required data point type.	

The following parameter is exclusively visible with "Function of status LED = Setpoint shift indication".

Status LED	ON in case of variation On in case of positive variation ON in case of negative variation OFF in case of variation OFF in case of positive variation OFF in case of negative variation
This parameter defines at which setpoint variation the status LED will be switched on or off.	

The following parameter is exclusively visible with "Colour selection of all status LEDs = Colour selection per rocker/button" ("General" parameter page).

Colour of the status LED	Red Green Blue Yellow Cyan Orange Violet White
If separate colour settings for the status LEDs are required, then this parameter can 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 of the push-button sensor in accordance with the basic configuration "Function of the status LED".	

Superposed function	enabled disabled
<p>Additionally, a superposed function can be enabled separately for each status LED. The superposed function can be used to change the colour of a status LED via a 1-byte communication object during device operation. It is also possible here to change the display function.</p>	
Selection of the superposed function	Control via separate LED object (1-bit) Control via separate LED object (1-byte)
<p>This parameter defines whether the superposed function of the status LED is controlled via a 1-bit object or via a 1-byte object.</p> <p>If "Control via separate LED object (1-bit)" is selected, the superimposed function is defined in the ETS parameters.</p> <p>If "Control via separate LED object (1-byte)" is selected, the superimposed function is defined in the 1-byte communication object bit coding.</p>	
Superposed function ON when	1 telegram 0 telegram
<p>This parameter is used to set whether the superposed function will be switched on via a 1-telegram or a 0-telegram.</p> <p>If the setting "1 telegram" is selected, the superposed function will be switched on via a 1-telegram and switched off via a 0-telegram.</p> <p>If the setting "0 telegram" is selected, the superposed function will be switched on via a 0-telegram and switched off via a 1-telegram.</p> <p>This parameter is only visible when "Selection of superposed function" = "Control via separate LED object (1-bit)".</p>	
Type of reading with superposed function	LED static ON LED flashes
<p>This parameter defines whether the status LED will be statically switched on or flash when the superposed function is switched on.</p> <p>This parameter is only visible when "Selection of superposed function" = "Control via separate LED object (1-bit)".</p>	

Colour of the superposed status LED	Red Green Blue Yellow Cyan Orange Violet White
<p>The status LED lights up in the colour set here when the superposed function is switched on.</p> <p>This parameter is only visible when "Selection of superposed function" = "Control via separate LED object (1-bit)".</p>	

The following parameters are available for the individual buttons or for the left and right sides of the rockers, depending on the set operating concept and function. The default settings change in accordance with the set operating concept.

always OFF: The status LED is permanently switched off.

always ON: The status LED is permanently switched on.

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.

Telegram acknowledge: The status LED indicates the transmission of a telegram in 2-channel operation.

Status display: The status LED indicates the state of the communication object "Switching". If the object value is "ON", the status LED is illuminated. If the object value is "OFF" the status LED is switched off.

Inverted status display: The status LED indicates the state of the communication object "Switching". If the object value is "OFF", the status LED is illuminated. If the object value is "ON" the status LED is switched off.

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 display: The status LED indicates the state of the room temperature controller or the controller extension. This setting causes the additional parameter "Status LED ON with" to be shown.

Presence status indication: The status LED indicates the status of the "Feedback presence function" feedback object.

Inverted presence status indication: The status LED indicates the inverted status of the "Feedback presence function" feedback object.

Setpoint value shift display: The status LED indicates the state of a setpoint shift in case of main controller and controller extension operation. This setting causes the additional parameter "Status LED" to be shown.

Air quality indication: The status LED indicates the air quality in the colours green (good), yellow (medium) and red (poor). The limit values are parameterised on the "Air quality → VOC measurement → VOC - Air quality indication" parameter page.

12.9.5 Object list "status LED"

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

Function	Name	Type	DPT	Flag
Switching	Button/rocker <i>n</i> - status LED - input	1-bit	1,001	C, -, W, -, -

1-bit object to control the status LED. This object is only visible with "Function of status LED = Control via separate LED object".

Function	Name	Type	DPT	Flag
Operating mode indication	Button/rocker <i>n</i> - status LED - input	1-byte	20,102	C, -, W, -, -

1-byte object to control the status LED. This object is only visible with "Function of status LED = Operating mode display".

Function	Name	Type	DPT	Flag
Controller status RHCC - KNX-compliant	Button/rocker <i>n</i> - status LED - input	2-byte	22,101	C, -, W, -, U

2-byte object for activation of the status LED.

Function	Name	Type	DPT	Flag
Controller status RTC - KNX-compliant	Button/rocker <i>n</i> - status LED - input	2-byte	22,103	C, -, W, -, U

2-byte object for activation of the status LED.

Function	Name	Type	DPT	Flag
Superposed function	Button/rocker <i>n</i> - status LED - input	1-bit	1,001	C, -, W, -, -

1-bit object for forced control of the status LED. It enables the superposed function to be switched on or off when "Control via separate LED object (1-bit)" is set.

Function	Name	Type	DPT	Flag
Superposed function	Button/rocker n - status LED - input	1-byte	---	C, -, W, -, -
<p>1-byte object for forced control of the status LED. This can be used to change the colour and display information of individual status LEDs according to priority when "Control via separate LED object (1-byte)" is set.</p> <p>"0" = Superposed function is deactivated</p> <p>"1" = LED lights up red, "2" = LED flashes red</p> <p>"3" = LED lights up green, "4" = LED flashes green</p> <p>"5" = LED lights up blue, "6" = LED flashes blue</p> <p>"7" = LED lights up white, "8" = LED lights up white</p> <p>"9" = LED lights up yellow, "10" = LED flashes yellow</p> <p>"11" = LED lights up cyan, "12" = LED flashes cyan</p> <p>"13" = LED lights up orange, "14" = LED flashes orange</p> <p>"15" = LED lights up violet, "16" = LED flashes violet</p>				

13 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)

13.1 Motion detection

13.1.1 Material penetration

Propagation and attenuation of high-frequency signals in buildings

The device operates using high-frequency signals within the designated frequency range. These signals can pass through ceilings and walls inside buildings. Depending on the properties of the material, this results in energy losses. Key influencing factors include, in particular, the thickness of the material and its electrical conductivity (e.g. metal content and moisture content).

The loss of energy during signal propagation is known as **attenuation**. It describes the ratio between the radio power emitted by the device and that received by the receiver. High-frequency signals are attenuated during transmission by various factors relating to the structure and materials involved. To ensure correct operation, it is essential to ensure that the high-frequency signals still have sufficient signal strength at the receiver to enable reliable processing. Virtually ideal propagation conditions exist in what is known as **the free field**. This refers to an environment free from structural obstacles, in which high-frequency signals can propagate largely unimpeded and no disruptive reflections or absorption occur.

Inside buildings, high-frequency signals often have to pass through walls and ceilings. The resulting attenuation – and thus the achievable operating range – depends in particular on:

- the number of components to be penetrated
- the type and nature of the building materials used
- the effective wall and ceiling thickness.

At material interfaces, part of the incident high-frequency radiation is reflected, whilst another part is absorbed by the material. Materials with high moisture content, such as those typically found in new buildings or recently renovated rooms (e.g. freshly plastered or wallpapered surfaces), cause greater attenuation of high-frequency electromagnetic signals.

The following overview shows examples of attenuation values for various building materials and serves as a guide for positioning equipment.

Material/Objects	Penetration
<ul style="list-style-type: none"> – Thin hardboard – Single glass pane (front) – Single laminated glass 	<ul style="list-style-type: none"> – Low attenuation Motion detection hardly restricted
<ul style="list-style-type: none"> – Lightweight doors – Thin lightweight walls – Double-glazed windows – Satinised glass 	<ul style="list-style-type: none"> – Medium damping Limited motion detection
<ul style="list-style-type: none"> – Structured glass 	<ul style="list-style-type: none"> – High damping

Material/Objects	Penetration
<ul style="list-style-type: none"> – Pressboard, wood (>15 mm) – Reinforced concrete wall, concrete slab – Solid wood doors – Triple-glazed windows – Multi-panelled lightweight walls 	No motion detection

There may be deviations due to structural features, surface conditions and detection angles.

Selecting installation location

If possible, the mounting locations of the device must be evaluated during the planning of the electrical installation. Concrete ceilings with metal reinforcements attenuate high-frequency signals to a greater extent than wooden ceilings. The same applies for mineral plasters or hollow walls on the basis of a metallic stand. Room use should also - if known - be taken into account, because a living room in an existing building offers fewer obstacles to radio radiation than an office with metallic cabinets.

13.1.2 Brightness sensor

Brightness measurement

To measure the brightness of the workstation or the ambient brightness, the device is fitted with two brightness sensors, which are located next to the status LEDs. The sensors detect ambient brightness and mixed light comprising both artificial and natural light. Based on the rocker switch set design line (parameters) used, the device determines the actual workplace or ambient brightness. If necessary, the device's brightness measurement can be adjusted to suit a different workplace or ambient brightness level by using the calibration function.

Ideally, brightness measurements should be taken whilst the unit is installed, using the final rocker switch design, with the LEDs switched off or in daylight. A measurement carried out using commissioning rockers will result in inaccurate readings. Brightness measurements at low brightness levels and with the LEDs switched on depend on the ambient brightness. They take place at least 15 minutes after the last reading or following a significant change in brightness. As a result, a new measurement value may not be generated in the event of minor changes. Similarly, if close-up or hand detection is active, brightness measurement is interrupted.

If the ambient brightness is sufficient, a continuous brightness measurement is performed.

In low ambient brightness conditions, it takes longer for the brightness measurement to complete. The middle status LED, if switched on, must be switched off for approximately 100 ms during a brightness measurement.

- When the LED is off, measurements are taken every second.

- When the LED is on, measurements are taken every 15 minutes or whenever there is a significant change in the brightness value (e.g. a door slams shut, the room suddenly goes dark).

For this reason, the measurement period is set to 15 minutes.

The brightness value determined by the device can be made available to the KNX system by means of the 2-byte communication object "Measured brightness value". The device can actively transmit the brightness value in the event of a configured brightness change and/or cyclically. It is also possible to only provide the brightness value passively and to transmit it upon request.

Presetting

The value for the brightness of the detection area to be determined by the device depends on the measured brightness. This depends on the surroundings and the colour of the rocker set design range used.

To compensate for any discrepancies between the brightness measured during factory calibration and the actual brightness in the room, the brightness measurement can be adjusted using a preset and tailored to the environment. The sensor calibration can be carried out either using the rocker set design line used or via an object with a separately measured brightness value.

- When calibrating using the rocker switch set design line, the colour of the back of the rocker switch set being used must be specified (light / dark).
- When calibrating using an object with a separately measured brightness value, an externally preset brightness value at the workplace is assigned to the currently measured brightness. This specification is made by means of the 2-byte communication object "Brightness value - Calibration". The sensor calibration in the ETS must be activated on the parameter page "Sensors - Brightness" by the parameter "Sensor calibration via" so that this object can be visible and subsequent calibration possible. To do this, this parameter must be set to "Object with separately measured brightness value". Furthermore, a current measurement value must already be available at the time of measurement. For best results, the measurement should be carried out with the LEDs switched off, so that a current value is recorded at least once every second.

Whether or not a subsequent user calibration is necessary can be determined purely subjectively or by reference measurement. A user calibration should be performed if the twilight level evaluation can be evaluated subjectively as "not adequate" by persons present. Alternatively, it is possible to determine whether subsequent calibration is necessary immediately after commissioning by reading out the brightness value determined by the device during calibration via the rocker set by means of the object "Brightness value". Here, the read-out brightness value is to be compared with the measured value of a suitable brightness meter (calibrated luxmeter) located in the detection field. If the deviation between the brightness values is too great, user calibration should be performed. During the comparison measurement, several measurements should be made at various points. The individual measurement results must then be averaged and compared with the measured value of the device.

User calibration is required if the device has been installed in an unsuitable location.

The following steps must be carried out for user calibration:

- Set the brightness level in the room as desired.
- Then transmit the brightness in the room that was measured several times and averaged - with the aid of the ETS, for example - to the object "sensor calibration". As a result, the device assigns the predefined measured value to the currently measured brightness value whereby the measured value curve is adapted in the device.

If the "Sensor calibration via" parameter in the ETS is set to "Object with separately measured brightness value", the device does not evaluate any brightness until user calibration has been performed! In this case, all function blocks will therefore have no function until a calibration has been carried out properly. The brightness value tracked via the object "Measured brightness value" can be influenced by the parameter "Behaviour in case calibration not carried out" in the event of a calibration not yet carried out. Depending on the setting, the device will either transmit no brightness value (value "0" in the object) or the value "7FFF" (hexadecimal) to indicate an invalid brightness measured value.

An old user calibration is replaced permanently by a new calibration (is preserved even after bus voltage failure).

13.1.2.1 "Brightness" parameter

Sensors -> Brightness

Designation	Free text Max. 40 characters long text
This parameter gives the "FBx" a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	
Sensor calibration via	Rocker set design range used Object with separately measured brightness value
<p>If necessary, this parameter can be used to adjust the brightness measured by the internal sensor to the brightness actually present in the room. There are two ways to do this:</p> <p>Toggle set design line used: When this parameter is selected, the colour of the toggle set design line can be chosen. The accuracy of the brightness measurement depends on the design line used.</p> <p>Object with separately measured brightness value: In this setting, a brightness value measured with a suitable measuring device is assigned to the value measured by the internal sensor. The "Measured brightness" input object appears via which the brightness value can be transmitted to the presence detector.</p> <p>Another parameter appears.</p>	

The back of the rocker set used	Bright Dark
<p>This parameter can be used to define the colour of the rocker set design range in greater detail. There are two ways to do this:</p> <p>light: This parameter is used to indicate that a light-coloured rocker set design line has been fitted.</p> <p>dark: This parameter is used to indicate that a dark rocker set design line has been fitted.</p>	
Behaviour if calibration is not carried out	Do not send brightness value Transmit invalid brightness value (\$7FFF)
<p>If the brightness sensor is calibrated by a KNX telegram, the device will not evaluate any brightness after the initial commissioning until the sensors have been calibrated for the first time. In this case, the brightness evaluation will therefore have no function until a calibration has been carried out properly. The brightness value tracked by means of the object "Brightness value - Status" can be called up in the event of a calibration not yet carried out. Depending on the setting, the device will either transmit no temperature value (value "0" in the object) or the value "7FFF" (hexadecimal) to indicate an invalid measured value.</p> <p>This parameter is visible only if the "Sensor calibration via" parameter is set to Object with separately measured brightness value.</p>	

Brightness value transmission behaviour

Send brightness value	On change Cyclically On change and cyclically
<p>This parameter is used to define when the current brightness value is automatically sent to the bus.</p> <p>On change: The brightness is sent as soon as it has changed by the set value. The specification is made in lux.</p> <p>Cyclically: The brightness is sent to the bus in a fixed cycle.</p> <p>On change and cyclically: The brightness is sent in a fixed cycle and additionally when there is a change by the set value.</p>	
On change by	5 ... 20 ... 200 lux
<p>This parameter is used to specify the value in lux by which the brightness must change before the brightness value is automatically sent to the bus.</p> <p>This parameter is visible only if the "Send brightness value" parameter is set to "On change" or "On change or cyclically".</p>	

Cycle time	0 ... 23 h 0 ... 15 ...59 min 0 ... 59 s
<p>This parameter is used to set the cycle time after which the brightness is automatically sent to the bus.</p> <p>This parameter is visible only if the "Send brightness value" or "On change and cyclically" parameter is set.</p>	

Debug

Pause brightness measurement during close-range detection	Active Inactive
<p>The 'Pause brightness measurement on proximity detection' parameter controls whether the brightness measurement is paused when proximity detection is triggered (e.g. when a person or object is close to the sensor).</p> <p>Active: Brightness measurement is interrupted when close-range detection is detected. This prevents incorrect measurements, for example, when the status LED is completely dimmed by pressing a button. It also reduces the effect of shadows.</p> <p>Inactive: Brightness measurement continues even when close-range detection is detected.</p>	
Adaptive brightness measurement	Active Inactive
<p>The 'Adaptive brightness measurement' parameter determines how flexibly the sensor responds to changes in ambient brightness. It only affects the brightness measurement when the status LED is on.</p> <p>Active: The brightness measurement automatically adjusts to changing light conditions and takes into account the current conditions in the room (e.g. lighting from luminaires or daylight). This parameter triggers a measurement (with a visible switch-off) when the other sensor (the middle LED on the right) detects a significant brightness change.</p> <p>Inactive: The brightness measurement remains static; the measured brightness value is used without automatic adjustment.</p>	

13.1.2.2 "Brightness" objects

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

Function	Name	Type	DPT	Flag
Brightness value	Brightness - Output	2-byte	9,004	C, R, -, T, A
<p>2-byte object used to output the brightness determined by the presence detector. The reflection factor or the separately measured brightness value sent to the device is taken into account, depending on the configuration.</p> <p>The brightness value is always output in "Lux" format.</p>				

Function	Name	Type	DPT	Flag
Brightness value – calibration	Brightness - Input	2-byte	9,004	C, -, W, -, U
2-byte object that can supply an external brightness value in lux to the device during the sensor calibration. During a calibration process, the device assigns the measured value specified by means of this object to the currently measured brightness value (internal sensor), which results in calibration of the brightness.				

13.1.3 General settings and reset behaviour

Motion detection

The device's motion detection is extremely sensitive, thanks to high-frequency sensors. This enables even the slightest movements within the detection field to be detected. The total detection field is up to 120°. When used in conjunction with the push-button sensor and LED functions, the device can be used as a presence or motion detector for rooms and corridors. The detection field can be extended by connecting several devices in parallel as main and extension units.

The sensitivity and range of the motion detection can be configured and adapted to different environmental conditions. The motion detection focuses on accuracy or speed. By adjusting the parameters relating to the detection focus, it is possible to carry out a differentiated assessment of movements at different distances. 2 function blocks for motion and brightness evaluation with 2 outputs each can be configured.

13.1.3.1 Reset behaviour

Changeable parameters can be reset via object

The device allows parameters to be changed in the individual function blocks by means of objects. If the change to the parameters is to be reversed and the values from the last ETS programming are to be called up again, this can be done with the parameter "Changeable parameters can be reset via object".

This parameter can be found under "Reset behaviour" on the "Motion detection -> Function blocks -> General" parameter page and applies to the changeable parameters of the entire device.

This parameter can be found in the same place also in all function blocks. If a telegram is sent to the object from the function blocks, all parameters from the function block are reset.

After the bus voltage returns

Normally, the current states of the device are sent to the bus after the bus voltage returns to communicate the current status to other bus subscribers or initialise them. If this is not desired, the "After bus voltage return" parameter can be set to "No reaction".

Delay after bus voltage return

The device has different status objects, depending on the configuration. These objects are normally configured as "Actively transmitting", which means a feedback telegram can be transmitted automatically to the bus when the state changes. These objects then transmit the current object value constantly even after the bus voltage returns in order to initialise other bus subscribers.

A high telegram load may occur after the bus voltage returns, in particular in large KNX systems with many sensors. To counteract an overload, a transmission delay after the bus voltage return can be configured with this device. This transmission

delay takes effect only for automatically transmitting objects of the device after the bus voltage return and is configured by the parameter "Delay after bus voltage return" on the "General -> Basic settings" parameter page. It is recommended to configure different delay times in the individual push-button sensors to prevent the devices from transmitting at the same time.

If the delay is not active after an ETS programming operation, the actively transmitting objects transmit their status without delay as soon as the device is restarted after the reset.

13.1.3.2 "General" parameters

The following parameter is available on the "Motion Detection" parameter page under the heading "Function blocks".

Number of function blocks	1 ... 2
Up to two function blocks can be activated for motion detection. Each function block works as an independent unit and can be configured separately. Each function block has up to two output objects of its own. This parameter defines the number of function blocks and thus the number of output objects that can be configured in the ETS.	

The following parameters are available on the "Motion Detection" parameter page under the heading "Day/Night Switch".

Day/night switchover	Inactive Active
This parameter is used to activate or deactivate the day/night switchover. Individual values can be set for many parameters for motion detection for day and night. This can be used, for example, to reduce faulty switching processes at night. If this parameter is activated, further parameters appear.	

Combine day/night output objects per FB	Inactive Active
This parameter determines whether an output object is used in both day and night modes. Active: The facility is used during both daytime and night-time operations. Inactive: A separate output object is used for day and night operation respectively. This parameter is visible only if day/night switchover is set to active.	

Object polarity	0 = day / 1 = night 1 = day / 0 = night
This parameter specifies the polarity used to switch between day and night mode. This parameter is visible only if day/night switchover is set to active.	

Time of switchover	At end of presence for each function block Immediately
<p>This parameter is used to define when day/night switchover is to take place.</p> <p>At end of presence for each function block: The switchover takes place separately for each function block as soon as no detection is active any more for the function block.</p> <p>Immediately: The switchover takes place immediately and for all function blocks together.</p> <p>This parameter is visible only if day/night switchover is set to active.</p>	

After the bus voltage returns	No reaction Query current state State before bus voltage failure
<p>This parameter specifies which state (day/night mode) is active after the bus voltage returns.</p> <p>No reaction: The device does not yet have any information on which state (day/night mode) is to be switched. The device always switches to day mode until this information is available.</p> <p>Query current state: The device sends a telegram to the bus and queries the current state (day/night mode). The current state is then set by means of a telegram to the object "Day/night switchover - Switching".</p> <p>State as before bus voltage failure: The device restores the state that was active before the bus voltage failure.</p> <p>This parameter is visible only if day/night switchover is set to active.</p>	

The following parameters are available on the "Motion Detection" parameter page under the heading "Reset behaviour".

Changeable parameters can be reset via object	Inactive Active
<p>The changeable parameters in the device are reset to the values configured in the ETS by sending a telegram to the 1-bit object "Changeable parameters - Reset", which can be enabled by this parameter.</p> <p>The values are retained until a new specification is made by a telegram or teach-in function. An ETS programming operation sets the parameters automatically to the ETS pre-settings if this is provided for in the configuration.</p>	

13.1.3.3 Object list "General"

Objects that belong to sensors, function blocks, brightness limit values or status LEDs are described in the corresponding chapters.

Function	Name	Type	DPT	Flags
Day/night switchover - Switching	Motion detection - Input	1-bit	1,024	C, -, W, -, U
1-bit object for day/night switchover of the device. The polarity of the object can be configured. This object is visible only if the day/night switchover parameter is set to active.				

Function	Name	Type	DPT	Flags
Day/night switchover - Status	Motion detection - Output	1-bit	1,024	C, -, W, -, U
This 1-bit object indicates whether the device is in day or night mode. The polarity of the object can be configured. This object is visible only if the "Day/night switchover" parameter is set to active.				

Function	Name	Type	DPT	Flags
Changeable parameters - Reset	Motion detection - Input	1-bit	1,017	C, -, W, -, U
1-bit object that can be used to reset all parameters of the device that can be changed by means of objects or the teach-in function to the settings in the ETS. A telegram is sent to this object for this purpose. This object is visible only if the parameter "Changeable parameters can be reset by means of object" is set to active.				

13.1.4 Detection areas

Detection areas and range

With a total detection field of up to 120°, the **high-frequency signal technology** used in the Detect push-button sensor for motion detection allows for flexible adjustment between detection accuracy and detection speed. The optimum operating point depends heavily on the specific application; for example, on whether the priority is on precise presence detection or rapid motion detection.

The Detect push-button sensor distinguishes between nearby and more distant motion zones. The detection limits depend on the installation height and the direction of movement of people within the detection area.

Movements in the immediate vicinity of the sensor are detected via proximity detection. Close-range detection can be parameterised for various application scenarios. A distinction is made between stair detection right, centre and left.

When close-range detection is enabled, the brightness measurement is interrupted. In this state, no current brightness values are available. This prevents highly distorted measured values from being recorded during device operation due to shadowing.

Gesture control

When gesture control is enabled, the Detect push-button sensor can be controlled by interpreting gestures and movements. Depending on the commands sent, the device reacts differently during and at the end of gesture recognition. The operating distance for gesture control is approximately 10 cm.

Pressing the push-button sensor does not trigger a gesture.

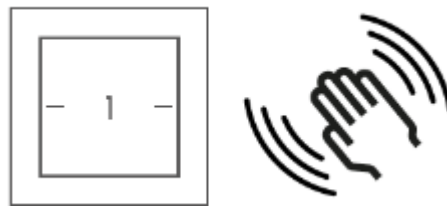


Figure 24: Gesture control

Staircase survey

The sensor is suitable for use in stairwells. With staircase detection (right, centre, left), motion detection is limited to an area of approx. 1 m² to the right, centre or left of the push-button sensor Detect.

Optimal results can be achieved when the tracking is set to prioritise "accuracy" and the maximum tracking distance is set to 2 m or 4 m.

The proximity sensor only reacts to movements in the immediate vicinity (to the right, in the centre or to the left). This function is used, for example, to switch on the staircase lighting automatically when the stairs are in use. People are detected when they

enter the stairwell. When ‘Stair detection left’ or ‘Stair detection right’ is selected, the detection field can be shifted to the left or right relative to the device to optimise people detection.

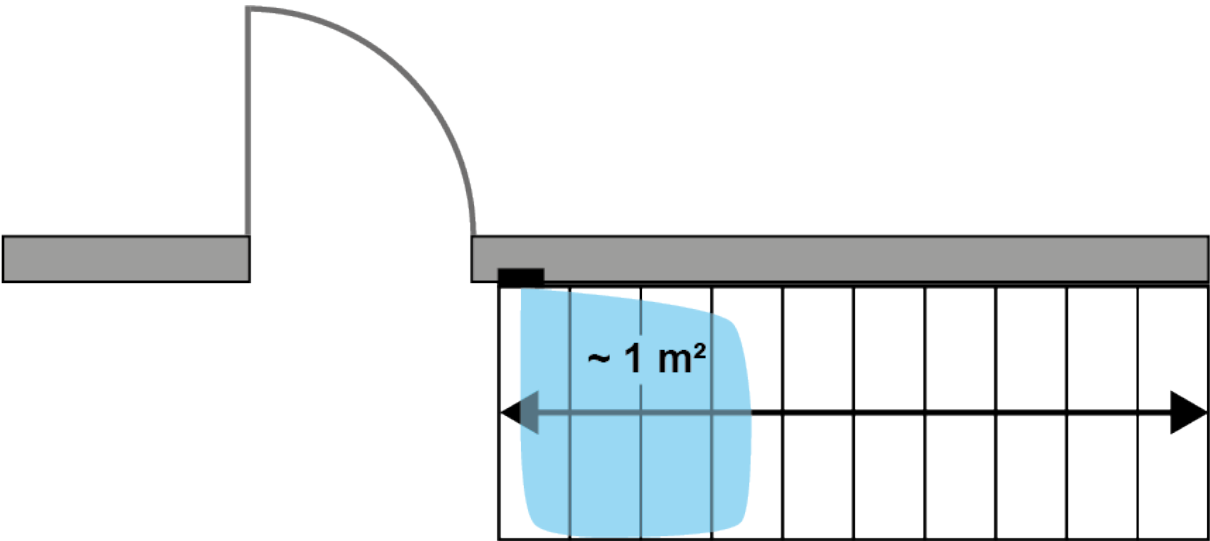


Figure 25: Example of a staircase survey

Detection areas

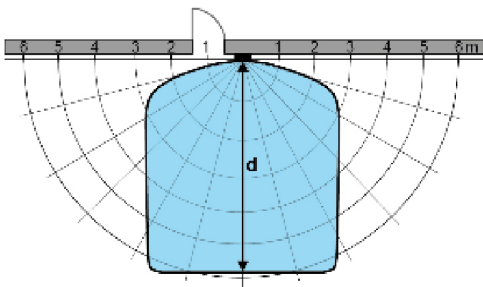


Figure 26: Detection areas

You use detection areas to define the spatial area in which the sensor can detect movement. The achievable ranges vary depending on the specific focus of the motion detection (whether the focus is on speed or accuracy).

Detection field	Value
Distance (d) max	0 ... 3.2 6 m
	The distance is dynamic and depends on the set focus of the detection.

13.1.4.1 Walking test

The device has a walking test function. The walking test function serves as a guide for the project design and setting of the detection field. The walk test indicates the device's response to detected movements via all status LEDs (blue). The walking test can be activated and deactivated in the ETS during operation of the device.

Characteristics of the device in the walking test

The device has the following characteristics during an active walking test:

- Motion is detected always brightness independently.
- The sensor is active, depending on the selected detection priority (accuracy or speed).
- When motion is detected, all status LEDs (blue) are activated for the duration of the motion pulse.
- No transmission delay is started at the end of a detected motion.
- Function blocks 1-2 are not processed (no telegrams are transmitted).
- There is no main unit and extension arrangement. The device works autonomously.
- The parameters "Behaviour after bus voltage return" and "Behaviour after ETS programming" and the disabling function of a function block are not evaluated.

An ongoing transmission delay after bus voltage return is deactivated during activation of the walking test function. This is then no longer active, even during deactivation of the walking test function.

Activation and deactivation via ETS parameter

To enable the walking test via the ETS configuration, the "Use walking test" parameter on the "Detection zones" parameter page must be set to "Enabled". It is possible to deactivate a walking test with the aid of the ETS by resetting the aforementioned parameter to "deactivated" and reprogramming the application program.

The walking test may be deactivated also by a bus voltage failure (device reset). In addition, simply pressing any button or sending a KNX telegram to the "Activate/Deactivate Walk Test" object is sufficient.

13.1.4.1.1 Motion status indicator

Indication of motion pulses

All status LEDs (blue) are controlled by the walk test. Optionally, the status LED can indicate any detected movements even during normal operation. The "LED function in normal operation" parameter enables this function in the "Indication of motion pulses" setting. The signalling enables the start and duration of motion detection to be visualised by the device at any time.

The status LED indicates detected movements brightness-independent.

Example application: Used outdoors to detect the failure of a light bulb.

- i** If the status LED is switched on, it will no longer be possible to measure the brightness with the internal brightness sensor. The last value before the status LED is switched on is therefore frozen. The function blocks use this value until the status LED is switched off again.

13.1.4.1.1.1 "Motion status indicator and walking test" parameter

Motion status indicator (blue status LED)

Use walking test	Active Inactive
This parameter is used to activate the "Walking test" object. A telegram to this object can be used to activate or deactivate the walking test to check the detection field. In the walking test, motion is detected brightness independently by means of the assigned function block . The detection focus (accuracy or speed) set for the sensors is active.	

13.1.4.1.1.2 "Motion status indication and walking test" objects

Function	Name	Type	DPT	Flag
Walking test - Activate/ Deactivate	Motion status indication - Input	1-bit	1,003	C, -, W, -, U
1-bit object used to activate and deactivate the walking test. The walking test can be used to test whether motion is reliably detected in the detection field. The walking test is activated or deactivated immediately after an ETS programming operation. This object is visible only if the "Use walking test" parameter is set to active.				

13.1.4.2 "Detection Zones" and "Close-Range Detection" parameters

Parameter page "Detection zones – General"

Focus of the motion tracking on	Accuracy (e.g. workplaces) Speed (e.g. corridors)
<p>This is where the focus for motion tracking is selected. The processing speed is faster when the focus is on speed and the distance is shorter.</p> <p>Accuracy (e.g. in the workplace): The focus of the data collection is on attendance tracking. The sensor reliably detects even the slightest movements.</p> <p>Speed (e.g. corridor): The focus of the detection is on motion detection. The system does not analyse whether a detected object is moving through the room. The sensor is specifically designed to respond to movements at higher speeds.</p>	
Maximum distance (d) for motion detection	2 m 4 m 6 m
<p>This parameter determines the maximum distance at which movements can be reliably detected, in order to process the "detection focus" parameter optimally.</p> <p>The smaller the maximum distance, the faster the high-frequency signals are analysed.</p>	
Use walking test	Activated Deactivated
<p>This parameter is used to activate the "Walking test" object. A telegram to this object can be used to activate or deactivate the walking test to check the detection field. In the walking test, motion is detected brightness independently by means of the assigned function block. The detection focus (accuracy or speed) set for the sensors is active.</p>	

Parameter page "Detection zones – Close-range detection (...)"

Designation	Free text Max. 40 characters long text
<p>This parameter assigns a name to the "Close-range detection field" for identification purposes. The name serves merely as an aid in the ETS and is not programmed into the device.</p>	

Application	Staircase survey on the right Staircase survey in the middle Staircase survey on the left
<p>This parameter determines the mode in which the motion detector analyses and interprets movements. Depending on the location, the detection behaviour can thus be optimally adapted to the surroundings.</p> <p>Right / centre / left detection: In this mode, the motion detector is configured to detect movement coming predominantly from the right / centre / left side of the detection area. This makes the setting particularly suitable for stairwells or corridors, where people typically enter the detection field from this direction.</p>	

Adjusting the detection field	Activated Deactivated
<p>This parameter enables the adjustment of the detection zones for the 'Stair detection, right' and 'Stair detection, left' parameters.</p>	

Shift by	-4 ... 0 ... 4
<p>This parameter can be used to shift the detection field for stair detection to the left or right, depending on where the sensor is installed. The process is carried out in stages.</p>	

Parameter page "Detection fields – Detection field x (...)"

Designation	Free text Max. 40 characters long text
<p>This parameter assigns a name to the "Detection field 1 (...)" for identification purposes. The name serves merely as an aid in the ETS and is not programmed into the device.</p>	

Distance (d) max	0... 3.2 ...2 0... 3.2 ...4 0... 3.2 ...6
<p>This parameter specifies the maximum distance at which movements can be reliably detected. The adjustable interval depends on the set maximum distance "d".</p>	

Distance adjustable via object	Activated Deactivated
<p>By enabling this parameter, the height of the detection zone can be adjusted via the object.</p>	

Changeable parameters can be reset via object	Activated Deactivated
<p>By enabling this parameter, modifiable parameters can be reset via a communication object.</p> <p>This can only be adjusted if the "Distance adjustable via object" parameter has been enabled beforehand.</p>	

Overwrite values in device in the ETS programming	Activated Deactivated
<p>Enabling this parameter allows the values set on the device to be replaced by those configured in the ETS.</p> <p>This can only be adjusted if the "Distance adjustable via object" parameter has been enabled beforehand.</p>	

13.1.4.3 Object list "Data collection areas"

Items relating to sensors, brightness thresholds or the status LED are described in the relevant sections.

Function	Name	Type	DPT	Flag
Walking test - Activate/Deactivate	Detection areas - Input	1-bit	1,003	C, -, W, -, U
1-bit object used to activate and deactivate the walking test. The walking test can be used to test whether motion is reliably detected in the detection field. The walking test is activated or deactivated immediately after an ETS programming operation. This object is visible only if the "Use walking test" parameter is set to "activated".				

Function	Name	Type	DPT	Flag
Changeable parameters Reset	Input - Detection field 1	1-bit	1,017	C, -, W, -, U
A 1-bit object that triggers a reset of all modifiable parameters. This object is visible only if the parameter "Changeable parameters can be reset by means of object" is set to "activated".				

Function	Name	Type	DPT	Flag
Distance (d) max	Input - Detection field 1	4-byte	14,039	C, -, W, -, U
4-byte input object that sends the maximum distance value to the KNX bus.				

Function	Name	Type	DPT	Flag
Distance (d) max - Status	Output - Detection field 1	4-byte	14,039	C, -, W, -, U
4-byte output object that retrieves the current maximum distance value.				

13.1.5 Function blocks 1-2 for motion detection

13.1.5.1 Function blocks 1...2 General

The device contains up to two function blocks (FB), which operate logically independently of one another and can be configured.

Up to two output communication objects are available for each function block, which transmit the switching and control commands to the bus.

The data format of these objects is defined separately and adapted to the controllable units of the KNX system, depending on the configured function (switching, staircase function, switching with forced position, dimming value transmitter, scene extension unit, brightness value transmitter, temperature value transmitter, temperature operating mode other value transmitters).

If a function block is to be used, it must be enabled in the ETS on the "Motion Detection" parameter page under "Function Blocks". The first function block is always intended for application and is thus enabled. Parameters and objects will appear in the ETS function block dependently, provided a function block was enabled.

The function block's properties can be configured on the "FBx – General" parameter page. The relevant parameters should be set to the required values at the start of the device configuration, as all other function block parameters and objects depend on these parameters.

The different applications of function blocks 1-2 are described in detail in the following chapters.

Application Presence detector - Lighting

The device is usually installed in passageways of buildings in order to switch on the lighting automatically whenever necessary. If lighting is switched on, it will not be switched off until no-one is in the monitored area.

The function block detects movements and transmits the telegram configured at the beginning of a detection process to the bus whenever the measured brightness value is below the set brightness threshold. At the start of a detection process, the telegram can be transmitted after a delay (evaluation delay). If the telegram was transmitted at the start of a detection, the device works independently of the brightness. If no further movements are detected, the device transmits the configured telegram to the bus at the "End of detection" after the set or self-learning run-on time has elapsed.

A switch-off pre-warning can be activated if the output is set to the "Dimming value transmitter" or "Brightness value transmitter" function. To do this, set the 'Shutdown warning' parameter to 'Active' under 'Start and end of recording'. A dimming or brightness value set for the switch-off warning is initially output to the bus after the run-on time has elapsed. Only after the "Duration" of the switch-off pre-warning has elapsed is the "At end of detection" telegram sent.

The lighting can be switched on and off even if the motion detector is disabled, during manual operation and when the bus voltage returns independently of a motion detection.

The brightness level, whereupon motion pulses are transmitted by the motion detector if this level is fallen below, is defined by the brightness threshold. The brightness threshold is configured in the ETS and can optionally be changed by a teach-in function or an external bus specification. If the determined brightness falls below the brightness threshold, the motion detector will switch on the lighting by means of the KNX actuators if motion is detected. The brightness range above the brightness threshold distinguishes the brightness of a room in which the illumination is sufficiently bright and thus the lighting no longer has to be switched on. The lighting is not switched on if the ambient brightness is within this range and the device detects a new motion.

If the motion evaluation is configured to "Brightness-independent", the lighting is always switched on when motion is detected without monitoring the ambient brightness.

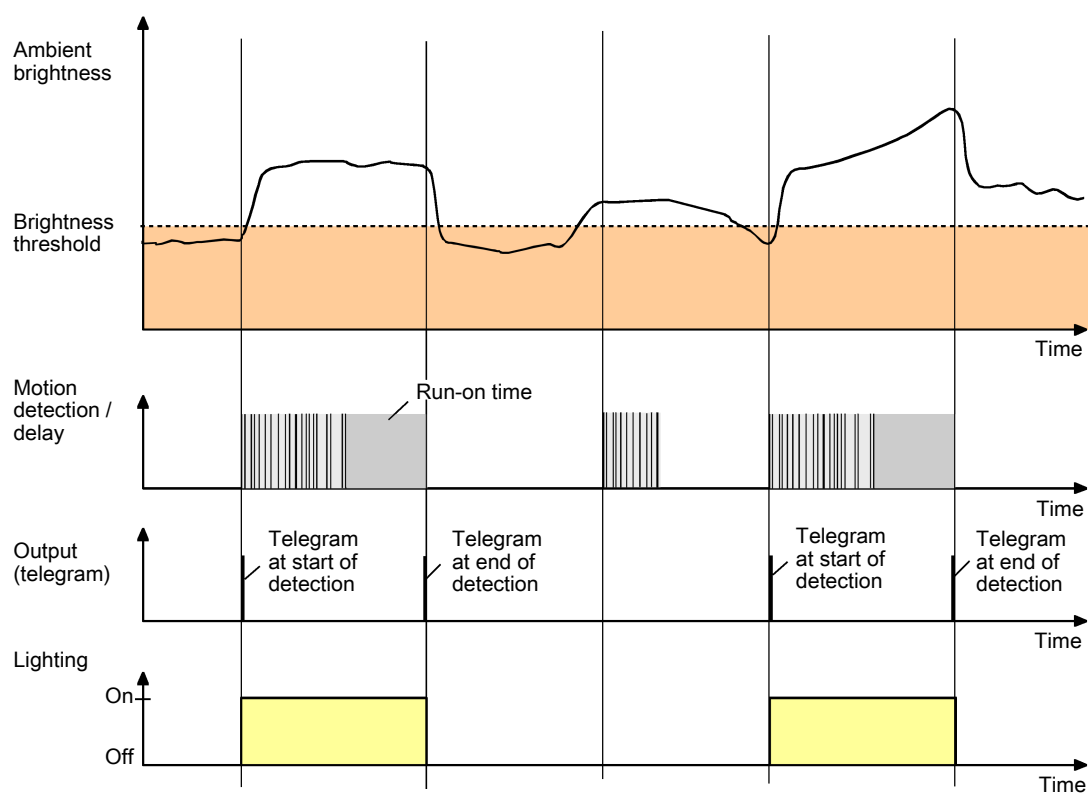


Figure 27: Brightness and motion evaluation with the motion detector

Application Presence detector - Lighting

The application "Presence detector - Lighting" is normally used in areas where people spend longer periods of time (e.g. kitchen, bathroom/toilet...) for controlling the lighting or heating/ventilation. In the 'Presence Detector – Lighting' application, ambient brightness is continuously monitored even when the lights are on. Thus, for example, lighting can be switched off when a defined brightness threshold is exceeded, e.g. by incoming daylight, even if motion continues.

If the measured brightness exceeds a defined switch-off threshold (switch-off brightness), the lighting is switched off after a configurable delay has elapsed even during active motion detection.

Regardless of a motion detection, the light can be switched on and off even if the detector is disabled, during a manual operation (external motion) and on bus voltage return.

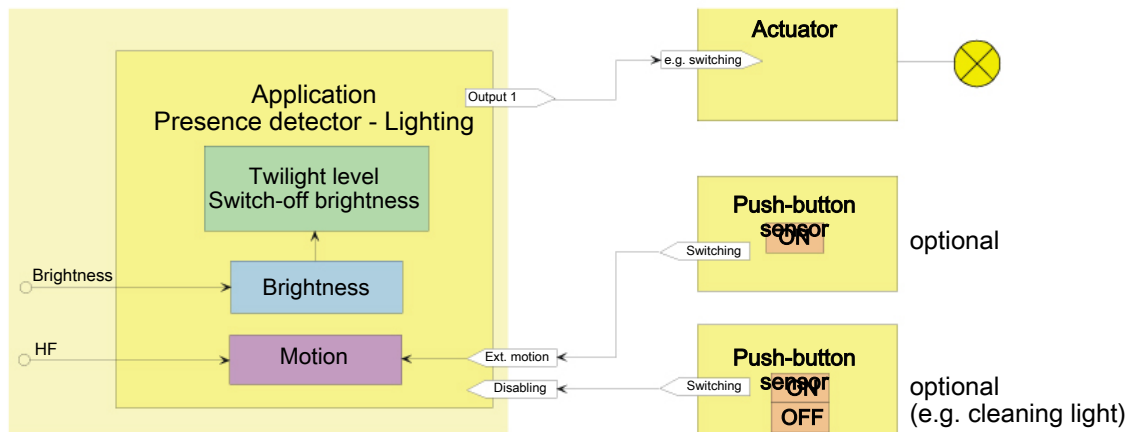


Figure 28: Application example of the application Presence detector - Lighting

In the application Presence detector - Lighting, the device detects the presence of people and transmits the configured telegram at the beginning of a detection whenever the determined brightness value is below the set twilight level. The twilight level is configured in the ETS and can be changed optionally by a Teach function or by external bus presetting. The telegram can also be transmitted after a delay (evaluation delay) at the beginning of a detection process. If no movements are detected any more during the further course of the motion detection, the device transmits the configured telegram to the bus once the set total transmission delay (standard delay 10 s + additional transmission delay) has elapsed.

If the measured ambient brightness continuously exceeds the set switch-off brightness during active motion detection, motion detection will be terminated either after the transmission delay has elapsed or after a separately configurable switch-off delay and the configured telegram transmitted at the end of detection.

- Transmission delay after reaching the switch-off brightness = "As additional transmission delay":
After the switch-off brightness has been exceeded, no further movements are evaluated. This means that the transmit delay is also not retriggered. After the transmission delay has elapsed, motion detection is terminated and the configured telegram is transmitted at the end of detection.
- Transmission delay after reaching the switch-off brightness = "Switch-off delay":
The configured switch-off delay is started after the switch-off brightness has been exceeded. Detected movements continue to be evaluated and retrigger the transmission delay. The end of detection then occurs after the configured switch-off delay has elapsed, assuming movements continue to be detected, or after the additional transmission delay has elapsed, if no more movements are detected.
The switch-off delay is used for the debouncing of brief light reflexes and prevents faulty switching of the lighting.

If, before the end of detection, the switch-off brightness is fallen below again, any detected movements trigger the transmission delay again normally and any switch-off delay currently running is terminated.

The range between twilight level and switch-off brightness characterises the brightness in the room to which the detector should adjust. If the ambient brightness is within this range and the device detects a new motion, no lighting is switched on.

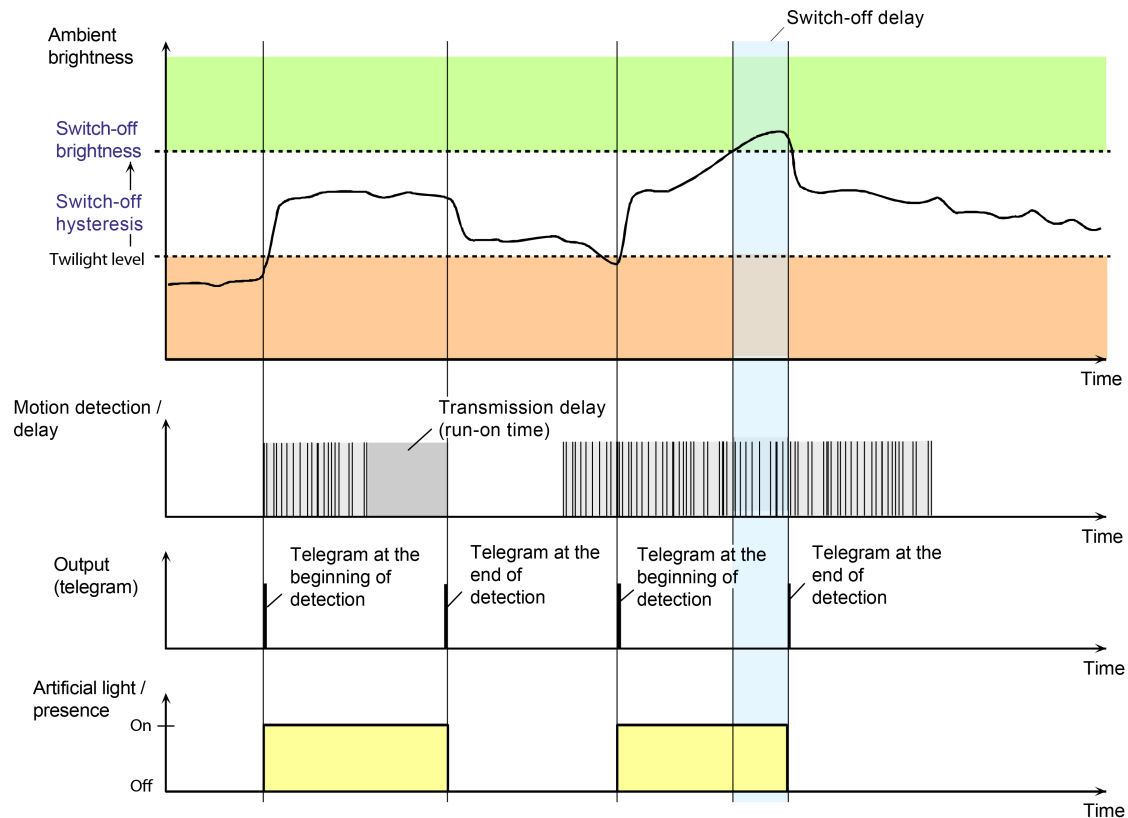


Figure 29: Brightness and motion detection in the 'Presence Detector – Lighting' application

Use as "Main unit"

A main unit is used as a central unit in combination with one or more motion or presence detectors configured as extensions. The combined main unit and extension unit(s) execute the motion and presence detection coherently and thus allow any desired extension of the detection area. The extensions combined with the main unit transmit their motion signal to the object "External motion" of the main unit via the same group address.

The brightness threshold evaluation can be made separately in main and extension unit(s) or centrally in the main unit. The evaluation of the brightness thresholds can be deactivated in the main and extension unit(s) for brightness-independent control systems such as temperature value transmitter applications, room temperature controller operating mode switchovers or ventilation control systems. The switch-off brightness at the presence detector is evaluated always centrally in the main unit. The actuators are controlled exclusively by the main unit. A combination of several main units (affecting the same KNX actuator) is not possible.

User-guided and motion-independent control is possible also with this type of use, for example with a push-button sensor in the room. This allows the user to control the connected KNX actuator even without motion detection in the detection field. Simple or permanent manual operation can be used as manual operation options.

- i** The device works exclusively as a single device in the "Presence detector - Monitoring" application.

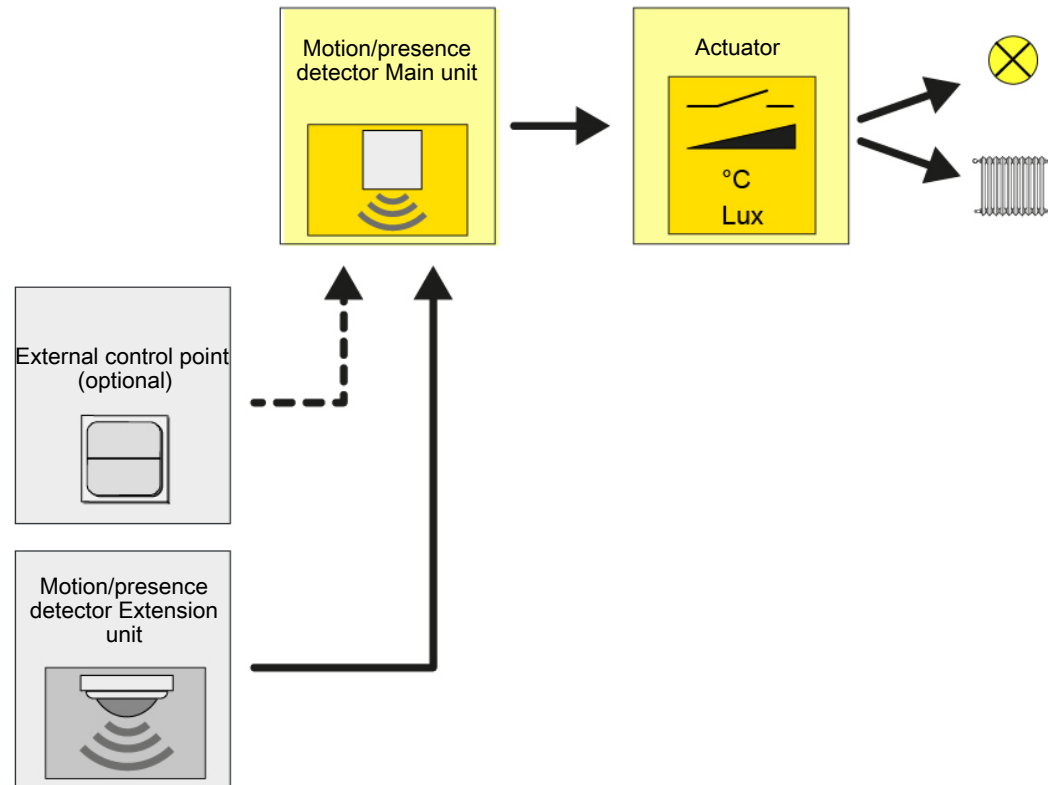


Figure 30: "Main unit" application type

Use as "Extension unit"

An extension unit is a device in a combination of several motion or presence detectors to detect motion and optionally also evaluate the brightness threshold. The extension unit transmits only one motion signal to one main unit. An extension unit therefore does not directly control an actuator.

An extension unit can subject the motion detection to the evaluation of its own brightness threshold or, alternatively, can work brightness independently. If the brightness evaluation is activated in the extension unit, the brightness threshold must be deactivated by the main unit when switching on the lighting (brightness-independent operation with lighting switched on). This is done, regardless of the data format of the actuator output objects of the main unit, by means of the input object "Brightness-dependent operation - Activate/Deactivate", which must be connected to the corresponding output object of the main unit.

The evaluation of the brightness thresholds can be deactivated in the main and extension unit(s) for brightness-independent control systems such as temperature value transmitter applications, room temperature controller operating mode switchovers or ventilation control systems.

The switch-off brightness is evaluated always centrally in the main unit.

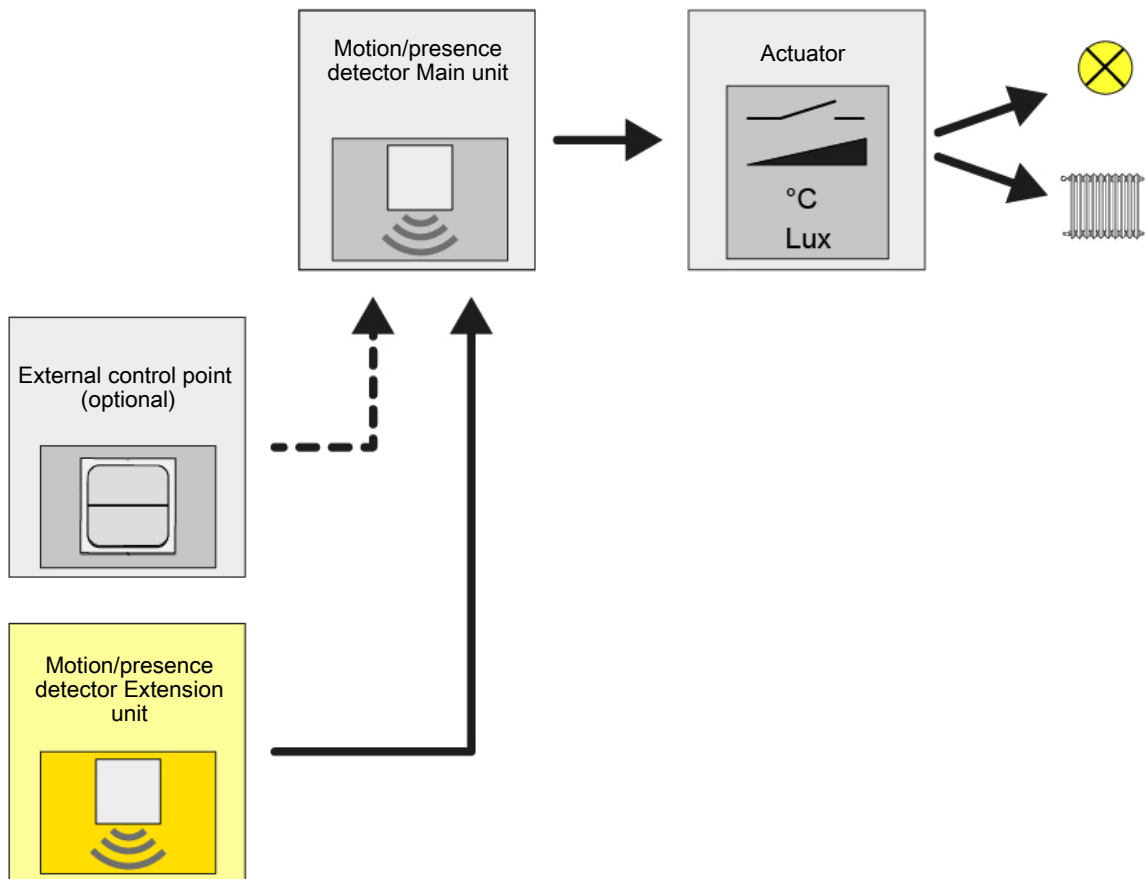


Figure 31: "Extension unit" application type

The extension unit sends cyclical motion telegrams to the main unit by means of the "Motion" object. The cycle time t_2 can be configured in the extension unit on the "FB x - Output 1" parameter page. All extension units must be configured to the same time. The cycle time must be coordinated with the run-on time of the main unit. Within the run-on time of the main unit, there must be at least one motion telegram during a continuous movement. To ensure reliable motion evaluation, the cycle time should be slightly less than half of the run-on time of the main unit. In the default configuration, the cycle time is set to 25 seconds. This ensures reliable motion evaluation by the extension units for the default configuration of the run-on time in the main unit. In the case of long run-on times of the main unit, it is recommended to also adapt the cycle time as described in order to reduce the bus load due to the extension motion telegrams.

The run-on time t_1 is permanently set to 6 seconds in extension unit mode.

When retriggering (new motion within the run-on time), no motion telegram is transmitted.

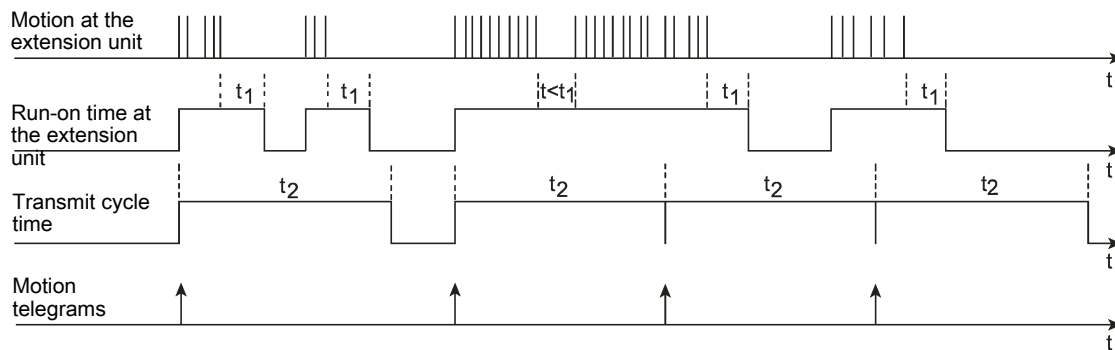


Figure 32: Motion signals of an extension unit

Manual operation (e.g. with a push-button sensor) is not possible on devices used as extension units. This is possible only on a main unit.

Control mode

The control mode can be configured in the ETS. The control mode specifies the functionality of the motion detection and defines whether or not the start and end of a motion detection process are identified automatically. Thus, the control mode can be configured to "Automatic ON, automatic OFF", "Manual ON, automatic OFF" or "Automatic ON, manual OFF". This makes it possible to adjust the motion detection to many applications in private and public areas (e.g. toilet lighting, service lighting, control of ventilation systems).

Auto ON, auto OFF

In this control mode, the outputs of a function block are activated automatically by the motion detection and brightness evaluation. Manual actuation of the device is not necessary.

An additional manual operation can take place by means of the following objects if necessary...

- "Simple manual operation":
When used as a "Single device" or "Main unit", this object can be used with an external push-button sensor to operate a connected KNX actuator brightness and motion independently. ON or OFF telegrams can be used for this purpose, depending on the setting. Automatic operation continues to run in the background. The subsequent evaluation of PIR motion signals and the processing of the delay times then takes place according to the normal pattern and the corresponding telegrams are sent.
- "Permanent manual operation":
This object can be used directly for the manual operation e.g. with a push-button sensor. An ON telegram is evaluated as a brightness-dependent motion detection, whereby the telegrams are always transmitted to the outputs at the beginning of detection and the run-on time is started. An OFF telegram transmitted to this object during a current motion detection results in the cancellation of the motion evaluation and termination of the run-on time, including

transmission of the telegrams at the end of the motion. The function block is then in the basic state and ready for a new motion detection process. Further information can be found in the chapter "Manual operation" .

- "Disabling":
This object is used to activate and deactivate the disabling function. This makes it possible to disable the function block and initiate a corresponding action by force (e.g. lighting permanently ON due to cleaning lighting). The normal operation of the function block will only be possible again after enabling the disabling function.

Manual ON, auto OFF

In this control mode, an ON telegram must be initially sent to the object "Simple manual operation" before a movement (including ext. motion) is detected and evaluated. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of the detection is identified automatically or initiated by an OFF telegram to the object "Simple manual operation". Afterwards, a manual ON telegram is required again to evaluate a new movement.

Auto ON, manual OFF

The initial detection is automatic in this control mode. After detecting a movement, the telegrams are sent at the "Start of a detection". The run-on time is not started. This means that the end of detection can be achieved only by an OFF telegram to the "Simple manual operation" object. The function block is then ready again for a new motion evaluation process.

Use as "Single device"

This type of use can be set as "Motion detector - Lighting" or "Presence detector - Lighting, Universal or heating / ventilation / air conditioning" in the application. The device then works autonomously. A main and extension unit arrangement with other motion or presence detectors is not possible.

Optionally, a manual operation can be supplied to the device, which, for example, originates from a push-button sensor in the room. This allows the user to control the connected KNX actuator even without motion detection in the detection field of the device. Simple or permanent manual operation can be used as manual operation options.

-  The device works exclusively as a single device in the "Presence detector - Monitoring" application. Manual operation is not possible in this application.

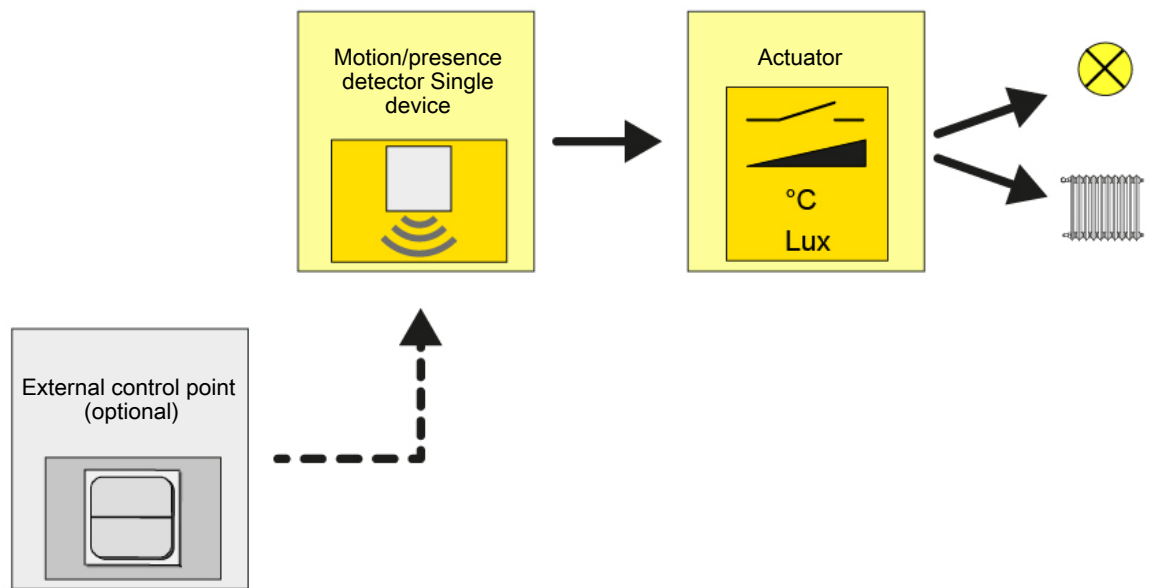


Figure 33: "Single device" application type

13.1.5.1.1 "General" parameters

FBx - General (x = 1...2)

Designation	Free text Max. 40 characters long text
This parameter gives the "FBx" a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	
Use as (application type)	Single device Main unit Extension unit
Definition of the function block application type. It is possible to use several devices in one room to extend the detection field by combining a device configured as a main unit with several devices configured as extension units. A single device always works autonomously. This parameter should be configured to the necessary setting at the start of the device configuration, since all other function block parameters and objects depend on the above parameters.	
Control mode At day / At night	Auto ON, auto OFF Manual ON, auto off Auto ON, manual OFF
<p>For function blocks of the "Single device" or "Main unit" application type, the control mode can be configured here. The control mode specifies the functionality of the motion detection and defines whether or not the start and end of a motion detection process are identified automatically. This makes it possible to adjust the motion detection to many applications in private and public areas (e.g. toilet lighting, service lighting, control of ventilation systems).</p> <p>Auto ON, auto OFF: In this control mode, the outputs of a function block are activated automatically by the motion detection and brightness evaluation. Manual actuation of the device is not necessary.</p> <p>Auto ON, auto OFF: In this control mode, an ON telegram must be initially sent to the object "Lighting manual ON/OFF" before a movement (including ext. motion) is detected and evaluated. At the same time, the ON telegram starts the first motion detection including the transmission delay. The end of the detection process is identified automatically or initiated by an OFF telegram to the "Lighting manual ON/OFF" object. Afterwards, a manual ON telegram is required again to evaluate a new movement.</p> <p>Auto ON, Manual OFF: With this control mode, detection of an event takes place automatically, as with the "Fully Automatic" control mode. After detection of a motion and output of the telegrams for "beginning of a detection", no transmission delay is started. Thus, the end of the detection can only be achieved by an OFF telegram to the object Lighting manual ON/OFF". The function block is then ready again for a new motion evaluation process. This parameter should be configured to the necessary setting at the start of the device configuration, since all other function block parameters and objects depend on the above parameters.</p>	

Functionality	Brightness dependent Brightness-independent
<p>This parameter can be used to activate or deactivate the evaluation of brightness when a motion detection is received for the respective function block.</p> <p>"Brightness-independent": Brightness is not taken into account. The FB always evaluates movements for the initial detection.</p> <p>"brightness-dependent": The brightness is analysed. For initial motion detection, the FB only evaluates movements if the brightness threshold is below the set value. If the design rocker is missing, detection may not work as there is no damping provided by the light guide.</p>	

Reset behaviour

Changeable parameters can be reset via object	Active Inactive
<p>The parameters of the FB in the device are reset to the values configured in the ETS by sending a telegram to the 1-byte object "Changeable parameters - Reset", which can be enabled by this parameter.</p> <p>The values are retained until a new specification is made by a telegram or a teach-in function. An ETS programming operation sets the parameters automatically to the ETS pre-settings if this is provided for in the configuration.</p>	

Behaviour after bus voltage return	No reaction Disabling function active State as at the beginning of a detection State as before bus voltage failure
<p>After bus voltage return, various states of operation (possibly with telegram output) can be adopted for the application types "single device" and "main unit". The behaviour of a function block is defined by this parameter.</p> <p>No reaction: The function block switches to basic state (no motion, transmission delay inactive, disabling function inactive). No telegram is output.</p> <p>Disabling function active: In this setting, the function block is set to the disabling state after the bus voltage returns. If a telegram output is configured at the beginning of the disabling function, these telegrams are then transmitted. The basic state (no motion, transmission delay inactive, disabling function inactive) is set as previous state for the disabling function.</p> <p>State as at the beginning of a detection: In this setting, the state changes to that of an active motion detection after the bus voltage returns (an evaluation delay is not processed). The processing of the motion detection is only subject to the configured twilight level evaluation. In brightness-independent detection, the configured telegrams are transmitted at the beginning of the detection and the transmission delay started. In brightness-dependent detection, the configured telegrams are transmitted at the beginning of the detection, the transmission delay started and brightness-independent motion detection switched-over to only if the brightness values are below the twilight level. If no further motion is then detected, the device processes the end of the detection after the transmission delay has elapsed.</p> <p>State as before bus voltage failure: In this setting, the state of the function block as it was before the bus voltage failure is assumed again. The behaviour configured here is not executed if the function block is not active (e.g. by function block switch-over, walking test) or the "Behaviour after ETS programming operation" is executed.</p>	

After ETS programming operation	No reaction Disabling function active State as at the beginning of a detection
<p>In the application types "single device" and "main unit", various states of operation (possibly with telegram output) can be adopted after ETS programming. The behaviour of a function block is defined by this parameter.</p> <p>No reaction: The function block switches to basic state (no motion, transmission delay inactive, disabling function inactive). No telegram is output.</p> <p>Disabling function active: In this setting the function block is set to the disabling state after ETS programming. If a telegram output is configured at the beginning of the disabling function, these telegrams are then transmitted. The basic state (no motion, transmission delay inactive, disabling function inactive) is set as previous state for the disabling function.</p> <p>State as at the beginning of a detection: In this setting, the state changes to that of an active motion detection after ETS programming (an evaluation delay is not processed). The processing of the motion detection is only subject to the configured twilight level evaluation. In brightness-independent detection, the configured telegrams are transmitted at the beginning of the detection and the transmission delay started. In brightness-dependent detection, the configured telegrams are transmitted at the beginning of the detection, the transmission delay started and brightness-independent motion detection switched-over to only if the brightness values are below the twilight level. If no further motion is then detected, the device processes the end of the detection after the transmission delay has elapsed.</p> <p>The parameters of the FB in the device are reset to the values configured in the ETS by sending a telegram to the 1-byte object "Changeable parameters - Reset", which can be enabled by this parameter.</p> <p>The values are retained until a new specification is made by a telegram or a teach-in function. An ETS programming operation sets the parameters automatically to the ETS pre-settings if this is provided for in the configuration.</p>	

Function output 1	no function Switching Staircase function Switching with forced position Dimming value transmitter Light scene extension Temperature value transmitter Brightness value transmitter Operating mode, room temperature controller
<p>Up to two output communication objects are available per function block via which the switching and control commands are transmitted on the bus to the KNX actuator, e.g. lighting system, room temperature control. The data format of the object of output 1 is defined depending on the function configured here and adapted to the controllable function units of the KNX system.</p> <p>no function: The output is deactivated. There is no separate output communication object available.</p> <p>Switching: Switching: 1-bit switching telegrams (ON/OFF) can be output. Example application: Switching lighting.</p> <p>Staircase function: 1-bit switching telegrams (ON, OFF) are output cyclically in order to trigger the run-on time in the activated KNX actuator. Example application: Switching staircase lighting.</p> <p>Switching with forced position: 2-bit switching telegrams can be output for the forced position of an actuator channel in accordance with DPT 2.001. This makes it possible to set switching states with a higher priority (ON, OFF). Example application: Switching lighting by forced control (cleaning lighting, service light).</p> <p>Dimming value transmitter: 1-byte brightness value telegrams in accordance with DPT 5.001 (0...100 %) can be output. Example application: Dimming lighting.</p> <p>Light scene extension unit: 1-byte telegrams in accordance with DPT 18.001 (1...64) can be output for the scene recall. Example application: Calling up actuator scenes (e.g. TV lighting).</p> <p>Temperature value transmitter: 2-byte temperature value telegrams in accordance with DPT 9.001 (0...+40 °C configurable in 1 °C-increments) can be output. Example application: Preset temperature setpoints.</p> <p>Brightness value transmitter: 2-byte brightness value telegrams in accordance with DPT 9.004 (0...2,000 Lux configurable in 50-Lux increments) can be output. Example application: Preset lighting setpoints.</p> <p>Operating mode, room temperature controller: 1-byte telegrams for switching over the operating mode of a KNX room temperature controller in accordance with DPT 20.102 (comfort, standby, night, frost/heat protection, automatic operation) can be output. Example application: Influence room temperature control. In the application type "extension unit", no output functions are available. Therefore, these are then only configurable in the main unit. In the application "detector", the output 1 preset to the detector function (1-bit switching telegrams).</p>	

Function output 2	no function Switching Staircase function Switching with forced position Dimming value transmitter Light scene extension Temperature value transmitter Brightness value transmitter Operating mode, room temperature controller
<p>Up to two output communication objects are available per function block via which the switching and control commands are transmitted on the bus to the KNX actuator, e.g. lighting system, room temperature control. The data format of the object of output 2 is defined depending on the function configured here and adapted to the controllable function units of the KNX system.</p> <p>no function: The output is deactivated. There is no separate output communication object available.</p> <p>Switching: Switching: 1-bit switching telegrams (ON/OFF) can be output. Example application: Switching lighting.</p> <p>Staircase function: 1-bit switching telegrams (ON, OFF) are output cyclically in order to trigger the run-on time in the activated KNX actuator. Example application: Switching staircase lighting.</p> <p>Switching with forced position: 2-bit switching telegrams can be output for the forced position of an actuator channel in accordance with DPT 2.001. This makes it possible to set switching states with a higher priority (ON, OFF). Example application: Switching lighting by forced control (cleaning lighting, service light).</p> <p>Dimming value transmitter: 1-byte brightness value telegrams in accordance with DPT 5.001 (0...100 %) can be output. Example application: Dimming lighting.</p> <p>Light scene extension unit: 1-byte telegrams in accordance with DPT 18.001 (1...64) can be output for the scene recall. Example application: Calling up actuator scenes (e.g. TV lighting).</p> <p>Temperature value transmitter: 2-byte temperature value telegrams in accordance with DPT 9.001 (0...+40 °C configurable in 1 °C-increments) can be output. Example application: Preset temperature setpoints.</p> <p>Brightness value transmitter: 2-byte brightness value telegrams in accordance with DPT 9.004 (0...2,000 Lux configurable in 50-Lux increments) can be output. Example application: Preset lighting setpoints.</p> <p>Operating mode, room temperature controller: 1-byte telegrams for switching over the operating mode of a KNX room temperature controller in accordance with DPT 20.102 (comfort, standby, night, frost/heat protection, automatic operation) can be output. Example application: Influence room temperature control. In the application type "extension unit", no output functions are available. Therefore, these are then only configurable in the main unit. In the application "detector", the output 2 cannot be configured.</p>	

13.1.5.1.2 "Enabled functions" parameters

This parameter page is available for each activated function block (FB) separately.

Function blocks (FB) -> FB x - General -> Enabled functions

Output 2	Inactive Active
<p>This parameter enables the parameters and objects for output 2 for the FB. The "Output 2" parameter page and other objects appear.</p> <p>For this parameter to be visible, the "Application" parameter must not be set to Presence detector - Monitoring.</p>	
Manual operation	Inactive Active
<p>The FB can be operated also manually. There is simple manual operation and permanent manual operation. This parameter enables manual operation. The "FB x - Manual operation" parameter page and other objects appear.</p> <p>For this parameter to be visible, the "Application" parameter must not be set to Presence detector - Monitoring.</p>	
Disabling function	Inactive Active
<p>A disabling function can be configured for the FB. This parameter enables the disabling function. The "FB x - Disabling function" parameter page and other objects appear.</p>	
Scenes	Inactive Active
<p>Scenes can be configured for the FB. This parameter enables the scenes. The "FB x - Scenes" parameter page and other objects appear.</p>	

13.1.5.1.3 Object list "General and Shares"

The objects are available for each function block separately.

Function	Name	Type	DPT	Flags
Changeable parameters - Reset	FB x - Input	1-bit	1,017	C, -, W, -, U
1-bit object used to reset all parameters of this function block that have been reset to the settings in the ETS by means of objects or the teach-in function. A telegram is sent to this object for this purpose.				

13.1.5.2 Motion evaluation

Assignment of the motion sensor

The motion detection of the device takes place digitally via a high-frequency sensor with a total detection field of up to 120°. The function blocks of the device can be assigned as required to the high-frequency detection field to coordinate the detection field.

Under "Motion Analysis", you can select the source for the trigger (post-detection zone / detection field 1).

13.1.5.2.1 "Motion evaluation" parameters

Function blocks (FB) -> FB x - General -> Motion evaluation

Sensor assignment

Detection fields for motion At day / At night	Inactive Close-up Detection field 1
<p>The device detects motion with a total detection field of up to 120°. This parameter is used to define which areas of the motion detector are active and respond to movement during the day and at night.</p> <p>Inactive: No detection field has been assigned. Consequently, the function block does not trigger any motion detectors.</p> <p>Proximity detection: Movements in the immediate vicinity of the sensor are detected and trigger an alert.</p> <p>Detection field 1: Movements within the defined detection field 1 are detected and reported.</p>	

13.1.5.2.2 Object list "Movement analysis"

Function	Name	Type	DPT	Flags
Motion	FB x - Output	1-bit	1,010	C, -, -, T, -
1-bit object that sends a telegram with a motion signal to the bus when motion is detected (cyclically "1" = motion present, "0" = not sent).				

Function	Name	Type	DPT	Flags
External motion	FB x - Input	1-bit	1,010	C, -, W, -, U
<p>1-bit object used to receive an external motion signal for single devices and main units ("1" = motion present, "0" irrelevant).</p> <p>An external 1-bit motion signal can be supplied to the device by means of this object, which comes, for example, from a motion detector or push-button sensor in the room. This allows the user to trigger the start of detection even without motion detection in the detection field of the device. The external motion signal can be evaluated dependently or independently of the brightness (configurable).</p> <p>In the case of main unit and extension arrangements, the main units receive the cyclical motion telegrams of the extension units by means of this object (it must be linked to the "Motion" objects of the extension units).</p>				

13.1.5.3 Brightness evaluation

Assignment of the brightness sensors

To determine the workplace brightness or ambient brightness, the device has a brightness sensor. The brightness value determined by this internal sensor can be supplied to a function block internally for the brightness evaluation. Optionally, an external 2-byte brightness value in accordance with DPT 9.004 can also be made available to the function block via the bus. This makes it possible to evaluate the brightness independently of the installation location of the device (e.g. provision of an external brightness value by an extension unit positioned more favourably). In special cases, it is possible to link the determined brightness value of the internal sensor to an external brightness value. In this way, the light measurement of a function block can take place at 2 locations. At the same time, both sensor values are weighted to determine the effective brightness value. The "Weighting of the brightness values internal to external" can be configured statically in the ETS.

The "Brightness measurement by" parameter on the "FBx - Brightness evaluation" parameter page is used to define which sensors are used to evaluate the brightness of a function block.

The brightness value determined by the internal sensor can be supplied to other KNX bus subscribers by means of the object "Brightness value - Status".

In "External" or "Internal and external" brightness value detection: In brightness-dependent motion evaluation mode, a current brightness value must first be present after a device reset before the corresponding function block can work properly. The function block works brightness-independently until a valid brightness value has been received externally! If user calibration of the internal brightness sensor is configured, this must first be executed correctly beforehand so that the internal sensor provides valid brightness values.

Brightness threshold

During the motion detection, the motion detection can be evaluated brightness-independently or brightness-dependently. In the brightness-independent evaluation, no brightness value is taken into account when processing a movement. Each motion then triggers a new detection process in the idle state. This configuration, for instance, is interesting for lighting-independent applications (e.g. room temperature controls).

In the brightness-dependent evaluation, the measured brightness value in relation to the effective brightness threshold is taken into account to process a motion detection. The function block then only detects movements when the measured brightness value is below the set brightness threshold. This configuration is normally used to control lighting systems in corridors or rooms with some levels of daylight.

The brightness threshold is specified in the ETS by the corresponding parameter and can be changed by means of an external brightness threshold (via object) or with the teach-in function in the operating state and thus adapted to meet the user requirements.

Active brightness threshold feedback

Feedback of the brightness threshold effectively set in the function block is possible by means of the 2-byte object "Switch-on brightness - Status" in accordance with DPT 9.004. This object can optionally work as an active signalling object or a passive status object. As an active signalling object, the current brightness threshold is transmitted once to the bus each time the brightness threshold is changed, after ETS programming or after the bus voltage returns (optionally delayed).

Specify brightness threshold externally

The brightness threshold currently set can be reset by sending a 2-byte brightness value to the "Switch-on brightness" object in accordance with DPT 9.004. This object can be configured if the parameter "Can be set via object" is set to "Enabled" on the parameter page "FB x - Brightness evaluation". The brightness threshold received by means of the object is retained until a new specification is made (switch-on brightness, teach-in function). Even a bus voltage failure does not reset a brightness threshold received via the bus. ETS programming resets the brightness threshold automatically to the ETS presettings if this is intended in the configuration (see below).

The disabling function has no influence on the external specification of the brightness threshold.

Teach-in function

Another option for user-guided adjustment of the brightness threshold is the teach-in function. The teach-in function is used to adopt the effective brightness value as new brightness threshold without delay by sending a corresponding telegram to the 1-bit object "Teach-in function - Teach-in". This object can be configured if the "Teach-in function" parameter is set to "active" on the parameter page "FB x - Brightness evaluation".

The polarity of a teach-in telegram can be configured with the "Functionality for teach-in" parameter. Depending on the configuration, it is possible to reset to the configured brightness threshold upon receiving the opposite object value (teach-in inactive). The previously learnt brightness threshold is lost. However, if the teach-in polarity is configured actively to "1" and "0", it will no longer be possible to switch back to the configured brightness threshold by means of this object during operation of the device! The new brightness threshold set with the teach-in function is retained until a new specification is made (switch-on brightness, teach-in function). Even a bus voltage failure will not reset the new brightness threshold. ETS programming resets the brightness level automatically to the ETS presettings if this is intended in the configuration (see below).

The disabling function has no influence on the teach-in function.

Brightness threshold for external motion signal

When used as a main unit, an external motion signal can be sent from the extension units to the device. If the motion evaluation is configured to "Brightness-dependent", the evaluation of the external motion detections can be influenced. The parameter

"Brightness-dependent on motion detection via external object" on the parameter page "FB x - Brightness evaluation" defines the behaviour when a motion telegram is received.

- "Only in the main unit":
External motion signals are evaluated by the main unit. The main unit only sends a telegram "At start of detection" if the brightness is below the brightness threshold set on the main unit.
- "In main unit and extension unit":
The extension unit sends motion signals only if the brightness falls below the brightness threshold set on the extension unit. The external motion signals are evaluated by the main unit. The main unit sends a telegram "At start of detection" also if the brightness is below the brightness threshold set on the main unit.

With brightness-independent motion evaluation, the external motion detections in a main unit are always evaluated.

Brightness threshold for an ETS programming operation

The parameter "Overwrite brightness threshold in device during ETS programming operation" determines whether an active brightness threshold previously set by an external object presetting or by the teach-in function is automatically overwritten by the brightness threshold configured in the ETS during an ETS programming operation. In the "Active" setting, the last value that was preset externally or by the teach-in function and is still active is replaced by the ETS specification. If "Deactivated", the brightness threshold last specified externally or by the teach-in function remains active even after an ETS programming operation.

The device always works with the value configured in the ETS if the parameter "Overwrite brightness threshold in the device during ETS programming" is set to "Deactivate" and no external presetting has been made yet - if provided for in the configuration - by means of the 2-byte object or by the teach-in function after the initial ETS commissioning. The ETS parameter only becomes invalid within the above configuration after an external presetting or after a teach-in procedure.

Switchover of the evaluation of the brightness threshold for brightness-dependent operation

It is possible to switch the evaluation of the brightness threshold off and on again during operation of the device by means of the 1-bit object "Activate/Deactivate brightness-independent operation". When using main units and extension units, the use of this object is fundamental in order to switch the main units to brightness-independent operation for output functions that are unlike the 1-bit data format. Consequently, the use of the object must be differentiated in the project design:

- Use as "Single device":
The object "Brightness-independent operation - Activate/Deactivate" is an input. A "1" telegram activates the brightness evaluation. A "0" telegram switches to brightness-independent operation.

After switching to brightness-independent operation by means of the object, the application does not automatically switch back to brightness-dependent operation at the end of a motion detection process.

- Use as "Main unit":
This includes the objects "Activate/Deactivate brightness-independent operation" once as an input and once as an output.
Input: A "1" telegram deactivates the evaluation of the brightness threshold. A "0" telegram enables the evaluation of the brightness threshold again. After switching over to brightness-independent operation by means of the object, the application does not automatically switch back to brightness-dependent operation at the end of a motion detection as would be the case in brightness-independent operation.
Output: The main unit uses this output to control the switchover of the evaluation of the brightness threshold of the extension unit(s) depending on its own evaluation of the brightness threshold. The application examples in this documentation show this more precisely.
Combined use of the input and output objects: If the main unit is switched to brightness-independent operation by means of the input object, the "Activate/Deactivate brightness-independent operation" object is no longer used to control the evaluation of the brightness threshold of the extension unit(s) (output function deactivated). No telegrams are then transmitted automatically from the main unit anymore until there is a switch back to brightness-dependent operation! To ensure that the main unit and extension unit(s) work correctly during the switch-over of the main unit to brightness-independent operation, the extension unit(s) must be switched simultaneously to brightness-independent operation by means of the object "Brightness-dependent operation Activate/Deactivate".
- Use as "Extension unit":
The "Activate/Deactivate brightness-dependent operation" object is an input. A "1" telegram deactivates the brightness threshold. A "0" telegram enables the brightness threshold again.

Switch-off brightness

The switch-off brightness is specified for brightness-dependent operation with the "Switch off when brightness threshold is exceeded by" parameter on the parameter page "FB x - Brightness evaluation". The switch-off brightness is calculated as follows:

Switch-off brightness = effective brightness threshold + switch-off when brightness threshold is exceeded by (in lux).

If the measured brightness exceeds the set switch-off brightness during an active motion detection, no further motions are evaluated. The device then transmits the configured telegram at the end of the detection process after the run-on time has elapsed or alternatively after a separately configurable delay time. The "Run-on time when reaching the switch-off brightness" parameter determines the type of delay time in this case.

The delay when reaching or exceeding the switch-off brightness is used for the debouncing of brief light reflexes and prevents faulty switching of the lighting.

If the switch-off brightness is fallen below again before the delay has elapsed, the device will abort the switch-off process. Detected movements will then retrigger the transmission delay.

With brightness-independent detection, no "Switch-off brightness" can be configured.

Teach-in function for switch-off brightness

The teach-in function makes it possible to preset the switch-off brightness externally. This function can be used by the ETS in parallel to the presetting of the switch-off brightness and allows for user-guided adjustment of the switch-off brightness to the lamp used. With the teach-in function, the currently measured brightness value is applied instantly by transmitting a corresponding telegram to the 1-bit object "Teach switch-off brightness" as a new switch-off brightness. This object can be configured if the "Teach-in function" parameter for the switch-off brightness is set to "active" on the parameter page "FB x - Brightness evaluation". The polarity of a teach-in telegram can be configured with the "Trigger" parameter. Depending on the configuration, it is possible to reset to the configured switch-off brightness upon receiving the opposite object value (Teach-in - Inactive). The switch-off brightness previously learned will be lost in the process. If, however, the trigger is configured actively to "1" and "0", it will not be possible to reset to the configured switch-off brightness anymore by means of this object during ongoing operation of the device! The new switch-off brightness set with the teach-in function is retained until a new teach-in operation is carried out. Even a bus voltage failure will not reset the new switch-off brightness.

The teach-in function is used to set an absolute brightness as switch-off brightness. When the brightness threshold is changed, the switch-off brightness set during the teach-in process remains unchanged in contrast to the configured switch-off hysteresis (switch-off when brightness threshold is exceeded by X lux). If the configured switch-off hysteresis is active, the resulting switch-off brightness (switch-off brightness + switch-off hysteresis) changes according to the brightness threshold set.

If the teach-in function learns a switch-off brightness that is too low, this will cause a light swing during operation (the lighting is switched on and off permanently). This will also happen if the switch-off brightness is below the brightness threshold. The same applies if after setting the switch-off brightness, the brightness threshold is adjusted in such a way that the interval between the brightness threshold and switch-off brightness is too low.

The disabling function has no influence on the teach-in function.

The parameter "Overwrite values during ETS download in the device - Switch-off brightness" is used to determine whether a switch-off brightness preset by teach-in is overwritten automatically by the switch-off brightness configured in the ETS during ETS programming. If the setting is "Active", the last switch-off brightness preset by teach-in and still active is replaced by the ETS presetting. If the setting is "Inactive", the last switch-off brightness preset by teach-in still remains active even after ETS programming.

If the parameter "Overwrite values during ETS download in the device" is set to "Inactive" and no teach-in has taken place yet after the initial commissioning - if provided for in the configuration - the device always works with the value configured in the ETS. The ETS parameter in the above configuration only becomes invalid after a teach-in process.

13.1.5.3.1 "Brightness evaluation" parameter

Function blocks (FB) -> FB x - General -> Brightness evaluation

These settings are only available if the function block's operating mode has previously been set to "brightness-dependent".

Functionality

(With internal motion detection) Brightness-dependent operation can be disabled via an object	Active Inactive
<p>In the default setting, the function block evaluates movements detected by means of an internal sensor on a brightness-dependent basis. This parameter enables the 'Brightness-dependent operation – Enable/Disable' object, which can be used to switch motion detection to brightness-dependent mode.</p> <p>"Active" The brightness is evaluated. In the idle state, motion triggers a new detection process only if the brightness falls below the set brightness threshold.</p> <p>"Inactive" The brightness is not evaluated. Each motion triggers a new detection process in the idle state.</p>	
Brightness dependent operation via object	Brightness-independent Brightness dependent
<p>This parameter can be used to activate or deactivate the evaluation when a motion detection is received.</p> <p>"Brightness-independent:" The brightness is not evaluated. When motion is detected, a telegram is sent brightness-independent.</p> <p>"Brightness-dependent" The brightness is evaluated. In motion detection mode, a telegram is sent brightness-independent whenever the brightness threshold is exceeded or reached.</p>	

Brightness source

Brightness measurement by	Internal sensor External sensor (object) Internal and external sensor (average value)
<p>The "Brightness measurement by" parameter specifies which sensor is used to determine the brightness.</p> <p>"Internal sensor": The sensor integrated in the device is activated. The brightness value is therefore determined only locally on the device.</p> <p>"External sensor (object)": The "External sensor" is a KNX brightness sensor or device with brightness detection connected by means of the 2-byte object "Brightness value - External".</p> <p>"Internal and external sensor (average value)": In these settings, the selected sources are combined with each other and an average value is calculated from the values. The setting of the "Weighting of the brightness value, internal to external" parameter is taken into account.</p> <p>This parameter is visible only if the "Use as" parameter is set to single device or main unit on the FB - General parameter page.</p>	
Weighting of measured values	10% to 90% 20% to 80% 30% to 70% 40% to 60% 50% to 50% 60% to 40% 70% to 30% 80% to 20% 90% to 10%
<p>The weighting of the measured brightness value of the internal and external sensor is defined here. This results in an overall value, which will be used for the further interpretation of the brightness.</p> <p>This achieves a more homogeneous brightness measurement in rooms with large differences in brightness.</p> <p>This parameter is visible only with "Brightness measurement by = "Internal and external sensor"!</p>	
"Brightness value" status object	Active Inactive
<p>The determined brightness value is sent to the bus by sending a brightness value to the 2-byte object "Active brightness value - Status", which can be enabled by this parameter. The value is output in lux.</p> <p>This parameter is visible only if the "Use as" parameter is set to single device or main unit on the FB - General parameter page.</p>	

Brightness threshold

(Trigger if motion is detected and brightness is lower than) At day / At night	10 ... 500 ... 2000 lux
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This parameter is used to set the brightness threshold in lux for day/night mode, below which a new detection process is triggered if the value falls below the threshold and there is motion in the idle state.

This parameter is visible only if the "Use as" parameter on the FB - General parameter page is set to single device or main unit and the "Day/night operation" function is set to active on the General parameter page.

Can be set via object	Active Inactive
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The brightness threshold in the device is reset by sending a brightness value to the 2-byte object "Switch-on brightness", which can be enabled by this parameter. The new value is retained until a new specification is made (externally by means of the object or the teach-in function).

An ETS programming operation resets a switch-on brightness value automatically to the ETS presettings if this is provided for in the configuration.

Teach-in function	Active Inactive
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With the teach-in function, the brightness value currently measured is adopted as the new brightness threshold without delay by sending a corresponding telegram to the 1-bit object "Switch-on brightness - Teach-in".

The object can be configured if this parameter is set to "Active".

Function for teach-in	0 = inactive / 1 = active 0 = active / 1 = inactive 0 = active / 1 = active
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The polarity of a teach-in telegram is configurable by this parameter. It is possible to reset to the configured limit value upon receiving the opposite object value (teach-in function inactive), depending on the configuration. The previously learnt brightness value is lost. If, however, the polarity is configured to "1"- and "0"-active, it is not possible anymore to reset to the configured brightness value via this object during ongoing operation of the device!

This parameter is visible only if the teach-in function is active.

Switch-off brightness

Evaluate switch-off brightness	Active Inactive
<p>This parameter is used to enable the evaluation of the switch-off brightness. Further parameters appear, which can be used to define the value of the switch-off brightness.</p> <p>This parameter is visible only if the "Use as" parameter is set to single device or main unit on the FB - General parameter page.</p>	
(Switch off when brightness threshold is exceeded by) At day / At night	10... 300 ...800 lux
<p>This parameter is used to set the brightness threshold in lux for day/night mode, above which no further movements are evaluated during active motion detection. The device then sends the configured telegram at the end of the detection after a delay time has elapsed.</p> <p>The delay time is set with the parameter "Run-on time after reaching switch-off brightness".</p> <p>This parameter is visible only if the "Evaluate switch-off brightness" parameter is set to active and the "Day/night operation" function is set to active on the General parameter page.</p>	
Teach-in function	Active Inactive
<p>With the teach-in function, the currently measured brightness value is applied instantly by transmitting a corresponding telegram to the 1-bit object "Teach switch-off brightness" as a new switch-off brightness.</p> <p>The object can be configured if this parameter is set to "Active".</p> <p>This parameter is visible only if the "Evaluate switch-off brightness" parameter is set to active.</p>	
Trigger (Function for teach-in)	0 = no takeover / 1 = brightness takeover 0 = brightness takeover / 1 = no takeover 0 = brightness takeover / 1 = brightness takeover
<p>The polarity of a teach-in telegram is configurable by this parameter. Depending on the configuration, it is possible to reset to the configured switch-off brightness value upon receiving the opposite object value (teach-in inactive). The switch-off brightness value previously learnt is lost. If, however, the polarity is configured to "1"- and "0"-active, it is not possible anymore to reset to the configured switch-off brightness value via this object during ongoing operation of the device!</p> <p>This parameter is visible only if the teach-in function is active.</p>	

Run-on time after reaching switch-off brightness	Like at end of detection Individual specification
<p>This parameter determines the run-on time to be used after the switch-off brightness is reached.</p> <p>"Like at end of detection": The settings that were set for the end of detection on the parameter page "FB - Start and end of detection" are used.</p> <p>"Individual specification": In this setting, an individual run-on time can be set for the run-on time. The settings under "End of detection" are no longer taken into account.</p> <p>This parameter is visible only if the "Evaluate switch-off brightness" parameter is set to active.</p>	

Individual specification	0 ... 5 ... 59 min 0 ... 59 s
<p>This parameter is used to determine how long the delay time is after the switch-off brightness is reached if the parameter "Run-on time after switch-off brightness is reached" is set to individual specification.</p> <p>Seconds (0 ... 59 s) and minutes (0 ... 59 min) can be set for this time.</p>	

Behaviour during ETS programming

Brightness threshold	Active Inactive
<p>This parameter is used to determine whether an active brightness threshold previously set by an external object specification or by the teach-in function is to be overwritten by the brightness threshold configured in the ETS during an ETS programming operation. In the "Active" setting, the last value that was specified externally or by the teach-in function and is still active is replaced automatically by the ETS specification. With "Inactive", the brightness threshold specified last externally or by teach-in remains active even after an ETS programming operation.</p> <p>This parameter is visible only if at least one of the parameters "Can be set via object" or the teach-in function is set to active for the brightness threshold.</p>	

Switch-off brightness	Active Inactive
<p>This parameter is used to determine whether an active switch-off brightness previously set by an external object specification or by the teach-in function is overwritten by the switch-off brightness configured in the ETS during an ETS programming operation. In the "Active" setting, the last value that was specified externally or by the teach-in function and is still active is replaced automatically by the ETS specification. If the setting is "Inactive", the last switch-off brightness preset externally or by teach-in still remains active even after ETS programming.</p> <p>This parameter is visible only if at least one of the parameters "Can set via object" or "Teach-in function" is set to active for the switch-off brightness.</p>	

13.1.5.3.2 Object list "Brightness evaluation"

Function	Name	Type	DPT	Flags
Brightness-dependent operation - Activate/De-activate	FB x - Input	1-bit	1,003	C, -, W, -, U
<p>1-bit object that can be used to switch the motion evaluation of the main unit to brightness-dependent mode.</p> <p>"Active"</p> <p>The brightness is evaluated. The "At start of detection" telegram is sent only if the brightness falls below the configured brightness threshold and motion is detected.</p> <p>"Deactivated"</p> <p>The brightness is not evaluated. Each motion detection process results in the transmission of the "At start of detection" telegram.</p>				

Function	Name	Type	DPT	Flags
Brightness-dependent operation - Activate/De-activate	FB x - Output	1-bit	1,003	C, R, -, T, A
<p>1-bit object that can be used by the main unit to set the switchover of the motion evaluation of the extension unit(s) depending on its own brightness evaluation. If the main unit is switched to brightness-dependent mode; by means of a telegram or at the start of detection, the extension unit(s) must simultaneously also be switched to brightness-dependent mode by means of this object for the main unit and extension unit(s) to function correctly.</p>				

Function	Name	Type	DPT	Flags
Brightness-dependent operation - Status	FB x - Output	1-bit	1,003	C, R, -, T, A
<p>1-bit object indicating whether brightness-dependent operation is enabled or disabled. This object can optionally act as an active signalling object or passive status object (read out object). As an active signalling object, the current status is transmitted once to the bus on each change of the brightness value, after ETS programming or after the bus voltage returns (optionally delayed).</p> <p>This object is visible only if the parameter "Brightness-independent operation can be activated via object" is set to active on the parameter page FB x - Brightness evaluation.</p>				

Function	Name	Type	DPT	Flags
External brightness sensor	FB x - Input	2-byte	9,004	C, -, W, -, U
<p>2-byte object used to couple an external KNX brightness sensor or a KNX device with brightness sensor. This allows several brightness sensors to be cascaded to measure the brightness. Possible range of values: 10 ... 2,000 lux</p> <p>This object is visible only if the "Brightness evaluation by" parameter is configured to "External sensor (object)" or "Internal and external sensor (average value)".</p>				

Function	Name	Type	DPT	Flags
Active brightness value - Status	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object for the feedback of the active brightness value of the function block. This object can optionally act as an active signalling object or passive status object (read out object). As an active signalling object, the current brightness value is transmitted once to the bus on each change of the brightness value, after ETS programming or after the bus voltage returns (optionally delayed). This object is visible only if the "Status objects brightness value" parameter is set to active on the parameter page FB x Brightness evaluation.

Function	Name	Type	DPT	Flags
Switch-on brightness - Preset	FB x - Input	2-byte	9,004	C, -, W, -, U

2-byte object used to specify the switch-on brightness for the function block. The specification is made in lux. The brightness value sent is adopted as the new switch-on brightness by sending a corresponding telegram to this object. This object is visible only if the "Can be set via object" parameter for the brightness threshold is active.

Function	Name	Type	DPT	Flags
Switch-on brightness - Teach	FB x - Input	1-bit	1,017	C, -, W, -, U

1-bit object used to triggering a teach-in process to learn the switch-on brightness. With the teach-in function, the effective brightness value is applied instantly by transmitting a corresponding telegram to this object as new switch-on brightness. The telegram polarity can be configured. This object is visible only if the teach-in function for the brightness threshold is active.

Function	Name	Type	DPT	Flags
Switch-on brightness - Status	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object used to feed back the active brightness threshold of the function block. This object can optionally act as an active signalling object or passive status object (read out object). As an active signalling object, the current brightness threshold is transmitted once to the bus each time the brightness value is changed after ETS programming or after the bus voltage returns (optionally delayed).

Function	Name	Type	DPT	Flags
Switch-off brightness - Preset	FB x - Input	2-byte	9,004	C, -, W, -, U

2-byte object used to specify the switch-off brightness for the function block. The specification is made in lux.

The transmitted brightness value is applied as new switch-off brightness by transmitting a corresponding telegram to this object.

This object is visible only if the "Can be set via object" parameter for the switch-off brightness is active.

Function	Name	Type	DPT	Flags
Switch-off brightness - Teach	FB x - Input	2-byte	9,004	C, -, W, -, U

1-bit object for triggering a teach-in operation for learning the switch-off brightness.

With the teach-in function, the effective brightness value is applied instantly by transmitting a corresponding telegram to this object as new switch-off brightness. The telegram polarity can be configured.

This object is visible only if the teach-in function for the switch-off brightness is active.

Function	Name	Type	DPT	Flags
Switch-off brightness -Status	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object used to feed back the active switch-off brightness of the function block. This object can optionally act as an active signalling object or passive status object (read out object). As an active signalling object, the current switch-off brightness is transmitted once to the bus each time the brightness value is changed after ETS programming or after the bus voltage returns (optionally delayed).

This object is visible only if the "Evaluate switch-off brightness" parameter on the parameter page FB x brightness evaluation is set to active.

13.1.5.4 Output functions

When used as a "Single device" and "Main unit", a function can be set for each output. The corresponding objects are provided for the set function and the reaction of the output at the start and end of detection can be set. No output functions are available when used as an "Extension unit". Only one cyclical telegram output by means of the "Motion" object is intended during the detection process.

Up to two output communication objects are available per function block via which the switching and control commands are transmitted on the bus to the KNX actuator, e.g. lighting system, room temperature control. Depending on the configured function (e.g. switching or staircase function), the data format of these objects is defined independently and adapted to the controllable units of the KNX system.

The functions of the outputs are defined separately on the parameter page "FB x - Output 1" and "FB x - Output 2". The available communication objects adapt depending on the configuration. The following functions can be configured:

- no function
- Switching
- Staircase function
- Switching with forced position
- Dimming value transmitter
- Scene extension unit
- Temperature value transmitter
- Brightness value transmitter
- Temperature, operating mode, other value transmitters

The behaviour of outputs 1 and 2 during detection of a motion, depending on the configured output function, can be configured separately. In the ETS on the parameter pages of the outputs, it is possible to define for each output whether a new telegram should be transmitted to the bus at the beginning of a new motion detection. The corresponding commands (e.g. switching commands or brightness values) are then configurable depending on the set function.

If a telegram is to be sent at the beginning of a detection, cyclical transmission during detection or telegram triggering with retriggering "Resend upon movement during run-on time" can be configured alternatively (see below). If none of the options have been activated, a telegram is only sent once at the start of detection.

Cyclical transmission:

Cyclical telegram output is activated during a detection process by setting the parameter "Cyclical transmission during detection" to "Active". The detection process includes a continuous run-on time. This means that the telegram is sent also during the run-on time. No telegram is sent while a switch-off warning is in progress.

Cyclical transmission is activated by the "Cyclical transmission during detection" parameter. The "Cycle time" parameter defines the time interval between the telegrams.

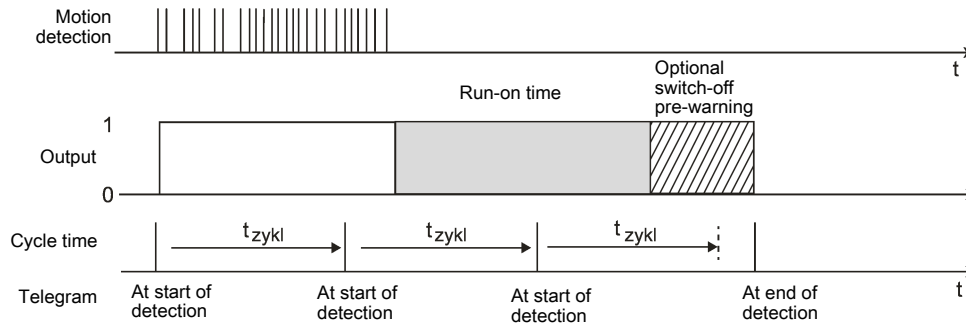


Figure 34: Cyclical transmission during a motion detection

Triggering of a telegram when retriggering:

When the first movement is detected, the "At start of detection" telegram is sent and the run-on time is started. If the cyclical transmission is not activated, an output can repeat the telegram at the beginning of the transmission when retriggering. Retriggering takes place when the device detects a new motion during an ongoing run-on time. To limit the number of telegrams, no telegram is sent within 10 seconds if motion is detected again.

The telegram triggering when retriggered is activated by the "Resend upon movement within the run-on time" parameter in the ETS.

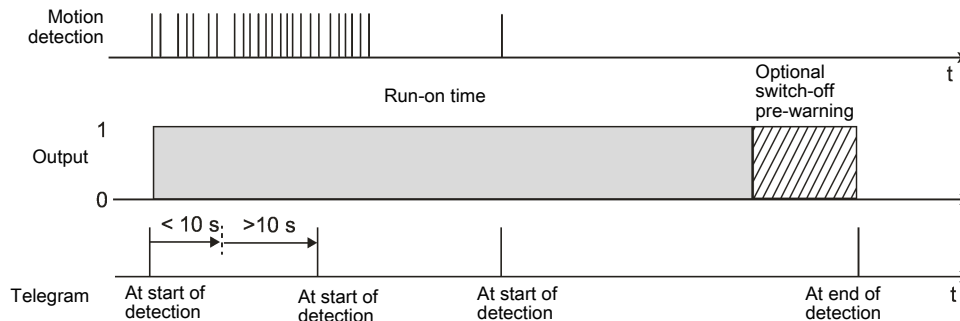


Figure 35: Send if motion is detected during the run-on time.

A cyclical telegram repetition or the triggering of a telegram when retriggering during an active motion detection is also possible in alert operation.

13.1.5.4.1 "Output 1/2" parameter

These parameter pages are available for each activated function block (FB) and each output separately.

Function blocks (FB) -> FB x - General -> Output

Function	no function Switching Staircase function Switching with forced position Dimming value transmitter Light scene extension Temperature value transmitter Brightness value transmitter Temperature operating mode Additional value transmitters
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When used as a "Single device" and "Main unit", a function can be set for each output, depending on the "Application" parameter. The corresponding objects are provided for the set function of the output and the reaction of the output at the start and end of detection can be set.

No output functions are available when used as an "Extension unit". Only one cyclical telegram output by means of the "Motion" object is intended during the detection process.

Further parameters appear, which are described in the following.

No function: No parameters and objects are available for the output.

Switching: Switching: 1-bit switching telegrams (ON/OFF) can be output. Example application: Switching lighting.

Staircase function: 1-bit switching telegrams (ON, OFF) are output cyclically in order to trigger the run-on time in the activated KNX actuator. Example application: Switching staircase lighting.

Switching with forced position: 2-bit switching telegrams can be output for the forced position of an actuator channel in accordance with DPT 2.001. This makes it possible to set switching states with a higher priority (ON, OFF). Example application: Switching lighting by forced control (cleaning lighting, service light).

Dimming value transmitter: 1-byte brightness value telegrams in accordance with DPT 5.001 (0...100 %) can be output. Example application: Dimming lighting.

Scene extension unit: 1-byte telegrams to call scenes can be output in accordance with DPT 18.001 (1 ... 64) are issued. Example application: Calling up actuator scenes (e.g. TV lighting).

Temperature value transmitter: 2-byte temperature value telegrams in accordance with DPT 9.001 (0...+40 °C configurable in 1 °C-increments) can be output. Example application: Preset temperature setpoints.

Brightness value transmitter: 2-byte brightness value telegrams in accordance with DPT 9.004 (0...2,000 Lux configurable in 50-Lux increments) can be output. Example application: Preset lighting setpoints.

Temperature operating mode: 1-byte telegrams can be output to switch over the operating mode of a KNX room temperature controller in accordance with DPT 20.102 (auto, comfort, standby, night, frost/heat protection). Example application: Influence room temperature control.

Other value transmitters: Various telegrams can be output, which are defined by the parameter "Data point type | Value range". Example application: setting the brightness and colour temperature of lamps.

Output 2 cannot be configured in the application "Presence detector - Monitoring".

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The function for output 1 is permanently set to report.

Report: 1-bit telegrams with the value zero or one can be output. Example application: presence monitoring in a retirement home.

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Data point type Value range	DPT 5.010 0 ... 255 DPT 5.003 0 ... 360° DPT 5.004 0 ... 255% DPT 6010 -128 ... 127 DPT 7.001 0 ... 65535 DPT 7.600 1000 ... 10000 K DPT 8.001 -32768 ... 32767 DPT 249.600 colour temperature + brightness RGB/HSV (RGB: DPT 232.600, HSV: DPT5.003, DPT 5.001, DPT 5.001) RGBW/HSVW (RGBW: DPT 251.600, HSV: DPT5.003, DPT 5.001, DPT 5.001, DPT 5.001)
<p>This parameter is used to define the data point type and value range that can be used for the output function if the "Function" parameter is set to other value transmitters. The following parameters can be displayed, depending on the setting of this parameter.</p>	

Commands at the start of detection

Start of detection	No reaction "Output function" e.g.: switching
<p>When used as a "Single device" and "Main unit", a telegram (corresponding to the configured function) can be sent separately via each output at the start of detection. This parameter defines whether a telegram is transmitted.</p> <p>"No reaction" No telegram is sent at the start of detection.</p> <p>"Output function" e.g. switching When the detection process begins, a telegram with the configured state or the configured values is sent, depending on the function of the output. Further parameters appear, which are described in the following.</p>	
Switching	OFF ON
<p>This parameter is used to define whether an OFF or ON telegram is sent at the start of the detection for the "Switching" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Switching) At day	OFF ON
<p>This parameter is used to define whether an OFF or ON telegram is to be sent for the "Switching" output functions in day mode at the start of detection.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Switching) At night	OFF ON
<p>This parameter is used to define whether an OFF or an ON telegram is to be sent for the "Switching" output functions at the start of detection in night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Staircase function	ON
<p>This parameter defines the telegram at the beginning of detection for the "Staircase function" output function. The parameter is set permanently to "ON".</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Staircase function) At night	ON
<p>This parameter defines the telegram at the beginning of detection for the "Staircase function" output function for day operation. The parameter is set permanently to "ON".</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Staircase function) At night	ON
<p>This parameter is used to define the telegram at the start of detection for the "Staircase function" output functions for night mode. The parameter is set permanently to "ON".</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

Priority control	Forcing active, ON Forcing active OFF Forcing inactive
<p>This parameter defines the telegram at the beginning of the detection for the "Switching with forced position" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page</p>	
(Forced position) At day	Forcing active, ON Forcing active OFF Forcing inactive
<p>This parameter is used to define the telegram at the start of detection for the "Switching with forced position" for the output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
(Forced position) At night	Forcing active, ON Forcing active OFF Forcing inactive
<p>This parameter is used to define the telegram at the start of detection for the "Switching with forced position" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
Dimming value	0 ... 100%
<p>This parameter is used to define the dimming value at the start of detection for the "Dimming value transmitter" output functions. This entry is made.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page</p>	
(Dimming value) At day	0 ... 100%
<p>This parameter is used to define the dimming value at the start of detection for the "Dimming value transmitter" output functions for day mode. This entry is made in per cent.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	

(Dimming value) At night	0 ... 100%
<p>This parameter is used to define the dimming value at the start of detection for the "Dimming value transmitter" output functions for night mode. This entry is made in per cent.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
Scene number	1 ... 64
<p>This parameter is used to define the scene number at the start of detection for the "Scene extension unit" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Scene number) At day	1 ... 64
<p>This parameter is used to define the scene number at the start of detection for the "Scene extension unit" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
(Scene number) At night	1 ... 64
<p>This parameter is used to define the scene number at the start of detection for the "Scene extension unit" output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
Temperature value	0 ... 23 ... 40 °C in 1 °C increments
<p>This parameter is used to define the temperature value at the start of detection for the "Temperature value transmitter" output functions. This entry is made in °C.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page</p>	
(Temperature value) At day	0 ... 23 ... 40 °C in 1 °C increments
<p>This parameter is used to define the temperature value at the start of detection for the "Temperature value transmitter" output functions for day mode. This entry is made in °C.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	

(Temperature value) At night	0 ... 23 ... 40 °C in 1 °C increments
<p>This parameter is used to define the temperature value at the start of detection for the "Temperature value transmitter" output functions for night mode. This entry is made in °C.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
Brightness value	0 ... 1000 ... 2000 lux in 50-lux increments
<p>This parameter is used to define the brightness value at the start of detection for the "Brightness value transmitter" output functions. This entry is made in LUX. The increment is 50 lux.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page</p>	
(Brightness value) At day	0 ... 1000 ... 2000 lux
<p>This parameter is used to define the brightness value at the start of detection for the "Brightness value transmitter" output functions for day mode. This entry is made in LUX. The increment is 50 lux.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
(Brightness value) At night	0 ... 1000 ... 2000 lux
<p>This parameter is used to define the brightness value at the start of detection for the "Brightness value transmitter" output functions for night mode. This entry is made in LUX. The increment is 50 lux.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

Operating mode	Auto Comfort Standby Night Frost/heat protection
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This parameter is used to define the operating mode to be sent at the start of detection for the "Temperature operating mode" output functions. The entry is made as a decimal value:

0 = auto

1 = Comfort

2 = standby

3 = Night

4 = Frost/heat protection

This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page

(Operating mode) At day	Auto Comfort Standby Night Frost/heat protection
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This parameter defines the operating mode to be sent for the "Temperature operating mode" output functions at the start of detection for day mode. The entry is made as a decimal value:

0 = auto

1 = Comfort

2 = standby

3 = Night

4 = Frost/heat protection

This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page

(Operating mode) At night	Auto Comfort Standby Night Frost/heat protection
<p>This parameter is used to define the operating mode to be used for the "Temperature operating mode" output functions at the start of detection for night mode. This parameter is used to define the operating mode to be sent at the start of detection for the "Temperature operating mode" output functions. The entry is made as a decimal value:</p> <p>0 = auto 1 = Comfort 2 = standby 3 = Night 4 = Frost/heat protection</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

"Additional value transmitters" function

Value	Depending on the data point type
<p>Different data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration. This parameter is used to define the value the telegram is to send for the "Additional value transmitters" output function at the end of detection.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page</p>	

(Value) At day	Depending on the data point type
<p>This parameter is used to define the telegram at the beginning of detection for the "Other value transmitters" output function for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	

(Value) At night	Depending on the data point type
<p>This parameter is used to define the telegram at the beginning of detection for the "Other value transmitters" output function for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	

Commands at the end of detection

At end of detection	No reaction "Output function" e.g.: switching
When used as a "Single device" and "Main unit", a telegram (corresponding to the configured function) can be sent separately via each output at the end of the detection. This parameter defines whether a telegram is transmitted. "No reaction" No telegram is sent at the end of the detection process. "Output function" e.g. switching At the end of the detection process, a telegram with the configured state or the configured values is sent, depending on the function of the output. Further parameters appear, which are described in the following.	
Switch-off warning	Active Inactive
This parameter is used to activate the switch-off pre-warning for the applications "Motion detector - Lighting" and "Presence detector - Lighting". The switch-off warning can be used only if the "Function" parameter is set to dimming value transmitter or brightness value transmitter. When the function is activated, the function block first sends a configured dimming value / brightness value after the run-on time has elapsed. After the "duration" of the switch-off pre-warning has elapsed, the "At the end of detection" telegram is sent.	
(Switch-off warning) dimming value	0 ... 100%
This parameter is used to define the dimming value during the current switch-off pre-warning for the "Dimming value transmitter" output functions. This entry is made in per cent. This parameter is visible only if the Switch-off pre-warning parameter is set to active and "Day/night switchover" is set to inactive on the General parameter page.	
(Switch-off warning dimming value) At day	0 ... 100%
This parameter is used to define the dimming value during the current switch-off pre-warning for the "Dimming value transmitter" output functions for day mode. This entry is made in per cent. This parameter is visible only if the Switch-off pre-warning parameter is set to active and "Day/night switchover" is set to active on the General parameter page.	
(Switch-off warning dimming value) At night	0 ... 100%
This parameter is used to define the dimming value during the current switch-off pre-warning for the "Dimming value transmitter" output functions for night mode. This entry is made in per cent. This parameter is visible only if the Switch-off pre-warning parameter is set to active and "Day/night switchover" is set to active on the General parameter page.	

Brightness value (switch-off pre-warning)	0 ... 750 ... 2000 lux in 50-lux increments
<p>This parameter is used to define the brightness value during the current switch-off pre-warning for the "Brightness value transmitter" output functions. This entry is made in LUX. The increment is 50 lux.</p> <p>This parameter is visible only if the Switch-off pre-warning parameter is set to active and "Day/night switchover" is set to inactive on the General parameter page.</p>	
(Brightness value switch-off pre-warning) At day	0 ... 750 ... 2000 lux in 50-lux increments
<p>This parameter is used to define the brightness value during the current switch-off pre-warning for the "Brightness value transmitter" output functions for day mode. This entry is made in LUX. The increment is 50 lux.</p> <p>This parameter is visible only if the Switch-off pre-warning parameter is set to active and "Day/night switchover" is set to active on the General parameter page.</p>	
(Brightness value switch-off pre-warning) At night	0 ... 750 ... 2000 lux in 50-lux increments
<p>For day mode, This parameter is used to define the brightness value during the current switch-off pre-warning for the "Brightness value transmitter" output functions for night mode. This entry is made in LUX. The increment is 50 lux.</p> <p>This parameter is visible only if the Switch-off pre-warning parameter is set to active and "Day/night switchover" is set to active on the General parameter page.</p>	
Switching	OFF ON
<p>This parameter defines the telegram at the end of detection for the "Switching" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Switching) At day	OFF ON
<p>This parameter is used to define the telegram at the end of detection for the "Switching" output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

(Switching) At night	OFF ON
<p>This parameter is used to define the telegram at the end of detection for the "Switching" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Staircase function	OFF
<p>This parameter defines the telegram at the end of detection for the "Staircase function" output function. The parameter is set permanently to "OFF".</p> <p>This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Staircase function) At night	OFF
<p>This parameter defines the telegram at the end of detection for the "Staircase function" output function for day operation. The parameter is set permanently to "OFF".</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Staircase function) At night	OFF
<p>This parameter is used to define the telegram at the start of detection for the "Staircase function" output functions for night mode. The parameter is set permanently to "On".</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Priority control	Forcing active, ON Forcing active OFF Forcing inactive
<p>This parameter defines the telegram at the end of detection for the "Switching with forced position" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Forced position) At day	Forcing active, ON Forcing active OFF Forcing inactive
<p>This parameter is used to define the telegram at the end of detection for the "Switching with forced position" for the output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Forced position) At night	Forcing active, ON Forcing active OFF Forcing inactive
<p>This parameter is used to define the telegram at the end of detection for the "Switching with forced position" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page</p>	
Dimming value	0 ... 100%
<p>This parameter defines the telegram at the end of detection for the "Dimming value transmitter" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Dimming value) At day	0 ... 100%
<p>This parameter is used to define the telegram at the end of detection for the "Dimming value transmitter" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Dimming value) At night	0 ... 100%
<p>This parameter is used to define the telegram at the end of detection for the "Dimming value transmitter" output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

Scene number	1 ... 64
<p>This parameter is used to define the telegram at the end of the detection process for the "Scene extension unit" output functions.</p> <p>This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Scene number) At day	1 ... 64
<p>This parameter is used to define the telegram at the end of the detection process for the "Scene extension unit" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Scene number) At night	1 ... 64
<p>This parameter is used to define the telegram at the end of the detection process for the "Scene extension unit" output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Temperature value	0 ... 21 ... 40 °C
<p>This parameter defines the telegram at the beginning of detection for the "Temperature value transmitter" output function.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Temperature value) At day	0 ... 21 ... 40 °C
<p>This parameter is used to define the telegram at the start of detection for the "Temperature value transmitter" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Temperature value) At night	0 ... 21 ... 40 °C
<p>This parameter is used to define the telegram at the start of detection for the "Temperature value transmitter" output functions for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

Brightness value	0 ... 2000 lux in 50-lux increments
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This parameter defines the telegram at the end of detection for the "Brightness value transmitter" output functions.

This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.

(Brightness value) At day	0 ... 2000 lux
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This parameter is used to define the telegram at the end of detection for the "Brightness value transmitter" output functions for night mode.

This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.

(Brightness value) At night	0 ... 2000 lux
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This parameter is used to define the telegram at the end of detection for the "Brightness value transmitter" output functions for day mode.

This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.

Operating mode	Auto Comfort Standby Night Frost/heat protection
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This parameter is used to define the telegram at the end of the detection process for the "Temperature operating mode" output functions.

This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.

(Operating mode) At day	Auto Comfort Standby Night Frost/heat protection
<p>This parameter is used to define the telegram at the end of the detection process for the output functions "Temperature operating mode" for day mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

(Operating mode) At night	Auto Comfort Standby Night Frost/heat protection
<p>This parameter is used to define the telegram at the end of the detection process for the "Temperature operating mode" output functions for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

"Additional value transmitters" function

Value	Depending on the data point type
<p>Different data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration. This parameter defines the value the telegram sends for the "Additional value transmitters" output function at the end of detection.</p> <p>This parameter is visible only if a telegram is to be sent at the end of the detection process and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Value) At day	Depending on the data point type
<p>This parameter is used to define the telegram at the end of the detection process for the "Other value transmitters" output function for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

(Value) At night	Depending on the data point type
<p>This parameter is used to define the telegram at the end of the detection process for the "Other value transmitters" output function for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the end of detection and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

Output values can be set via object	Active Inactive
<p>This parameter enables the objects that can be used to set the behaviour at the start and end of the detection process.</p> <p>This parameter is not provided for the staircase function and other value transmitters RGB/HSV and RGBW/HSVW.</p>	

Transmission behaviour

Cyclical transmission during detection	Active Inactive
<p>"Active"</p> <p>The "At start of detection" telegram is sent cyclically during an ongoing detection process. The detection process also includes a run-on time. This means that the telegram is sent also during the run-on time. No telegram is sent while a switch-off warning is in progress.</p> <p>"Inactive"</p> <p>A telegram is sent only once at the start of the detection process.</p> <p>When used as an extension unit, this parameter is permanently set to active.</p> <p>This parameter is visible only if a telegram is to be sent at the start of a detection process and the parameter "Resend upon motion within the run-on time" is set to inactive.</p>	
Cycle time	0 ... 23 h 0 ... 59 min 0 ... 25 ...59 s
<p>This parameter is used to set the time interval at which the "At start of detection" telegram is sent. Hours (0 ... 23 h), minutes (0 ... 59 min) and seconds (0 ... 59 s) can be set for the cycle time. The minimum cycle time is 3 seconds.</p> <p>The parameter is visible only if the "Cyclical transmission during detection" parameter is set to active.</p>	

Re-send upon movement during run-on time	Active Inactive
<p>"Active"</p> <p>When the first movement is detected, the "At start of detection" telegram is sent and the run-on time is started. The "At start of detection" telegram is also sent during the current run-on time and a new detection process.</p> <p>To limit the number of telegrams, no telegram is sent within 10 seconds if motion is detected again.</p> <p>No telegram is sent while a switch-off warning is in progress.</p> <p>"Inactive"</p> <p>A telegram is sent only once at the start of the detection process.</p> <p>This parameter is not present when used as an extension unit.</p> <p>The parameter is visible only if the "Cyclical transmission during detection" parameter is set to inactive.</p>	

Behaviour during ETS programming

(Overwrite values in device during ETS programming) Output values	Inactive Active
<p>This parameter must be activated if the values set by means of an object are to be overwritten with the values set in the ETS after an ETS programming operation.</p> <p>This parameter is visible only if the "Output values can be set via object" parameter is set to active.</p>	

13.1.5.4.2 Object list "Output 1 / 2"

The objects are available for each output of a function block separately .
Output 2 cannot be used in the "Presence detector - Monitoring" application.

Switching

Function	Name	Type	DPT	Flags
Output 1 / 2 - Start of detection - Switching	FB x - Input	1-bit	1,001	C, -, W, -, U

1-bit object that can be used to specify a value (0 = OFF, 1 = ON) for the telegram at the "Start of detection" by means of a telegram to this object. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "switching".

Function	Name	Type	DPT	Flags
Output 1 / 2 - Start of detection - Switching - Status	FB x - Output	1-bit	1,001	C, R, -, T, A

1-bit object used to send the active value (ON, OFF) for the telegram at the "Start of detection" to the bus.

This object is only visible if the function of the output is configured to "switching".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Switching	FB x - Input	1-bit	1,001	C, -, W, -, U

1-bit object that can be used to specify a value (0 = OFF, 1 = ON) for the telegram at the "End of detection" by means of a telegram to this object. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "switching".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Switching - Status	FB x - Output	1-bit	1,001	C, R, -, T, A

1-bit object that can be used to send the active value (0 = OFF, 1 = ON) for the telegram at the "End of detection" to the bus.

This object is only visible if the function of the output is configured to "switching".

Function	Name	Type	DPT	Flags
Output 1/2 – Switching	FB x - Output	1-bit	1,001	C, R, -, T, A
1-bit object via which the output of a function block outputs the switching commands to the KNX actuator (e.g. switch actuator).				
This object is only visible if the function of the output is configured to "switching" and day/night switchover is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Switching	FB x - Output	1-bit	1,001	C, R, -, T, A
1-bit object via which the output of a function block outputs the switching commands to the KNX actuator (e.g. switch actuator) in day mode.				
This object is only visible if the function of the output is configured to "switching" and day/night switchover is activated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Switching	FB x - Output	1-bit	1,001	C, R, -, T, A
1-bit object via which the output of a function block outputs the switching commands to the KNX actuator (e.g. switch actuator) in night mode.				
This object is only visible if the function of the output is configured to "switching" and day/night switchover is activated.				

Staircase function

Function	Name	Type	DPT	Flags
Output 1/2 - Staircase switching	FB x - Output	1-bit	1,010	C, R, -, T, A
1-bit object used by the output of a function block to output the staircase commands to the KNX actuators (e.g. switch actuator).				
This object is only visible if the function of the output is configured to "Staircase" and day/night switchover is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Staircase switching	FB x - Output	1-bit	1,010	C, R, -, T, A
1-bit object used by the output of a function block to output the staircase commands to the KNX actuators (e.g. switch actuator) in day mode.				
This object is only visible if the output function is set to "Stairwell" and the day/night switching function is enabled.				

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Staircase switching	FB x - Output	1-bit	1,010	C, R, -, T, A

1-bit object used by the output of a function block in night mode to output the staircase commands to the KNX actuators (e.g. switch actuator) in night mode.

This object is only visible if the output function is set to "Stairwell" and the day/night switching function is enabled.

Switching with forced position

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Forced position	FB x - Input	2-bit	2,001	C, -, W, -, U

2-bit object that can be used to specify a value for the telegram at the "Start of detection" by means of a telegram to this object. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "Switching with forced position".

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Forced position - Status	FB x - Output	2-bit	2,001	C, R, -, T, A

2-bit object used to send the active value for the telegram at the "Start of detection" to the bus.

This object is only visible if the function of the output is configured to "Switching with forced position".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Forced position	FB x - Input	2-bit	2,001	C, -, W, -, U

2-bit object that can be used to specify a value for the telegram at the "End of detection" by means of a telegram to this object. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "Switching with forced position".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Forced position - Status	FB x - Output	2-bit	2,001	C, R, -, T, A

2-bit object used to send the active value for the telegram at the "End of detection" to the bus.

This object is only visible if the function of the output is configured to "Switching with forced position".

Function	Name	Type	DPT	Flags
Output 1/2 - Forced position	FB x - Output	2-bit	2,001	C, R, -, T, A

2-bit object used by the output of a function block to output the telegrams for switching with forced position to the KNX actuators (e.g. switch actuator).

This object is only visible if the function of the output is configured to "Switching with forced position" and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Forced position	FB x - Output	2-bit	2,001	C, R, -, T, A

2-bit object used by the output of a function block to output the telegrams for switching with forced position to the KNX actuators (e.g. switch actuator) in day mode.

This object is only visible if the function of the output is configured to "Switching with forced position" and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Forced position	FB x - Output	2-bit	2,001	C, R, -, T, A

2-bit object used by the output of a function block to output the telegrams for switching with forced position to the KNX actuators (e.g. switch actuator) in night mode.

This object is only visible if the function of the output is configured to "Switching with forced position" and day/night switchover is activated.

Dimming value transmitter

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Dimming value	FB x - Input	1-byte	5,001	C, -, W, -, U

1-byte object that can be used to specify a dimming value for the telegram at the "Start of detection" by means of a telegram to this object. This entry is made in per cent. The value range is 0 ... 100%. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "Dimming value".

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Dimming value - Status	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object used to send the active dimming value for the telegram at the "Start of detection" to the bus. The output is in per cent.

This object is only visible if the function of the output is configured to "Dimming value".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Dimming value	FB x - Input	1-bit	5,001	C, -, W, -, U

1-byte object that can be used to specify a dimming value for the telegram at the "Start of detection" by means of a telegram to this object. This entry is made in per cent. The value range is 0 ... 100%. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "Dimming value".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Dimming value - Status	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object used to send the active dimming value for the telegram at the "End of detection" to the bus. The output is in per cent. The value range is 0 ... 100%.

This object is only visible if the function of the output is configured to "Dimming value".

Function	Name	Type	DPT	Flags
Output 1/2 - Dimming value	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object used by the output of a function block to output the dimming value to the KNX actuators (e.g. dimming actuator). The output is in per cent. The value range is 0 ... 100%.

This object is only visible if the function of the output is configured to "Dimming value" and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Dimming value	FB x - Output	1-byte	5,001	C, R, -, T, A
<p>1-byte object used by the output of a function block to output the dimming value to the KNX actuators (e.g. dimming actuator) in day mode. The output is in per cent. The value range is 0 ... 100%.</p> <p>This object is only visible if the output function is set to "Dimming value" and the day/night switching function is enabled.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Dimming value	FB x - Output	1-byte	5,001	C, R, -, T, A
<p>1-byte object used by the output of a function block to output the dimming value to the KNX actuators (e.g. dimming actuator) in night mode. The output is in per cent. The value range is 0 ... 100%.</p> <p>This object is only visible if the output function is set to "Dimming value" and the day/night switching function is enabled.</p>				

Scene extension unit

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Scene extension unit	FB x - Input	1-byte	17,001	C, -, W, -, U
<p>1-byte object that can be used to specify a scene number for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is 0 ... 64. The scene number is valid until a new scene number is received. If the configured scene number from the ETS is to be used again, an ETS programming operation can be carried out if configured. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is only visible if the function of the output is configured to "Scene extension unit".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Scene extension unit - Status	FB x - Output	1-byte	17,001	C, R, -, T, A
<p>1-byte object used to send the active scene number for the telegram at the "Start of detection" to the bus. The output is a decimal value. The value range is 0 ... 64.</p> <p>This object is only visible if the function of the output is configured to "Scene extension unit".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Scene extension unit	FB x - Input	1-byte	17,001	C, -, W, -, U

1-byte object that can be used to specify a scene number for the telegram at the "End of detection" by means of a telegram to this object. This entry is made in percent. The value range is 0 ... 64. The scene number is valid until a new scene number is received. If the configured scene number from the ETS is to be used again, an ETS programming operation can be carried out if configured. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "Scene extension unit".

Function	Name	Type	DPT	Flags
Output 1/2 - At end of detection - Scene extension unit - Status	FB x - Output	1-byte	17,001	C, R, -, T, A

1-byte object used to send the active scene number for the telegram at the "End of detection" to the bus. The value range is 0 ... 64.

This object is only visible if the function of the output is configured to "Scene number".

Function	Name	Type	DPT	Flags
Output 1/2 - Scene extension unit	FB x - Output	1-byte	17,001	C, R, -, T, A

1-byte object used by the output of a function block to output the scene number to the KNX actuators (e.g. dimming actuator). The output is a decimal value. The value range is 0 ... 64.

This object is only visible if the output function is set to "Scene control" and the day/night switching function is disabled.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Scene extension unit	FB x - Output	1-byte	17,001	C, R, -, T, A

1-byte object used by the output of a function block to output the scene number to the KNX actuators (e.g. dimming actuator) in day mode. The output is a decimal value. The value range is 0 ... 64.

This object is only visible if the function of the output is configured to "Scene extension unit" and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Scene extension unit	FB x - Output	1-byte	17,001	C, R, -, T, A
<p>1-byte object used by the output of a function block in night mode to output the scene number to the KNX actuators (e.g. dimming actuator). The output is a decimal value. The value range is 0 ... 64.</p> <p>This object is only visible if the function of the output is configured to "Scene extension unit" and day/night switchover is activated.</p>				

Temperature value transmitter

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Temperature value	FB x - Input	2-byte	9,001	C, -, W, -, U
<p>2-byte object that can be used to specify a temperature value for the telegram at the "start of detection" by means of a telegram to this object. This entry is made in degrees Celsius. The value range is 0 ... 40°C. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is only visible if the function of the output is configured to "temperature value transmitter".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Temperature value - Status	FB x - Output	2-byte	9,001	C, R, -, T, A
<p>2-byte object used to send the active temperature value for the telegram at the "start of detection" to the bus. The output is in degrees Celsius. The value range is 0 ... 40°C.</p> <p>This object is only visible if the function of the output is configured to "temperature value transmitter".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Temperature value	FB x - Input	2-byte	9,001	C, -, W, -, U
<p>2-byte object that can be used to specify a temperature value for the telegram at the "start of detection" by means of a telegram to this object. This entry is made in degrees Celsius. The value range is 0 ... 40°C. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is only visible if the function of the output is configured to "temperature value transmitter".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Temperature value - Status	FB x - Output	2-byte	9,001	C, R, -, T, A
<p>2-byte object used to send the active temperature value for the telegram at the "end of detection" to the bus. The output is in degrees Celsius. The value range is 0 ... 40°C.</p> <p>This object is only visible if the function of the output is configured to "temperature value transmitter".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Temperature value	FB x - Output	2-byte	9,001	C, R, -, T, A
<p>2-byte object used by the output of a function block to output the temperature value to the KNX actuators or sensors (e.g. room temperature controller). The output is in degrees Celsius. The value range is 0 ... 40°C.</p> <p>This object is only visible if the function of the output is configured to "Temperature value transmitter" and day/night switchover is deactivated.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Temperature value	FB x - Output	v	9,001	C, R, -, T, A
<p>2-byte object used by the output of a function block to output the temperature value to the KNX actuators or sensors (e.g. room temperature controller) in day mode. The output is in degrees Celsius. The value range is 0 ... 40°C.</p> <p>This object is only visible if the function of the output is configured to "Temperature value transmitter" and day/night switchover is activated.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Temperature value	FB x - Output	v	9,001	C, R, -, T, A
<p>2-byte object used by the output of a function block to output the temperature value to the KNX actuators or sensors (e.g. room temperature controller) in night mode. The output is in degrees Celsius. The value range is 0 ... 40°C.</p> <p>This object is only visible if the function of the output is configured to "Temperature value transmitter" and day/night switchover is activated.</p>				

Brightness value transmitter

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Brightness value	FB x - Input	2-byte	9,004	C, -, W, -, U

2-byte object that can be used to specify a brightness value for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made in lux. The value range is 0 ... 2000 lux. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "brightness value transmitter".

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Brightness value - Status	FB x - Output	v	9,004	C, R, -, T, A

2-byte object used to send the active brightness value for the telegram at the "Start of detection" to the bus. The output is in lux. The value range is 0 ... 2000 lux.

This object is only visible if the function of the output is configured to "brightness value transmitter".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Brightness value	FB x - Input	2-byte	9,004	C, -, W, -, U

2-byte object that can be used to specify a brightness value for the telegram at the "End of detection" by means of a telegram to this object. The entry is made in lux. The value range is 0 ... 2000 lux. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is only visible if the function of the output is configured to "brightness value transmitter".

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Brightness value - Status	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object used to send the active brightness value for the telegram at the "End of detection" to the bus. The output is in lux. The value range is 0 ... 2000 lux.

This object is only visible if the function of the output is configured to "brightness value transmitter".

Function	Name	Type	DPT	Flags
Output 1/2 - Brightness value	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object used by the output of a function block to output the brightness value to the KNX actuators or sensors (e.g. external constant light controller). The output is in lux. The value range is 0 ... 2000 lux.

This object is only visible if the function of the output is configured to "Brightness value transmitter" and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Brightness value	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object used by the output of a function block to output the brightness value to the KNX actuators or sensors (e.g. external constant light controller) in day mode. The output is in lux. The value range is 0 ... 2000 lux.

This object is only visible if the function of the output is configured to "Brightness value transmitter" and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Brightness value	FB x - Output	2-byte	9,004	C, R, -, T, A

2-byte object used by the output of a function block to output the brightness value to the KNX actuators or sensors (e.g. external constant light controller) in night mode. The output is in lux. The value range is 0 ... 2000 lux.

This object is only visible if the function of the output is configured to "Brightness value transmitter" and day/night switchover is activated.

Temperature operating mode

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Operating mode	FB x - Input	1-byte	20,102	C, -, W, -, U
<p>1-byte object that can be used to specify the temperature operating mode for the telegram at the "start of detection" by means of a telegram to this object. The entry is made as a decimal value:</p> <p>0 = auto 1 = Comfort 2 = standby 3 = Night 4 = Frost/heat protection</p> <p>This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Operating mode - Status	FB x - Output	1-byte	20,102	C, R, -, T, A
<p>1-byte object used to send the active temperature operating mode for the telegram at the "start of detection" to the bus. The output is in lux.</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Operating mode	FB x - Input	1-byte	20,102	C, -, W, -, U
<p>1-byte object that can be used to specify the temperature operating mode for the telegram at the "end of detection" by means of a telegram to this object. The entry is made as a decimal value:</p> <p>0 = auto 1 = Comfort 2 = standby 3 = Night 4 = Frost/heat protection</p> <p>This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Operating mode - Status	FB x - Output	1-byte	20,102	C, R, -, T, A
<p>1-byte object used to send the active temperature operating mode for the telegram at the "end of detection" to the bus. The output is a decimal value.</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode".</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Operating mode	FB x - Output	1-byte	20,102	C, R, -, T, A
<p>1-byte object used by the output of a function block to output the temperature operating mode to the KNX actuators or sensors (e.g. room temperature controller). The output is a decimal value.</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode" and day/night switchover is deactivated.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Operating mode	FB x - Output	1-byte	20,102	C, R, -, T, A
<p>1-byte object used by the output of a function block to output the temperature operating mode to the KNX actuators or sensors (e.g. room temperature controller) in day mode. The output is a decimal value.</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode" and day/night switchover is activated.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Operating mode	FB x - Output	1-byte	20,102	C, R, -, T, A
<p>1-byte object used by the output of a function block to output the temperature operating mode to the KNX actuators or sensors (e.g. room temperature controller) in night mode. The output is a decimal value.</p> <p>This object is only visible if the function of the output is configured to "Temperature operating mode" and day/night switchover is activated.</p>				

Additional value transmitters

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0...255	FB x - Input	1-byte	5,010	C, -, W, -, U

1-byte object that can be used to specify a value for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is 0 ... 255. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0 ... 255 - Status	FB x - Output	1-byte	5,010	C, R, -, T, A

1-byte object used to send the active value for the telegram at the "Start of detection" to the bus. The output is a decimal value. The value range is 0 ... 255.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...255	FB x - Input	1-byte	5,010	C, -, W, -, U

1-byte object that can be used to specify a value for the telegram at the "End of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is 0 ... 255. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...255 - Status	FB x - Output	1-byte	5,010	C, R, -, T, A

1-byte object used to send the active value for the telegram at the "End of detection" to the bus. The output is a decimal value. The value range is 0 ... 255.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0 ... 255	FB x - Output	1-byte	5,010	C, R, -, T, A

1-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator). The output is a decimal value. The value range is 0 ... 255.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value 0 ... 255	FB x - Output	1-byte	5,010	C, R, -, T, A

1-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in day mode. The output is a decimal value. The value range is 0 ... 255.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value 0 ... 255	FB x - Output	1-byte	5,010	C, R, -, T, A

1-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in night mode. The output is a decimal value. The value range is 0 ... 255.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0...360°	FB x - Input	1-byte	5,003	C, -, W, -, U

1-bit object that can be used to specify an angle value for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made in degrees. The value range is 0 ... 360° The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.003.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0 ... 360° - Status	FB x - Output	1-byte	5,003	C, R, -, T, A

1-bit object used to send the active angle value for the telegram at the "Start of detection" to the bus. The output is in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...360°	FB x - Input	1-byte	5,003	C, -, W, -, U

1-bit object that can be used to specify an angle value for the telegram at the "End of detection" by means of a telegram to this object. The entry is made in degrees. The value range is 0 ... 360°. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...360° - Status	FB x - Output	1-byte	5,003	C, R, -, T, A

1-bit object used to send the active angle value for the telegram at the "End of detection" to the bus. The output is in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010.

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...360°	FB x - Output	1-byte	5,003	C, R, -, T, A

1-bit object used by the output of a function block to output the angle value to the KNX actuators (e.g. actuator for colour control). The output is in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value 0...360°	FB x - Output	1-byte	5,003	C, R, -, T, A

1-bit object used by the output of a function block to output the angle value to the KNX actuators (e.g. actuator for colour control) in day mode. The output is in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value 0...360°	FB x - Output	1-byte	5,003	C, R, -, T, A

1-bit object used by the output of a function block in night mode to output the switching commands to the KNX actuators (e.g. actuator for colour control). The output is in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.010 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0...255%	FB x - Input	1-byte	5,004	C, -, W, -, U

1-byte object that can be used to specify a percentage value for the telegram at the "Start of detection" by means of a telegram to this object. This entry is made in per cent. The value range is 0 ... 100%. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0 ... 255% - Status	FB x - Output	1-byte	5,004	C, R, -, T, A

1-byte object used to send the active percentage value for the telegram at the "Start of detection" to the bus. The output is in per cent.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...255%	FB x - Input	1-byte	5,004	C, -, W, -, U

1-byte object that can be used to specify a percentage value for the telegram at the "End of detection" by means of a telegram to this object. This entry is made in per cent. The value range is 0 ... 100%. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...255% - Status	FB x - Output	1-byte	5,004	C, R, -, T, A

1-byte object used to send the active percentage value for the telegram at the "End of detection" to the bus. The output is in per cent. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004.

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...255%	FB x - Output	1-byte	5,004	C, R, -, T, A

1-byte object used by the output of a function block to output the percentage value to the KNX actuators (e.g. dimming actuator). The output is in per cent. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value 0...255%	FB x - Output	1-byte	5,004	C, R, -, T, A

1-byte object used by the output of a function block to output the percentage value to the KNX actuators (e.g. dimming actuator) in day mode. The output is in per cent. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value 0...255%	FB x - Output	1-byte	5,004	C, R, -, T, A
<p>1-byte object used by the output of a function block to output the percentage value to the KNX actuators (e.g. dimming actuator) in night mode. The output is in per cent. The value range is 0 ... 100%.</p> <p>This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 5.004 and day/night switchover is activated.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value -128...127	FB x - Input	1-byte	6,010	C, -, W, -, U
<p>1-byte object that can be used to specify a value for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is -128 ... 127. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value -128 ... 127 - Status	FB x - Output	1-byte	6,010	C, R, -, T, A
<p>1-byte object used to send the active value for the telegram at the "Start of detection" to the bus. The output is a decimal value. The value range is -128 ... 127.</p> <p>This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value -128...127	FB x - Input	1-byte	6,010	C, -, W, -, U
<p>1-byte object that can be used to specify a value for the telegram at the "End of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is -128 ... 127. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".</p> <p>This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010.</p>				

Function	Name	Type	DPT	Flags
Output 1/2 - End of de- tection - Value -128...127 - Status	FB x - Output	1-byte	6,010	C, R, -, T, A

1-byte object used to send the active value for the telegram at the "End of detection" to the bus. The output is a decimal value. The value range is -128 ... 127.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010.

Function	Name	Type	DPT	Flags
Output 1/2 - Value -128 ... 127	FB x - Output	1-byte	6,010	C, R, -, T, A

1-byte object used by the output of a function block to output the scene number to the KNX actuators (e.g. dimming actuator). The output is a decimal value. The value range is -128 ... 127.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value -128 ... 127	FB x - Output	1-byte	6,010	C, R, -, T, A

1-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in day mode. The output is a decimal value. The value range is -128 ... 127.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value -128 ... 127	FB x - Output	1-byte	6,010	C, R, -, T, A

1-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in night mode. The output is a decimal value. The value range is -128 ... 127.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 6.010 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0...65535	FB x - Input	2-byte	7,001	C, -, W, -, U

1-byte object that can be used to specify a value for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is 0...65535. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value 0 ... 65535 - Status	FB x - Output	2-byte	7,001	C, R, -, T, A

1-byte object used to send the active value for the telegram at the "Start of detection" to the bus. The output is a decimal value. The value range is 0...65535.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...65535	FB x - Input	2-byte	7,001	C, -, W, -, U

2-byte object that can be used to specify a value for the telegram at the "End of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is 0...65535. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value 0...65535 - Status	FB x - Output	2-byte	7,001	C, R, -, T, A

2-byte object used to send the active value for the telegram at the "End of detection" to the bus. The output is a decimal value. The value range is 0...65535.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001.

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...65535	FB x - Output	2-byte	7,001	C, R, -, T, A

2-byte object used by the output of a function block to output the scene number to the KNX actuators (e.g. dimming actuator). The output is a decimal value. The value range is 0...65535.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value 0 ... 65535	FB x - Output	2-byte	7,001	C, R, -, T, A

2-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in day mode. The output is a decimal value. The value range is 0...65535.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value 0...65535	FB x - Output	2-byte	7,001	C, R, -, T, A

2-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in night mode. The output is a decimal value. The value range is 0...65535.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.001 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value -100...10000K	FB x - Input	2-byte	7,600	C, -, W, -, U

2-byte object that can be used to specify the absolute colour temperature for the telegram at the "Start of detection" by means of a telegram to this object. This entry is made in Kelvin. The value range is 1000...10000 K. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of de- tection - Value -100...10000K - Status	FB x - Output	2-byte	7,600	C, R, -, T, A

2-byte object used to send the active value for telegram at the "Start of detection" to the bus. The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters" and the data point type is configured to DPT. This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600.

Function	Name	Type	DPT	Flags
Output 1/2 - End of de- tection - Value -100...10000K	FB x - Input	2-byte	7,600	C, -, W, -, U

2-byte object that can be used to specify the absolute colour temperature for the telegram at the "End of detection" by means of a telegram to this object. This entry is made in Kelvin. The value range is 100 ... 10000K. This value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters" and the data point type is configured to DPT. This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600.

Function	Name	Type	DPT	Flags
Output 1/2 - End of de- tection - Value -100...10000K - Status	FB x - Output	2-byte	7,600	C, R, -, T, A

2-byte object used to send the active value for the telegram at the "End of detection" to the bus. The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600.

Function	Name	Type	DPT	Flags
Output 1/2 - Value -100 ... 10000 K	FB x - Output	2-byte	7,600	C, R, -, T, A

2-byte object used by the output of a function block to output the absolute colour temperature to the KNX actuators (e.g. DALI actuator). The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value 100 ... 10000 K	FB x - Output	2-byte	7,600	C, R, -, T, A

2-byte object used by the output of a function block to output the absolute colour temperature to the KNX actuators (e.g. DALI actuator) in day mode. The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value 100 ... 10000 K	FB x - Output	2-byte	7,600	C, R, -, T, A

2-byte object used by the output of a function block to output the absolute colour temperature to the KNX actuators (e.g. DALI actuator) in night mode. The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value -32768...32767	FB x - Input	2-byte	8,001	C, -, W, -, U

2-byte object that can be used to specify a value for the telegram at the "Start of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is -32768...32767. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value -32768 ... 32767 - Status	FB x - Output	2-byte	8,001	C, R, -, T, A

2-byte object used to send the active value for telegram at the "Start of detection" to the bus. The output is a decimal value. The value range is -32768...32767.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value -32768...32767	FB x - Input	2-byte	8,001	C, -, W, -, U

2-byte object that can be used to specify a value for the telegram at the "End of detection" by means of a telegram to this object. The entry is made as a decimal value. The value range is -32768...32767. The value is valid until a new value is received. An ETS programming operation can be carried out if configured and the configured value from the ETS is to be used again. For this purpose, activate the parameter "Overwrite values in device during ETS programming".

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value -32768...32767 - Status	FB x - Output	2-byte	8,001	C, R, -, T, A

2-byte object used to send the active value for the telegram at the "End of detection" to the bus. The output is a decimal value. The value range is -32768...32767.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001.

Function	Name	Type	DPT	Flags
Output 1/2 - Value -32768...32767	FB x - Output	2-byte	8,001	C, R, -, T, A

2-byte object used by the output of a function block to output the scene number to the KNX actuators (e.g. dimming actuator). The output is a decimal value. The value range is -32768...32767.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Value -32768 ... 32767	FB x - Output	2-byte	8,001	C, R, -, T, A

2-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in day mode. The output is a decimal value. The value range is -32768...32767.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Value -32768...32767	FB x - Output	2-byte	8,001	C, R, -, T, A

1-byte object used by the output of a function block to output the value to the KNX actuators (e.g. dimming actuator) in night mode. The output is a decimal value. The value range is -32768...32767.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 8.001 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Colour temperature and brightness value	FB x - Input	6-byte	249,600	C, -, W, -, U

6-byte object for combined absolute dimming of brightness (in percent) and setting of the colour temperature (in Kelvin) by separate dimming values and for specifying a transition time (in seconds) for the telegram at the start of detection.

When dimming by means of the 6-byte combination object, it is possible to specify an individual dimming time in the telegram. If a valid time is specified there, the DALI actuator executes the transition period transmitted in the telegram and not the one specified in the ETS. The colour temperature and brightness specified in the telegram value is then dimmed to within the transmitted transition period (fading). If the time is defined as "invalid" in the telegram, the DALI actuator always executes the dimming behaviour defined in the ETS parameters during absolute dimming.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 249.600.

Function	Name	Type	DPT	Flags
Output 1/2 - Start of detection - Value - Colour temperature and brightness - Status	FB x - Output	6-byte	249,600	C, R, -, T, A

6-byte object used to send the active value for telegram at the "Start of detection" to the bus. The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters" and the data point type is configured to DPT. This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 7.600.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value - Colour temperature and brightness	FB x - Input	6-byte	249,600	C, -, W, -, U

6-byte object for combined absolute dimming of brightness (in percent) and setting of the colour temperature (in Kelvin) by separate dimming values and for specifying a transition time (in seconds) for the telegram at the end of detection.

When dimming by means of the 6-byte combination object, it is possible to specify an individual dimming time in the telegram. If a valid time is specified there, the DALI actuator executes the transition period transmitted in the telegram and not the one specified in the ETS. The colour temperature and brightness specified in the telegram value is then dimmed to within the transmitted transition period (fading). If the time is defined as "invalid" in the telegram, the DALI actuator always executes the dimming behaviour defined in the ETS parameters during absolute dimming.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 249.600.

Function	Name	Type	DPT	Flags
Output 1/2 - End of detection - Value - Colour temperature and brightness - Status	FB x - Output	6-byte	249,600	C, R, -, T, A

6-byte object used to send the active values for the telegram at the "End of detection" to the bus. The output is made in Kelvin. The value range is 100 ... 10000K.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 249.600.

Function	Name	Type	DPT	Flags
Output 1/2 - Value - Colour temperature and brightness	FB x - Output	6-byte	249,600	C, R, -, T, A

6 bytes object used by the output of a function block to outputs the dimming value in percent, the colour temperature in Kelvin and the transition time in seconds to the KNX actuators (e.g. DALI actuator).

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 249.600 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Colour temperature and brightness value	FB x - Output	6-byte	249,600	C, R, -, T, A

6 bytes object used by the output of a function block to outputs the dimming value in percent, the colour temperature in Kelvin and the transition time in seconds to the KNX actuators (e.g. DALI actuator) in day mode.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 249.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Colour temperature and brightness value	FB x - Output	6-byte	249,600	C, R, -, T, A

6 bytes object used by the output of a function block to outputs the dimming value in percent, the colour temperature in Kelvin and the transition time in seconds to the KNX actuators (e.g. DALI actuator) in night mode.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 249.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flag
Output 1/2 value - RGB/HSV RGB	FB x - Output	3-byte	232,600	C, R, -, T, A

3-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator).

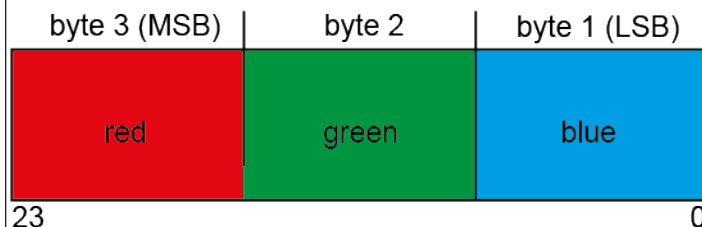
byte 3 (MSB)	byte 2	byte 1 (LSB)
red	green	blue

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This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 232.600 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flag
Output 1/2 - Day - RGB/HSV value RGB	FB x - Output	3-byte	232,600	C, R, -, T, A

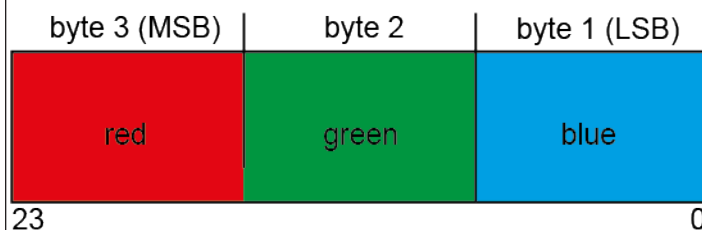
3-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator) in day mode.



This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 232.600 and day/night switchover is activated.

Output 1/2 - Night - RGB/HSV value RGB	FB x - Output	3-byte	232,600	C, R, -, T, A
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3-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator) in night mode.



This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 232.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - RGB/HSV value HSV H	FB x - Output	1-byte	5,003	C, R, -, T, A

1-byte object for transmitting the colour hue. This entry is made in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - RGB/HSV value HSV S	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the saturation. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - RGB/HSV value HSV V	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the brightness value. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGB/HSV value HSV H	FB x - Output	1-byte	5,003	C, R, -, T, A

1-byte object for transmitting the colour hue in day mode. This entry is made in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGB/HSV value HSV S	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the saturation in day mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGB/HSV value HSV V	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the brightness value in day mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGB/HSV value HSV H	FB x - Output	1-byte	5,003	C, R, -, T, A

1-byte object for transmitting the colour hue in night mode. This entry is made in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGB/HSV value HSV S	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the saturation in night mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

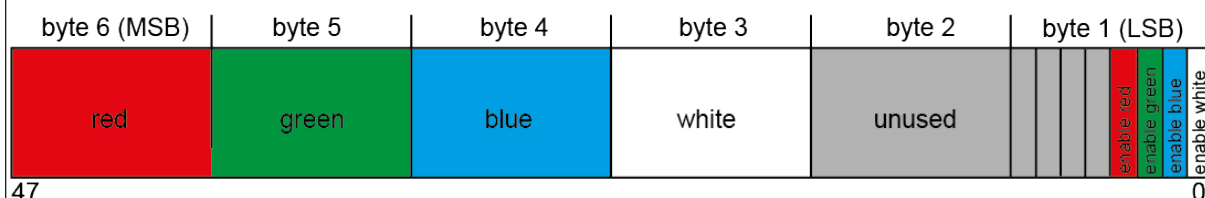
Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGB/HSV value HSV V	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the brightness value in night mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flag
Output 1/2 - RGBW/HSVW value RGBW	FB x - Output	6-byte	251,600	C, R, -, T, A

6-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator).

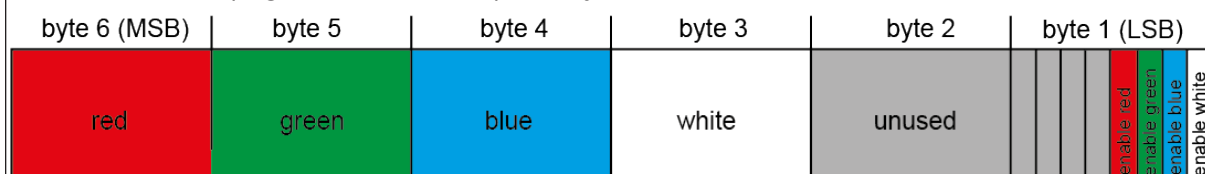


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This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 251.600 and day/night switchover is deactivated.

Function	Name	Type	DPT	Flag
Output 1/2 - Day - RGBW/HSVW value RGBW	FB x - Output	6-byte	251,600	C, R, -, T, A

6-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator) in day mode.



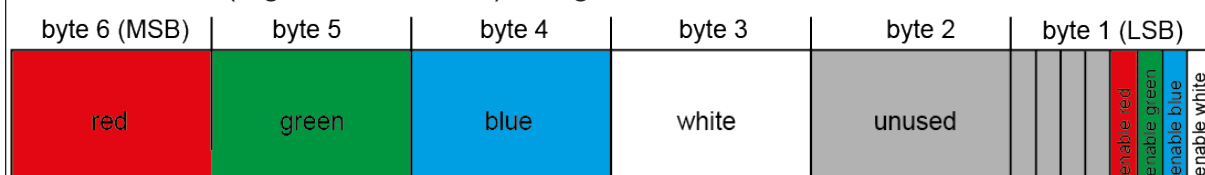
47

0

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 251.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flag
Output 1/2 - Night - RGBW/HSVW value RGBW	FB x - Output	6-byte	251,600	C, R, -, T, A

6-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator) in night mode.



47

0

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to DPT 251.600 and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - RGBW/HSVW value HSVW H	FB x - Output	1-byte	5,003	C, R, -, T, A

6-byte object for transmitting the colour hue. This entry is made in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - RGBW/HSVW value HSVW S	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the saturation. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Value RGBW/HSVW HSVW V	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the brightness value. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGBW/HSVW value HSVW W	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the white level. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is deactivated

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGBW/HSVW value HSVW H	FB x - Output	1-byte	5,003	C, R, -, T, A

1-byte object for transmitting the colour hue in day mode. This entry is made in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGBW/HSVW value HSVW S	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the saturation in day mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGBW/HSVW value HSVW V	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the brightness value in day mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated

Function	Name	Type	DPT	Flags
Output 1/2 - Day - RGBW/HSVW value HSVW W	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the white value in day mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGBW/HSVW value HSVW H	FB x - Output	1-byte	5,003	C, R, -, T, A

1-byte object for transmitting the colour hue in night mode. This entry is made in degrees. The value range is 0 ... 360°.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGB/HSV (RGB DPT 232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGBW/HSVW value HSVW S	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the saturation in night mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGBW/HSVW value HSVW V	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the brightness value in night mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated

Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGBW/HSVW value HSVW W	FB x - Output	1-byte	5,001	C, R, -, T, A

1-byte object for transmitting the white level in night mode. The entry is made as a percentage. The value range is 0 ... 100%.

This object is visible only if the output function is configured to "Other value transmitters", the data point type is configured to RGBW/HSVW (RGBW DPT 251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DTP 5.001) and day/night switchover is activated

13.1.5.5 Start and end of detection

Total motion

A total motion is defined as the time period from the start of the first detection pulse of the high frequency sensor (start of detection) plus the run-on time. The shortest run-on time is 10 seconds and starts immediately after the last active motion signal. The run-on time can be configured in the ETS.

If configured in the ETS, an evaluation delay at the start of detection can be set to ignore short-term movements.

Telegrams can be transmitted at the beginning, during and at the end of a motion detection. The setting is made on the parameter page "FB x - Output 1/2". During a motion detection, the function block concerned is always in brightness-dependent opera-

tion in relation to the brightness threshold. Thus, regardless of the ambient brightness and provided that the switch-off brightness was not exceeded, the run-on time is retrigged for each new motion detection.

It should be noted that the function block is always switched over to brightness-dependent operation at the end of a detection if the brightness threshold is not set to brightness-independent. Thus, special care should be taken since no motion detections will take place anymore if the ambient brightness is constantly above the brightness threshold at the end of the detection due to a switched-on light.

Transmission behaviour at the start of a detection process

The "Transmission behaviour" parameter can be used, if necessary, to delay the motion evaluation at the start of a detection process. The function block may therefore not react to a movement detected only temporarily (e.g. walking quickly through a room). The motion is only processed during a longer-lasting detection and the telegram is transmitted "at the beginning of detection".

The evaluation delay is available for this purpose. The evaluation delay always affects both outputs together as well as external motion detectors.

"Evaluation delay"

The evaluation delay is started when motion is detected. The "At start of detection" telegram is sent and the run-on time started only if another movement is detected within 30 seconds after the evaluation delay has elapsed.

Telegram output at the end of the detection

Just like at the beginning of a detection, a telegram output can be configured for the end of a detection according to the output functions for the outputs 1 and 2. The end of a detection process is detected either by the absence of motion signals and expiry of the run-on time or by permanently exceeding a configured switch-off brightness.

Run-on time

Motion detection processes end always after the run-on time has expired. The minimum run-on time is 10 seconds.

The run-on time can either be set discretely by parameters in the ETS or, alternatively, calculated by the device by means of self-learning. The "Run-on time" parameter on the "FB x - Start and end of detection" parameter page defines whether a fixed or self-learning run-on time is used.

- "By parameter" setting:
The run-on time is configured in the ETS. This makes it possible to adjust the run-on time dynamically via the bus in a user-defined manner.
- "Self-learning" setting:
In this setting, the device determines the run-on time independently, depending on the frequency of the motion pulses within a range defined by the user. In addition, the evaluation of a short presence can be activated there. This means that a short presence is not evaluated. The self-learning run-on time should be selected if the objectives and tasks listed below are to be fulfilled

using the device (optimization strategies)...

- Increased user comfort & lamp protection: A high level of user comfort can be achieved especially when used as a presence detector if constant switching off and on again is avoided. The maximum run-on time possible guarantees the best comfort here. A self-learning run-on time makes it possible for the device to incorporate recurring motion signals into the calculation of the run-on time during a motion evaluation and thus prevent the lighting from being switched off too early. If light bulbs are frequently switched off and on again, this often additionally reduces their service life. The longest possible run-on time ensures a long service life of the lamps.
- Energy efficiency: It is always possible to control the lighting or load in an energy-efficient manner when the switch-on time, which is directly proportional to the consumed energy, can be minimized adequately. The device is able to identify recurring short presence or motion detections, while keeping the delay-time to a minimum without any loss in comfort.

With a self-learning run-on time, the device always calculates the actual run-on time dynamically. In this case, no constant value can be derived by the user. Moreover, the run-on time is adjusted constantly and attuned to the frequency of the motion signals. While doing so, the device extends the time only during a motion evaluation. The delay is reduced internally only if no motion is evaluated.

The limits of the self-learning run-on time can be configured in the ETS. The "Minimum duration" and "Maximum duration" parameters are available for this purpose. The self-learning behaviour can either be forced more in the direction of user-comfort / lamp protection or energy efficiency by means of a specific parameter setting of the minimum and maximum value. The dynamic range selected for these optimization strategies should be as narrow as possible. If the user or installation engineer does not want to or cannot do this, the dynamic range should alternatively be defined as wide as possible. In the optimization that is then fully automatic, the device can adapt optimally to the current motion pattern.

The table below shows how the limits of the minimum and maximum values should be selected depending on the desired optimization strategy...

Optimization strategy	Minimum run-on time duration	Maximum run-on time duration	Dynamic range
User comfort / Lamp protection	high	high	narrow
Energy efficiency	low	low	narrow
none (fully automatic adjustment)	low	high	wide

Parameter setting for the different optimization strategies

The device has an early switch-off detection function for the adaptive adjustment of the run-on time. In this process, the device evaluates the time interval between the end of a previous detection process (OFF) and the beginning of a new motion evaluation process (ON). If the time between switching off and on again is shorter than 10 seconds, the run-on time last calculated will be evaluated as "too short to calculate". In this case, the device will extend the run-on time immediately to prevent a repeated early switch-off process.

The device can optionally evaluate a short presence during the self-learning run-on time. Short presence detection is an interesting option in presence detector operation, for example, for preventing immediate activation of a long run-on time when the detection field is entered briefly (e.g. just quickly taking the office key from the desk). The device identifies whether or not a detected motion is brief according to the time defined in the ETS parameter "Time window for detection". This parameter is visible only if the parameter "Evaluate short presence" is set to "Active" on the parameter page - "FB x - Beginning and end of detection". In this case, the short presence evaluation is activated too.

Upon the first motion signal of a new movement, the device starts the configured time window. Movements within the time window are evaluated as short presence. If additional movements also continue to occur after the time window has elapsed, the device will discard the short presence and work normally with the determined run-on time. If, however, no movements occur anymore beyond the configured time window, the device will assume a short presence and start merely the "Minimum run-on time".

The "Minimum duration of the run-on time" configured in the ETS should be at least three times as long as the configured time window for the short presence to allow a short presence to be evaluated reliably.

The short presence detection, if activated in the ETS, is processed in parallel to the self-learning of the run-on time and has no influence on the process and value of the self-learning time calculation. If a short presence is detected, this is given one-time priority over the self-learning, i.e. the device processes the short presence and ends the motion detection early.

The short presence detection will not take effect if there is a new movement after an early switch-off has been identified.

Switch-off warning

A switch-off pre-warning can be activated for the application "Motion detector - Lighting or presence detector operation - Lighting/universal". This makes sense in public spaces because it prevents a person from suddenly standing in the dark. The switch-off pre-warning starts as soon as the run-on time has elapsed. The telegram is sent at the end of the detection only after the set duration of the switch-off pre-warning has elapsed.

The switch-off pre-warning is enabled first for the corresponding function block with the "Switch-off pre-warning" parameter on the "Start and end of detection" parameter page. The duration of the switch-off warning is also defined here. The duration set here applies to all outputs of the function block. The run-on time is extended practic-

ally by the duration of the switch-off warning. This also applies to outputs for which the switch-off pre-warning has not been activated or for which an output function has been set for which no switch-off pre-warning can be activated.

To activate the switch-off pre-warning for an output, the function of the output is now set to dimming value transmitter or brightness value transmitter on the parameter page for the output and the switch-off pre-warning is also activated.

The "Dimming value" or "Brightness value" parameter that now appears can now be used to set the brightness during the switch-off pre-warning. At the end of the run-on time, the function block now sends a dimming value in per cent or a brightness value in lux, depending on the function set.

13.1.5.5.1 "Start and end of detection" parameter

Function blocks (FB) -> FB x - General -> Start and end of detection

Start of detection

Transmission behaviour	Send directly Evaluation delay
<p>This parameter is used to specify when a telegram is sent to the bus after a detection process.</p> <p>The evaluation delay at the beginning of a motion detection ensures that no reaction to just a brief motion (e.g. when quickly striding through a room) takes place. The motion is processed and the telegram is transmitted at the start of the detection process only if the detection process takes place for a prolonged time</p> <p>"Send directly"</p> <p>After a detection, the telegram at the start of the detection is sent directly to the bus.</p> <p>"Evaluation delay"</p> <p>The evaluation delay is started when motion is detected. The telegram sent to the bus at the start of the detection and the run-on time started only if another movement is detected within 30 seconds after the evaluation delay has elapsed. Another parameter appears.</p>	
Delay time	0 ... 59 min 0 ... 30 ...-59 s
<p>This parameter is used to set the duration of the evaluation delay. Minutes and seconds can be set.</p>	

End of detection

Run-on time	Fixed time Self-learning
<p>This parameter is used to define whether a fixed or self-learning run-on time is used at the end of the detection before the "At end of detection" telegram is sent.</p> <p>"Fixed run-on time"</p> <p>At the end of detection, a fixed run-on time starts to expire. The setting is made in hours, minutes and seconds.</p> <p>"Self-learning"</p> <p>The run-on time at the end of detection varies within specified limits. The minimum and maximum duration is defined in hours, minutes and seconds.</p> <p>If present only for a short time, the run-on time is shortened. If present for a long time, the run-on time is extended.</p> <p>Additional parameters appear.</p>	

(Run-on time) At day	0 ... 59 h 0 ... 10 ... 59 min 0 ... 59 s
-------------------------	---

This parameter is used to set the fixed run-on time at the end of a detection in day mode. The setting is made in hours, minutes and seconds.

These parameters are visible only if the run-on time parameter is set to a fixed time and the "Day/night switchover" parameter on the General parameter page is set to active.

(Run-on time) At night	0 ... 59 h 0 ... 10 ... 59 min 0 ... 59 s
---------------------------	---

This parameter is used to set the fixed run-on time at the end of a detection in night mode. The setting is made in hours, minutes and seconds.

These parameters are visible only if the run-on time parameter is set to a fixed time and the "Day/night switchover" parameter on the General parameter page is set to active.

(Run-on time) Can be set via object	Active Inactive
--	--------------------

This parameter enables the "Run-on time" and "Run-on time - Status" objects that can be used to set the fixed run-on time by means of a telegram or query the active run-on time.

This parameter is visible only if the "Run-on time" parameter is set to a fixed run-on time.

Minimum duration	0 ... 59 h 0 ... 10 ... 59 min 0 ... 59 s
------------------	---

This parameter is used to set the lower limit of the self-learning run-on time. The setting is made in hours, minutes and seconds.

This parameter is visible only if the "Run-on time" parameter is set to self-learning.

Maximum duration	0 ... 59 h 0 ... 10 ... 59 min 0 ... 59 s
------------------	---

This parameter is used to set the upper limit of the self-learning run-on time. The setting is made in hours, minutes and seconds.

This parameter is visible only if the "Run-on time" parameter is set to self-learning.

Evaluate short presence	Active Inactive
<p>This parameter enables the evaluation of a short presence. This parameter is not available for the presence detector - monitoring application.</p> <p>The presence time in the specified time window is assessed as short presence. The time window is defined with the "Time window for detection" parameter. If short presence is detected, the minimum run-on time is applied.</p> <p>This parameter is visible only if the "Run-on time" parameter is set to self-learning.</p>	
Time window for detection	1 ... 10 ... 59 s
<p>This parameter is used to define the length of the short presence detection. The time is set by default to 10 s. All presence times up to the set time are counted as short presence.</p> <p>This parameter is visible only if the "Evaluate short presence" parameter is set to active.</p>	
Switch-off warning	Active Inactive
<p>This parameter is used to activate the switch-off pre-warning for the applications "Motion detector - Lighting and Presence detector - Lighting, universal". The switch-off pre-warning can be used only if the output is set to the dimming value transmitter or brightness value transmitter function.</p> <p>When the function is activated, the function block first sends a configured dimming value / brightness value after the run-on time has elapsed. After the "duration" of the switch-off pre-warning has elapsed, the "At the end of detection" telegram is sent.</p> <p>If a movement is detected during the ongoing switch-off pre-warning, the switch-off pre-warning is stopped, the "At start of detection" telegram sent and the run-on time started.</p>	
(Switch-off warning) Duration	0 ... 30 ... 59 s 0 ... 59 min
<p>This parameter is used to set the length of the switch-off warning. The setting is made in minutes and seconds. The time is set by default to 30 s. The run-on time is extended by this value. The time set here applies to all outputs of the function block and all output functions. This also applies to the functions for which no switch-off pre-warning can be activated on the "Start and end of detection" parameter page.</p> <p>This parameter is visible only if the "Switch-off pre-warning" parameter is set to active and the "Day/night operation" function is set to inactive on the General parameter page.</p>	

(Switch-off warning duration) At day	0 ... 30 ... 59 s 0 ... 59 min
<p>This parameter is used to set the length of the switch-off warning for day mode. The setting is made in minutes and seconds. The time is set by default to 30 s. The run-on time is extended by this value. The time set here applies to all outputs of the function block and all output functions. This also applies to the functions for which no switch-off pre-warning can be activated on the "Start and end of detection" parameter page.</p> <p>This parameter is visible only if the "Switch-off pre-warning" parameter is set to active and the "Day/night operation" function is set to active on the General parameter page.</p>	

(Switch-off warning duration) At night	0 ... 30 ... 59 s 0 ... 59 min
<p>This parameter is used to set the length of the switch-off warning for night mode. The setting is made in minutes and seconds. The time is set by default to 30 s. The run-on time is extended by this value. The time set here applies to all outputs of the function block and all output functions. This also applies to the functions for which no switch-off pre-warning can be activated on the "Start and end of detection" parameter page.</p> <p>This parameter is visible only if the "Switch-off pre-warning" parameter is set to active and the "Day/night operation" function is set to active on the General parameter page.</p>	

(Switch-off warning) Can be set via object	Active Inactive
<p>This parameter enables the objects "Switch-off pre-warning" and "Switch-off pre-warning - Status" that can be used to set the duration of the switch-off pre-warning by means of a telegram or query the active duration.</p> <p>This parameter is visible only if the "Switch-off pre-warning" parameter is set to active.</p>	

Behaviour during ETS programming

(Overwrite values during ETS programming) Run-on time	Active Inactive
<p>This parameter must be activated if the fixed run-on time is to be overwritten with the values set in the ETS after an ETS programming operation.</p> <p>These parameters are visible only if the "Can be set via object" parameter is set to active.</p>	

(Overwrite values during ETS programming) Duration for switch-off warning	Active Inactive
This parameter must be activated if the duration of the switch-off pre-warning is to be overwritten with the values set in the ETS after an ETS programming operation. These parameters are visible only if the "Can be set via object" parameter is set to active.	

13.1.5.5.2 Object list "Start and end of detection"

Start and end of detection

Function	Name	Type	DPT	Flags
Run-on time	FB x - Input	2-byte	7,005	C, -, W, -, U

2-byte object used to specify a fixed run-on time. The telegram is sent at the end of a detection only after this time has elapsed. This entry is made in seconds.
This object is visible only if the "Run-on time" parameter for the end of detection is set to a fixed time and to the ability to be set by means of an object on the parameter page "FB x - Start and end of detection".

Function	Name	Type	DPT	Flags
Run-on time - Status	FB x - Output	2-byte	7,005	C, R, -, T, A

2-byte object used to feed back the active fixed run-on time. This entry is made in seconds
This object is visible only if the "Run-on time" parameter for the end of detection is set to a fixed time and to the ability to be set by means of an object on the parameter page "FB x - Start and end of detection".

Function	Name	Type	DPT	Flags
Duration Switch-off warning	FB x - Input	2-byte	7,005	C, -, W, -, U

2-byte object used to specify the duration of the switch-off pre-warning. The time starts after the run-on time has expired at the end of the detection process. The telegram is sent at the end of the detection only after the time for the switch-off pre-warning has elapsed. This entry is made in seconds.
This object is visible only if the "Switch-off pre-warning" parameter is set to active.

Function	Name	Type	DPT	Flags
Duration Switch-off warning - Status	FB x - Output	2-byte	7,005	C, R, -, T, A

2-byte object used to feed back the active duration of the switch-off pre-warning. This entry is made in seconds
This object is visible only if the "Switch-off pre-warning" parameter is set to active.

13.1.5.6 Manual operation

With manual operation, the function blocks can be operated manually by means of KNX commands, e.g. with push-button sensors. A distinction is made between two manual operating options.

Simple manual operation

With simple manual operation, the function blocks can be started and stopped by the user independently of the sensors, e.g. with a push-button sensor, whereby no ambient brightness is evaluated when starting. Thus, activation of the actuators is forced when switching on manually.

Manual operation is activated by means of the "Simple manual operation" object. After manual activation, the function block works presence and brightness-dependently as usual thereby ensuring automatic switch-off if there is no presence or adequate basic brightness.

An OFF command in simple manual operation causes the lighting to be switched off as configured.

Parameters can be used to set which telegrams (ON/OFF/UM) the device is to react to during simple manual operation.

Activating permanent manual operation

Even with this type of manual operation, the function block can be started or stopped independently of the sensors, for example with a push-button sensor. However, the automatic function is deactivated so that the actuators remain permanently in the called state until it is operated again.

A different value can be called up for day and night mode, depending on the configuration.

Manual operation is activated by means of the "Permanent manual operation" object. Parameters can be used to set which telegrams (ON/OFF/TOGGLE) the device reacts to during permanent manual operation.

Ending permanent manual operation

There are a number of ways of ending permanent manual operation ...

- Triggering simple manual operation
- Re-triggering permanent manual operation
- The "End automatically" parameter for permanent manual operation can be used to configure an automatic end by means of a configurable "Run-on time" or "At the end of the presence and run-on time". Different times can be entered for day and night mode, depending on the configuration.

Parallel operation

The parameter "Objects for parallel operation via other control points" enables parallel operation of the actuators controlled by means of the function blocks. With parallel operation, the assigned actuators can be activated directly, for example, via a push-button sensor or operating panel. The manually triggered switching, dimming or scene commands to the actuator must also be transmitted to the function block. Oth-

erwise, the automatic function of the function block would override the manual operation. For this purpose, each function block has 4 objects, each with different data formats ("Parallel operation input" - 4-bit relative dimming, 1-byte brightness value, 1-byte scene extension unit, 1-byte HVAC operating mode). The automatic function is deactivated during parallel operation, which means that the actuators are no longer influenced by motion or brightness, but only by the user by "listening" to the telegrams by means of the objects mentioned.

- i** The automatic function is activated after parallel operation either, like with permanent manual operation, using single manual operation, permanent manual operation with automatic end or double triggering of permanent manual operation.
- i** If parallel operation is performed during an active permanent manual operation with automatic end, e.g. because the configured brightness is too low or too high, the run-on time or reset time is not stopped. After the run-on or reset time has elapsed, the device returns to normal operation and the automatic function is active.

Ignoring motion with off telegram

Switching off the lighting in simple or permanent manual operation causes the lighting to be switched off directly. If a detection field had to be crossed to leave the room, the light would switch on again. To prevent this, there is the "Ignore motion if OFF" parameter. This parameter can be used to set a time of up to one hour during which no motion is detected after the lighting is switched off manually.

13.1.5.6.1 "Manual operation" parameter

Function blocks (FB) -> FB x - General -> Enabled functions

Use simple manual operation	Inactive Active
This parameter enables simple manual operation. Set the parameter to active for this purpose. Additional parameters appear.	

Function blocks (FB) -> FB x - General -> Manual operation

(Simple manual operation) Reacts to	ON only OFF only ON and OFF Switch over if telegram arrives
<p>The "Reacts to" parameter specifies how and to which telegram the function block reacts.</p> <p>ON only: The function block reacts only to ON telegrams to the object "Simple manual operation". When an ON telegram is received, the configured behaviour at the "Start of detection" is executed regardless of the brightness and motion. Automatic operation continues to run in the background. This means, for example, that the behaviour is executed at the "End of detection" if there is no detection.</p> <p>OFF only: The function block reacts only to OFF telegrams to the object "Simple manual operation". When an OFF telegram is received, the configured behaviour for "End of detection" is executed immediately, regardless of brightness and movement. This occurs even if the run-on time has not yet expired. Automatic operation continues to run in the background. This means, for example, that the behaviour is executed at the "Start of detection".</p> <p>ON and OFF: The function block reacts to an ON and OFF telegrams to the object "Simple manual operation". When an ON telegram is received, the configured behaviour at the "Start of detection" is executed regardless of the brightness and motion. When an OFF telegram is received, the behaviour at the "End of detection" is executed regardless of the brightness and motion. This occurs even if the run-on time has not yet expired. Automatic operation continues to run in the background. If a new event occurs, e.g. new detection or exceedance of the switch-off brightness, the corresponding telegram is sent.</p> <p>Switch over if telegram arrives: The function block reacts to each telegram input to the object "Simple manual operation". When a telegram is received, the telegram that switches the output is sent regardless of the brightness and motion. This depends on the current status of the output, which must be communicated to the operating device, e.g. push-button sensor, via group addresses. Automatic operation continues to run in the background. If a new event occurs, e.g. new detection or exceedance of the switch-off brightness, the corresponding telegram is sent.</p> <p>This parameter is visible only if the "Use simple manual operation" parameter is set to active.</p>	

Use permanent manual operation	Inactive Active
This parameter enables permanent manual operation. Set the parameter to active for this purpose. Additional parameters appear.	
(Permanent manual operation) Reacts to	ON only OFF only ON and OFF Switch over if telegram arrives
<p>The "Reacts to" parameter specifies how and to which telegram the function block reacts during permanent manual operation.</p> <p>ON only: The function block reacts only to ON telegrams to the object "Permanent manual operation". When an ON telegram is received, the configured behaviour at the "Start of detection" is executed regardless of the brightness and motion. Automatic mode is stopped. The evaluation of movements and brightness is disabled. To end permanent manual operation, send another ON telegram to the object "Permanent manual operation". Automatic mode is active again. The configured behaviour at the "Start of detection" is executed.</p> <p>OFF only: The function block reacts only to OFF telegrams to the object "Permanent manual operation". When an OFF telegram is received, the configured behaviour is executed at the "End of detection". This also takes place if the run-on time has not yet expired. Automatic mode is stopped. The evaluation of movements and brightness is disabled. To end permanent manual operation, send another OFF telegram to the object "Permanent manual operation". Automatic mode is active again. The configured behaviour at the "End of detection" is executed.</p> <p>ON and OFF: The function block reacts to an ON and OFF telegrams to the object "Permanent manual operation". When an ON telegram is received, the configured behaviour at the "Start of detection" is executed regardless of the brightness and motion. When an OFF telegram is received, the behaviour at the "End of detection" is executed immediately, regardless of brightness and motion. This occurs even if the run-on time has not yet expired. The evaluation of movements and brightness is disabled. To end permanent manual operation, send another ON or OFF telegram to the object "Permanent manual operation". The behaviour is executed at the "Start of detection" or "End of detection", depending on the telegram.</p> <p>Switch over if telegram arrives: The function block reacts to each telegram input to the object "Permanent manual operation". When a telegram is received, there is an immediate switchover regardless of the brightness and motion. This depends on the current status of the actuators, which must be communicated to the operating device, e.g. push-button sensor, via group addresses. The evaluation of movements and brightness is disabled. To end permanent manual operation, send a switchover telegram to the object "Permanent manual operation" again.</p> <p>This parameter is visible only if the "Use permanent manual operation" parameter is set to active.</p>	

End automatically	Deactivated After run-on time At end of presence and run-on time At the end of external presence and run-on time
<p>This parameter is used to define whether permanent manual operation is to be ended automatically or remain active until manual deactivation. Automatic mode is active at the end of permanent manual operation.</p> <p>Deactivated: Permanent manual operation is not ended automatically. To end it, a telegram must be sent again to the object "Permanent manual operation". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.</p> <p>After run-on time: Permanent manual operation is automatically ended after the time set with the "Run-on time" parameter has elapsed.</p> <p>Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Permanent manual operation". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.</p> <p>At end of presence and run-on time: Permanent manual operation is automatically terminated when no detection takes place anymore (end of presence) and the relapse fall-back time has expired. The run-on time is set with the "Run-on time" parameter.</p> <p>Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Permanent manual operation". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.</p> <p>At end of external presence and run-on time: Permanent manual operation is automatically terminated when no external presence detection takes place anymore (end of presence) and the run-on time has expired. The run-on time is set with the "Run-on time" parameter.</p> <p>Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Permanent manual operation". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.</p> <p>This parameter is visible only if "Permanent manual operation" parameter is activated.</p>	
Run-on time	0 ... 23 h 0 ... 30 ...59 min 0 ... 59 s
<p>This parameter is used to define how long permanent manual operation is to remain switched on. The setting is made in hours, minutes and seconds. The shortest time that can be set is 10 seconds.</p> <p>After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.</p> <p>This parameter is visible only if the "End automatically" parameter is set to "Run-on time" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	

(Run-on time) At day	0 ... 23 h 0 ... 30 ...59 min 0 ... 59 s
<p>This parameter is used to define how long permanent manual operation is to remain switched on in day mode. The setting is made in hours, minutes and seconds. The shortest time that can be set is 10 seconds.</p> <p>After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.</p> <p>This parameter is visible only if the "End automatically" parameter is set to "Run-on time" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	
(Run-on time) At night	0 ... 23 h 0 ... 30 ...59 min 0 ... 59 s
<p>This parameter is used to define how long permanent manual operation is to remain switched on in night mode. The setting is made in hours, minutes and seconds. The shortest time that can be set is 10 seconds.</p> <p>After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.</p> <p>This parameter is visible only if the "End automatically" parameter is set to "Run-on time" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	
Run-on time	0 ... 23 h 0 ... 30 ...59 min 0 ... 59 s
<p>This parameter is used to define for how long permanent manual operation is to remain switched on after the last detection of presence. The setting is made in hours, minutes and seconds. The shortest time that can be set is 10 seconds.</p> <p>After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection.</p> <p>This parameter is visible only if the "End automatically" parameter is set to "At end of presence and relapse time" or "At end of external presence and run-on time".</p>	

(Run-on time)	0 ... 23 h
At day	0 ... 30 ...59 min
	0 ... 59 s

This parameter is used to define for how long permanent manual operation is to remain switched on after the last detection of presence in day mode. The setting is made in hours, minutes and seconds. The shortest time that can be set is 10 seconds.

After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection.

This parameter is visible only if the "End automatically" parameter is set to "At end of presence and run-on time" or "At end of external presence and run-on time" with day/night switchover activated.

(Run-on time)	0 ... 23 h
At night	0 ... 30 ...59 min
	0 ... 59 s

This parameter is used to define for how long permanent manual operation is to remain switched on after the last detection of presence in night mode. The setting is made in hours, minutes and seconds. The shortest time that can be set is 10 seconds.

After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection.

This parameter is visible only if the "End automatically" parameter is set to "At end of presence and run-on time" or "At end of external presence and run-on time" with day/night switchover activated.

Objects for parallel operation via additional control points	Inactive Active
<p>The parameter enables parallel operation of the actuators actuated by means of the function block. With parallel operation, the assigned actuators can be activated directly, for example, via a push-button sensor or operating panel. The manually triggered dimming, HVAC or scene commands to the actuators must be transmitted to the function block for this purpose. Otherwise, the automatic function would override the manual operation. The following objects are available for this purpose:</p> <p>Parallel operation - Dimming Setting the brightness of the function block by sending relative dimming telegrams.</p> <p>Parallel operation - Dimming value Specification of an absolute dimming value for the function block in per cent.</p> <p>"Parallel operation - Scene extension unit" Call-up of a scene of the function block.</p> <p>"Parallel operation - Actuator status" Feedback of the switching state of the actuated actuator ("1" = active / "0" = inactive) to the bus.</p> <p>"HVAC operating mode" Setting of the HVAC mode: automatic, comfort, standby, night; frost/heat protection</p> <p>In parallel operation, the function blocks behave in the same way as in permanent manual operation, i.e. the automatic function is deactivated. This state remains until it is revoked by simple manual operation or permanent manual operation.</p> <p>This parameter is visible only if the "Permanent manual operation" parameter is set to active.</p>	
Show info graphic	Active Inactive
An infographic is displayed in the ETS if this parameter is activated.	
Ignore motion if OFF	0 ... 59 min 0 ... 5 ...59 s
<p>This parameter specifies for how long no movements are evaluated after switching off (OFF telegram) by means of simple or permanent manual operation . The setting is made in minutes and seconds.</p> <p>This parameter is visible only if at least one type of manual operation has been activated.</p>	

13.1.5.6.2 Object list "Manual operation"

Function	Name	Type	DPT	Flags
Simple manual operation - Preset	FB x - Input	1-bit	1,001	C, -, W, -, U
<p>1-bit object used to manually actuate (switch on/off) the function block. Manual operation is detected and processed by the device by means of this object. With manual control by means of the simple manual operation object, the automatic function is still active ("1" = ON / reaction as at start of detection, "0" = OFF / reaction as at end of detection)</p> <p>This object is visible only if simple manual operation is enabled.</p>				

Function	Name	Type	DPT	Flags
Permanent manual operation - Preset	FB x - Input	1-bit	1,001	C, -, W, -, U
<p>1-bit object used to manually actuate (switch on/off) the function block. Manual operation is detected and processed by the device by means of this object. During manual control, automatic mode is deactivated ("1" = ON / reaction as at start of detection, "0" = OFF / as at end of detection) by means of the permanent manual operation object.</p> <p>This object is visible only if permanent manual operation is enabled.</p>				

Function	Name	Type	DPT	Flags
Permanent manual operation ON - Status	FB x - Output	1-bit	1,011	C, R, -, T, A
<p>1-bit object for feedback that the function block has the same status as at the start of detection due to permanent manual operation and that the automatic function is deactivated.</p> <p>This object is visible only if permanent manual operation is enabled.</p>				

Function	Name	Type	DPT	Flags
Permanent manual operation OFF - Status	FB x - Output	1-bit	1,011	C, R, -, T, A
<p>1-bit object for feedback that the function block has the same status as at the end of detection due to permanent manual operation and that the automatic function is deactivated.</p> <p>This object is visible only if permanent manual operation is enabled.</p>				

Parallel operation

The actuators controlled by the function block can also be controlled by other sensors of the KNX installation. This is referred to as parallel operation. Parallel operation deactivates automatic mode. The following objects are visible only if permanent manual operation is activated and the parameter "Objects for parallel operation via additional control points" is activated.

Function	Name	Type	DPT	Flags
Parallel operation - Dimming	FB x - Input	4-bit	3,007	C, -, W, -, U
4-bit object that can be used to send telegrams for relative dimming to the function block. Dimmer steps are sent to this object as long as, for example, a push-button sensor is actuated. The dimming process stops when the push-button sensor is released.				
Function	Name	Type	DPT	Flags
Parallel operation - Dimming value	FB x - Input	1-byte	5,001	C, -, W, -, U
This 1-byte object is used to inform the function block that dimming values are sent to the actuators actuated by means of the function block, e.g. with a push-button sensor.				
Function	Name	Type	DPT	Flags
Parallel operation - HVAC	FB x - Input	1-byte	20,102	C, -, W, -, U
1-byte object used to set the HVAC mode. A telegram with the value 0 ... 4 is sent to this object. Possible modes: 0 = auto, 1 = comfort, 2 = standby, 3 = economy; 4 = building protection.				
Function	Name	Type	DPT	Flags
Parallel operation - Scene extension unit	FB x - Input	4-bit	17,001	C, -, W, -, U
This 1-byte object is used to inform the function block that a scene call-up is being sent to the actuators controlled by means of the function block, e.g. with a push-button sensor.				
Function	Name	Type	DPT	Flags
Parallel operation - Actuator status	FB x - Input	1-bit	1,011	C, -, W, -, U
1-bit object used for feedback on the state of the actuated actuator after parallel operation. "1 = active" The actuator is switched on after parallel manual operation. "0 = inactive" The actuator is switched off after parallel manual operation.				

13.1.5.7 Disabling function

The disabling function can be used to disable function blocks independently of the other function units. Automatic mode is deactivated in the event of an active disabling process. The assigned outputs can be brought to a defined state at the beginning or end of the disabling function. The disabling function can be activated by force by means of the object "Disabling function - Activate/Deactivate", after the bus voltage returns or after an ETS programming operation.

Behaviour at the beginning of the disabling function

A telegram can be transmitted separately at the beginning of the disabling function via each output (according to the configured function) for the application types "Single device" and "Main unit". The parameter "Behaviour at the beginning of the disabling function" on the parameter page "FB x - Disabling function" defines whether a telegram is transmitted.

No telegram output is intended at the start of disabling in the "Presence detector - Monitoring" application or when used as an "Extension unit". Here, the function block is merely interlocked.

Ongoing run-on times and switch-off delays are stopped and reset by activation of the disabling function. The current state (motion active/inactive) of the motion detection is frozen and saved.

The output can send a telegram to the actuator at the start of disabling, depending on the configured function of the output (switching, dimming, scene, value transmitter ...).

Behaviour during the disabling function

During an active disable, no motion detection and telegram output takes place via the outputs. External motion telegrams from extension units and telegrams for manual operation are ignored.

-  Repeated disabling telegrams (disabling function active after disabling function active) received during an active disable cause the device to execute the disabling reaction again (repeat of the configured behaviour at the beginning of the disabling function).

Behaviour at the end of the disabling function

The following behaviour can be configured when the disabling function is ended ...

- Enable and send no telegram,
- Enable and reaction as at end of detection,
- Enable and reaction as at start of detection,
- Enable and state as before the disabling function.

-  If a disabling function is not activated, the receipt of an enabling telegram is discarded and does not trigger the behaviour at the end of the disabling function.

- i** In brightness-dependent motion detection, attention must be paid to the state of the lighting at the end of the disabling function. If the lighting is on, a motion detection might not be possible again anymore (the function block no longer responds). The lighting can then still only be switched off manually.

13.1.5.7.1 "Disabling function" parameter

Function blocks (FB) -> FB x - General -> Disabling function

Behaviour of the outputs at the beginning of disabling

Output 1	No reaction
Output 2	"Output function" e.g.: switching
<p>A telegram can be transmitted separately at the beginning of the disabling function via each output (according to the configured function) when used as a "Single device" and "Main unit". This parameter defines whether a telegram is transmitted.</p> <p>"No reaction"</p> <p>No telegram is sent at the start of a disabling process.</p> <p>"Output function" e.g. switching</p> <p>A telegram with the configured state or configured values is sent at the beginning of the disabling, depending on the output function.</p> <p>Further parameters appear, which are described in the following.</p> <p>No telegram output is intended at the start of disabling in the "Presence detector - Monitoring" application or when used as an "Extension unit". Here, the function block is merely interlocked.</p> <p>Ongoing run-on times and switch-off delays are stopped and reset by activation of the disabling function. The current state (motion active/inactive) of the motion detection is frozen and saved.</p>	
Switching	OFF ON
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Switching" and "Staircase function".</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Switching) At day	OFF ON
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Switching" and "Staircase function" for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

(Switching) At night	OFF ON
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Switching" and "Staircase function" for night operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Priority control	Forcing active, OFF Forcing active ON Forcing inactive
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Switching with forced position".</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Forced position) At day	Forcing active, OFF Forcing active ON Forcing inactive
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Switching with forced position" for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Forced position) At night	Forcing active, OFF Forcing active ON Forcing inactive
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Switching with forced position" for night operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Dimming value	0 ... 100%
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Dimming value transmitter".</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Dimming value) At day	0 ... 100%
<p>This parameter defines the telegram at the beginning of disabling for the "Dimming value transmitter" output function for day operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Dimming value) At night	0 ... 100%
<p>This parameter defines the telegram at the beginning of disabling for the "Dimming value transmitter" output function for night operation.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Scene number	1 ... 64
<p>This parameter defines the telegram at the beginning of the disabling function for the "Scene extension unit" output function.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Scene number) At day	1 ... 64
<p>This parameter is used to define the telegram at the beginning of the disabling function for the "Scene extension unit" output function.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Scene number) At night	1 ... 64
<p>This parameter is used to define the telegram at the beginning of the disabling function for the "Scene extension unit" output function for night mode.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Temperature value	0 ... 21 ... 40 °C
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Temperature value transmitter".</p> <p>This parameter is visible only in the applications "Presence detector - Heating / Ventilation / Air conditioning" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Temperature value) At day	0 ... 21 ... 40 °C
<p>This parameter defines the telegram at the beginning of disabling for the "Temperature value transmitter" output function for day operation.</p> <p>This parameter is visible only in the applications "Presence detector - Heating / Ventilation / Air conditioning" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Temperature value) At night	0 ... 21 ... 40 °C
<p>This parameter defines the telegram at the beginning of disabling for the "Temperature value transmitter" output function for night operation.</p> <p>This parameter is visible only in the applications "Presence detector - Heating / Ventilation / Air conditioning" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
Brightness value	0 ... 750 ... 2000 lux
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Brightness value transmitter".</p> <p>This parameter is visible only in the applications "Motion detector - Lighting", "Presence detector - Lighting" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	
(Brightness value) At day	0 ... 750 ... 2000 lux
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Brightness value transmitter" for day operation.</p> <p>This parameter is visible only in the applications "Motion detector - Lighting", "Presence detector - Lighting" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	
(Brightness value) At night	0 ... 750 ... 2000 lux
<p>This parameter defines the telegram at the beginning of the disabling function for the output function "Brightness value transmitter" for night operation.</p> <p>This parameter is visible only in the applications "Motion detector - Lighting", "Presence detector - Lighting" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to active on the General parameter page.</p>	

Operating mode	Auto Comfort Standby Night Frost/heat protection
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This parameter is used to define the telegram at the start of disabling for the "Temperature operating mode" output functions.

This parameter is visible only in the applications "Presence detector - Heating / Ventilation / Air conditioning" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to inactive on the General parameter page

(Operating mode) At day	Auto Comfort Standby Night Frost/heat protection
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This parameter is used to define the telegram at the start of disabling for the "Temperature operating mode" output functions for day mode.

This parameter is visible only in the applications "Presence detector - Heating / Ventilation / Air conditioning" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to active on the General parameter page

(Operating mode) At night	Auto Comfort Standby Night Frost/heat protection
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This parameter is used to define the telegram at the start of disabling for the "Temperature operating mode" output functions for night mode.

This parameter is visible only in the applications "Presence detector - Heating / Ventilation / Air conditioning" and "Presence detector - Universal" if a telegram is to be sent at the beginning of the disabling period and the "Day/night switchover" parameter is set to active on the General parameter page.

"Additional value transmitters" function

Value	Depending on the data point type of the output
<p>The following data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration:</p> <p>DPT 5.010 0 ... 255</p> <p>DPT 5.003 0 ... 360°</p> <p>DPT 5.004 0 ... 255%</p> <p>DPT 6.010 -128 ... 127</p> <p>DPT 7.001 0 ... 65535</p> <p>DPT 7.600 1000 ... 10000 K</p> <p>DPT 8.001 -32768 ... 32767</p> <p>DPT 249.600 colour temperature + brightness</p> <p>RGB/HSV (RGB: DPT 232.600, HSV: DPT5.003, DPT 5.001, DPT 5.001)</p> <p>RGBW/HSVW (RGBW: DPT 251.600, HSV: DPT5.003, DPT 5.001, DPT 5.001, DPT 5.001).</p> <p>This parameter is used to define which value the telegram sends at the start of disabling for the "Other value transmitters" output function.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Value) At day	Depending on the data point type
<p>The following data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration:</p> <p>DPT 5.010 0 ... 255</p> <p>DPT 5.003 0 ... 360°</p> <p>DPT 5.004 0 ... 255%</p> <p>DPT 6.010 -128 ... 127</p> <p>DPT 7.001 0 ... 65535</p> <p>DPT 7.600 1000 ... 10000 K</p> <p>DPT 8.001 -32768 ... 32767</p> <p>DPT 249.600 colour temperature + brightness</p> <p>RGB/HSV (RGB: DPT 232.600, HSV: DPT5.003, DPT 5.001, DPT 5.001)</p> <p>RGBW/HSVW (RGBW: DPT 251.600, HSV: DPT5.003, DPT 5.001, DPT 5.001, DPT 5.001).</p> <p>This parameter is used to define which value the telegram sends at the start of disabling for the "Other value transmitters" output function.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

(Value) At night	Depending on the data point type
<p>The following data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration:</p> <p>DPT 5.010 0 ... 255</p> <p>DPT 5.003 0 ... 360°</p> <p>DPT 5.004 0 ... 255%</p> <p>DPT 6.010 -128 ... 127</p> <p>DPT 7.001 0 ... 65535</p> <p>DPT 7.600 1000 ... 10000 K</p> <p>DPT 8.001 -32768 ... 32767</p> <p>DPT 249.600 colour temperature + brightness</p> <p>RGB/HSV (RGB: DPT 232.600, HSV: DPT5.003, DPT 5.001, DPT 5.001)</p> <p>RGBW/HSVW (RGBW: DPT 251.600, HSV: DPT5.003, DPT 5.001, DPT 5.001, DPT 5.001).</p> <p>This parameter is used to define which value the telegram sends at the start of disabling for the "Other value transmitters" output function.</p> <p>This parameter is visible only if a telegram is to be sent at the start of disabling and the "Day/night switchover" parameter is set to inactive on the General parameter page.</p>	

At end of disabling	Enable and send no telegram Enable and reaction as at end of detection Enable and reaction as at start of detection Enable and state as before the disabling function
<p>This parameter is used to define the behaviour of the function block at the end of disabling.</p> <p>"Enable and send no telegram" In this setting, the function block is in the internal OFF state after enabling and reacts to a new motion detection according to the configuration. At the end of the disabling period, the current state of the connected actuators is not changed until motion is detected again by the function block.</p> <p>"Enable and reaction as at end of detection" At the end of disabling, the function block behaves in the same way as at the end of a detection. The function block sends the telegram configured for the end of a detection directly. With new motion is detected, the function block reacts with the same behaviour as at the start of a detection.</p> <p>"Enable and reaction as at the start of a detection" In this setting, the function block sends the telegram configured for "At the start of detection". The further behaviour of the function block depends on the actual motion detection.</p> <p>"Enabled and state as before disabling" The function block restores the state that was active before the disabling. The behaviour at the end of disabling is the same for all active channels. This parameter is visible only if the "Day/night switchover" parameter is inactive on the General parameter page.</p>	

(At end of disabling) At day	Enable and send no telegram Enable and reaction as at end of detection Enable and reaction as at start of detection Enable and state as before the disabling function
<p>This parameter is used to define the behaviour of the function block at the end of disabling.</p> <p>"Enable and send no telegram" In this setting, the function block is in the internal OFF state after enabling and reacts to a new motion detection according to the configuration. At the end of the disabling period, the current state of the connected actuators is not changed until motion is detected again by the function block.</p> <p>"Enable and reaction as at end of detection" At the end of disabling, the function block behaves in the same way as at the end of a detection. The function block sends the telegram configured for the end of a detection directly. With new motion is detected, the function block reacts with the same behaviour as at the start of a detection.</p> <p>"Enable and reaction as at the start of a detection" In this setting, the function block sends the telegram configured for "At the start of detection". The further behaviour of the function block depends on the actual motion detection.</p> <p>"Enabled and state as before disabling" The function block restores the state that was active before the disabling. The behaviour at the end of disabling is the same for all active channels. This parameter is visible only if the "Day/night switchover" parameter is activated on the General parameter page.</p>	

(At end of disabling) At night	Enable and send no telegram Enable and reaction as at end of detection Enable and reaction as at start of detection Enable and state as before the disabling function
<p>This parameter is used to define the behaviour of the function block at the end of disabling.</p> <p>"Enable and send no telegram" In this setting, the function block is in the internal OFF state after enabling and reacts to a new motion detection according to the configuration. At the end of the disabling period, the current state of the connected actuators is not changed until motion is detected again by the function block.</p> <p>"Enable and reaction as at end of detection" At the end of disabling, the function block behaves in the same way as at the end of a detection. The function block sends the telegram configured for the end of a detection directly. With new motion is detected, the function block reacts with the same behaviour as at the start of a detection.</p> <p>"Enable and reaction as at the start of a detection" In this setting, the function block sends the telegram configured for "At the start of detection". The further behaviour of the function block depends on the actual motion detection.</p> <p>"Enabled and state as before disabling" The function block restores the state that was active before the disabling. The behaviour at the end of disabling is the same for all active channels. This parameter is visible only if the "Day/night switchover" parameter is activated on the General parameter page.</p>	

Unlocking behaviour

The behaviour at the end of disabling is set together for outputs 1 and 2.

Unlock automatically	Deactivated After configured disabling time At end of presence and individual run-on time
<p>This parameter specifies whether a disabling process must be ended manually or is ended automatically.</p> <p>"Deactivated"</p> <p>An active disabling function must be ended manually by sending a telegram to the object "Disabling function - Activate/Deactivate".</p> <p>"After configured locking period: An active locking function is automatically deactivated after the locking period has expired. Additional parameters appear.</p> <p>At end of presence and individual run-on time: An active disabling process is automatically ended when no more presence is detected (end of presence) and the individual run-on time has expired. Additional parameters appear.</p> <p>Furthermore, it is still possible to unlock with an object, regardless of the selected setting.</p>	
Disabling time	0 ... 23 h 0 ... 15 ...59 min 0 ... 59 s
<p>This parameter is used to set the length of the disabling period in hours, minutes and seconds.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "After configured locking period" and the "Day/night switchover" parameter is inactive on the "General" parameter page.</p>	
(Disabling time) At day	0 ... 23 h 0 ... 15 ...59 min 0 ... 59 s
<p>This parameter is used to set the length of the disabling period in hours, minutes and seconds.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "After configured locking period" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	
(Disabling time) At night	0 ... 23 h 0 ... 15 ...59 min 0 ... 59 s
<p>This parameter is used to set the length of the disabling period in hours, minutes and seconds.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "After configured locking period" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	

Disabling time can be set via object	Inactive Active
<p>This parameter is used to enable the 2-byte objects "Disabling function - Disabling duration" and "Disabling function - Disabling duration - Status". Set the parameter to active for this purpose. These objects can be used to specify the disabling period or query the active disabling period.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "At end of disabling period".</p>	
Individual run-on time	0 ... 23 h 0 ... 59 min 0 ... 30 ...59 s
<p>This parameter is used to set the length of the individual run-on time in hours, minutes and seconds. At the "End of detection" and expiry of the individual run-on time, the disabling is automatically terminated.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "At end of presence and individual run-on time" and the "Day/night switchover" parameter is inactive on the "General" parameter page.</p>	
(Individual run-on time) At day	0 ... 23 h 0 ... 59 min 0 ... 30 ...59 s
<p>This parameter is used to set the length of the individual run-on time in day mode. The setting is made in hours, minutes and seconds.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "At end of presence and individual run-on time" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	
(Individual run-on time) At night	0 ... 23 h 0 ... 59 min 0 ... 30 ...59 s
<p>This parameter is used to set the length of the individual run-on time in night mode. The setting is made in hours, minutes and seconds.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "At end of presence and individual run-on time" and the "Day/night switchover" parameter is activated on the "General" parameter page.</p>	

Individual run-on time can be set via object	Inactive Active
<p>This parameter is used to enable the objects "Disabling function - Individual run-on time" and "Disabling function - Individual run-on time - Status". Set the parameter to active for this purpose. These objects can be used to specify the individual run-on time or query the active individual run-on time by means of telegrams.</p> <p>This parameter is visible only if the "Unlock automatically" parameter is set to "At end of presence and individual run-on time".</p>	
Unlocking delay after manual unlocking	Inactive Active
<p>This parameter is used to specify the behaviour of a disabling process that was ended manually, e.g. by a telegram from a push-button sensor.</p> <p>Inactive The disabling is revoked immediately.</p> <p>Active The disabling is revoked only after the set unlocking delay has elapsed.</p> <p>Additional parameters appear.</p>	
Duration of unblocking delay	0 ... 59 min 0 ... 15 ... 59 s
<p>This parameter is used to set the length of the unlocking delay in minutes and seconds.</p> <p>This parameter is visible only if the "Unlocking delay after manual unlocking" parameter is set to active and the "Day/night switchover" parameter is inactive on the General parameter page.</p>	
(Duration of unblocking delay) At day	0 ... 59 min 0 ... 15 ... 59 s
<p>This parameter is used to set the length of the unlocking delay in minutes and seconds.</p> <p>This parameter is visible only if the "Unlocking delay after manual unlocking" parameter is set to active and the "Day/night switchover" parameter is activated on the General parameter page.</p>	
(Duration of unblocking delay) At night	0 ... 59 min 0 ... 15 ... 59 s
<p>This parameter is used to set the length of the unlocking delay in minutes and seconds.</p> <p>This parameter is visible only if the "Unlocking delay after manual unlocking" parameter is set to active and the "Day/night switchover" parameter is activated on the General parameter page.</p>	

Overwrite values in device after ETS programming	Inactive Active
<p>If the disabling duration or the individual run-on time of the disabling function is to be overwritten in the device after an ETS programming operation, this parameter must be set to activated.</p> <p>The parameter is visible only if the "Disabling duration can be set via object" or "Individual run-on time can be set via object" parameter is activated.</p>	
Object polarity	0 = enable / 1 = disable 0 = disable / 1 = enable
<p>This parameter defines the telegram polarity of the disabling object.</p> <p>The parameter is visible only if the disabling function is enabled.</p>	
Status object	Inactive Active
<p>This parameter enables the object "Disabling function - Status", which is used to send the current status of the disabling function to the bus. A telegram is sent whenever a change is made:</p> <p>Default setting 0 = normal operation, 1 = disabling function active</p> <p>The parameter is visible only if the disabling function is enabled.</p>	
Acknowledgement	Inactive Active
<p>The deactivation of the disabling function can optionally take place using an additional 1-bit acknowledgement object. This prevents the deactivation of the disabling function by the disabling object.</p> <p>Parameter activated: The acknowledgement object is available. The disabling function can only be deactivated using the acknowledgement object by an ON telegram. OFF telegrams to the disabling object are ignored by the actuator.</p> <p>Parameter deactivated: No additional acknowledgement object is available. The disabling function can be deactivated via the disabling object by means of an "OFF" telegram.</p> <p>The parameter is visible only if the disabling function is enabled.</p>	

13.1.5.7.2 Object list "Disabling function"

Disabling function

Function	Name	Type	DPT	Flags
Disabling function - Activate/Deactivate	FB x - Input	1-bit	1,003	C, -, W, -, U

1-bit object used to activate and deactivate the disabling function. This is done independently of the other function blocks. The telegram polarity can be configured.

Function	Name	Type	DPT	Flags
Disabling function - Status	FB x - Output	1-bit	1,003	C, R, -, T, A

1-bit object for feedback on whether the disabling function is activated or deactivated.

Function	Name	Type	DPT	Flags
Disabling function - Acknowledgement	FB x - Input	1-bit	1,016	C, -, W, -, U

1-bit object used to acknowledge an active disabling function of an output. This object is visible only if the acknowledgement is to be used with the disabling function ("1" = disabling function is deactivated / "0" = disabling function remains active). It is no longer possible to deactivate the disabling function by means of the "Disabling function - Activate/Deactivate" object.

Function	Name	Type	DPT	Flags
Disabling function - Disabling time	FB x - Input	2-byte	7,005	C, -, W, -, U

2-byte object used to set a disabling period in seconds. The disabling function is terminated automatically after this time has elapsed.
This object is visible only if the "Unblock automatically" parameter is set to "After configured disabling time".

Function	Name	Type	DPT	Flags
Disabling function - Disabling time - Status	FB x - Output	2-byte	7,005	C, R, -, T, A

2-byte object used to output the currently active disabling period in seconds.

Function	Name	Type	DPT	Flags
Disabling function - Individual run-on time	FB x - Input	2-byte	7,005	C, -, W, -, U

2-byte object used to set a run-on time in seconds. The disabling function is automatically terminated at the end of the presence and the expiry of this time.
This object is visible only if the "Unlock automatically" parameter is set to "At end of presence and individual run-on time".

Function	Name	Type	DPT	Flags
Disabling function - Individual run-on time - Status	FB x - Output	2-byte	7,005	C, R, -, T, A
2-byte object used to output the currently active individual run-on time in seconds.				

13.1.5.8 Activity monitoring function

Activity monitoring

In brightness-independent operation, a function block can determine the time period after the last motion, depending on the configured operation, and transmit it to the bus by means of a communication object. This function, for example, allows simple monitoring of people's movements for example in assisted living or in a senior citizens' residence.

The function is activated if the parameter "Activity monitoring function" on the parameter page "FB x - General -> Enabled functions" is set to active in the ETS. However, the activity monitoring function is visible only if the "Functionality" parameter is set to brightness-independent on the parameter page FB x- General or the "Application" parameter is set to Presence detector - Heating/Ventilation/Cooling or Presence detector - Monitoring.

If this function is enabled, the device sends the current meter value to the bus when motion is detected and then sets the time meter to "0".

The meter value is always "0" during active motion or an ongoing run-on time. The time meter is started only immediately after the run-on time has elapsed. The meter starts with the value of the set run-on time. This ensures that the current meter value represents the period of time since the last time motion was detected.

The current meter value is tracked in the 2-byte communication object "Activity monitoring - Time since last motion" in "Seconds" data format in accordance with DPT 7.005.

As soon as the meter has reached the maximum value of "65,535", the meter stops until it is reset by a new motion detection process.

The meter is always reset and the time for cyclical transmission restarted if the function block is restarted (e.g. after ETS programming, after the bus voltage returns, after a function block switch-over, when deactivating the disabling function, after a walking test).

The device can also send the current meter reading cyclically to the bus. To do this, set the parameter "Transmit meter reading cyclically" to active on the parameter page "FB x- General -> Activity monitoring". The cycle time can be configured in the ETS.

The device cannot evaluate the time period after the last motion if the brightness threshold is configured to "Brightness-dependent" or "Auto ON, manual OFF" control mode is configured. In these cases, the function cannot be configured.

13.1.5.8.1 "Activity monitoring function" parameter

Function blocks (FB) -> FB x - General -> Activity monitoring

Transmit meter reading cyclically	Active Inactive
<p>This parameter is used to define whether the meter reading is sent cyclically to the bus.</p> <p>Active The meter reading is sent automatically. The interval is defined with the "Cycle time" parameter.</p> <p>Inactive The parameter must be queried by means of a telegram to the object "Activity monitoring - Time since last motion".</p>	
Cycle time	0 ... 23 h 0 ... 10 ... 59 min
<p>This parameter is used to set the time interval at which the meter reading is automatically sent to the bus. Hours and minutes can be set for the cycle time. The shortest cycle time is 10 minutes.</p> <p>This parameter is visible only if the "Transmit meter reading cyclically" parameter is set to active</p>	

13.1.5.8.2 Activity monitoring objects

Function	Name	Type	DPT	Flags
Activity monitoring - Time since last movement	FB x - Output	2-byte	7,006	C, R, -, T, A
<p>2-byte object containing the current meter reading of the measurement of the time period after the motion identified last in the "Minutes" data format. This object cyclically sends the current meter reading to the bus if cyclical transmission is activated. The cycle time can be configured in the ETS. The meter value is always "0" during active motion or an ongoing standard delay. As soon as the meter has reached the maximum value of "65,535", the meter stops until it is reset by a new motion detection process.</p> <p>This object is visible only if the activity monitoring function is activated in the ETS.</p>				

13.1.5.9 Scenes

Up to 64 scenes can be created and scene values (function) configured for the device. The scene values are called up by means of a separate scene extension object. The data point type of the extension object allows all scenes to be addressed.

A distinction is made between two types of scenes:

- Scenes that apply to the entire device and, in this way, influence all function blocks. They are configured on the "Scenes" parameter page
- Scenes that only apply to the respective function block and therefore influence only it.
The scene function must be enabled on the "Enabled function" parameter page of the corresponding function block so that the "Scenes" parameter page of the function block is visible together with the required communication objects and parameters.

The scene configuration selected in the configuration decides whether the number of scenes is either variable (1 ... 64) or alternatively fixed to the maximum (64).

- Scene configuration = "Variable (1 ... 64 scenes)"
In this setting, the number of scenes used can be selected anywhere within a range of 1 to 64. The "Number of scenes" parameter decides how many scenes are visible in the ETS and can therefore be used. It is possible to specify which scene number (1 ... 64) controls each scene.
- Scene configuration = "Fixed (64 scenes)"
In this setting, all scenes are always visible and can therefore be used. The scenes are actuated by permanently assigned scene numbers (1 ... 64) (scene number 1 -> scene 1, scene number 2 -> scene 2 ...). Individual scenes can be deactivated if necessary.

The scene function can be combined together with other functions of the device, whereby the set state received last is always executed.

Up to 64 scenes can be called up in the function block 1 ... 2, which can trigger disabling functions or manual operations only for the corresponding function block. The scene values are called up by means of a separate scene extension object. The data point type of the extension object allows all scenes to be addressed.

Disabling function via scene call-up

Automatic mode is deactivated in the event of an active disabling process. The assigned outputs can be brought to a defined state at the beginning or end of the disabling function. The disabling function can be activated via the "Disable" object or by force after the bus voltage returns or after ETS programming.

- i** To activate and deactivate the disabling function by scene call-up, the disabling function must be enabled and configured for the corresponding function block.
- i** To use simple manual operation by calling up a scene, **"Manual operation" must be enabled and "Simple manual operation" configured**.

- i** To use permanent manual operation by scene call-up, **"Manual operation" must be enabled and "Permanent manual operation" configured**.

There are also parameters for delayed scene call-up with adjustable delay time and an extended scene call-up to call up scenes one after the other, optionally also with overflow.

Setting a scene call-up delay

Each scene call-up of the device can optionally also be delayed. In this way, dynamic scene sequences can be configured if several scene outputs are combined with cyclical scene telegrams.

Prerequisite

The scene function must be enabled for the device or the function block on the "Scenes" parameter page.

- Activate the "Delay scene recall" parameter on the "Scenes" parameter page.

The delay time is activated and can be configured separately. The delay influences only the scene call-up of the "Presence detector". The delay time is started when a call-up telegram arrives. The corresponding scene is called up and the operating mode set only after the time has elapsed.

- i** Each scene call-up telegram restarts the delay time and retriggers it. If a new scene call-up telegram is received while a delay is active (scene not yet called up), the old (not yet called up) scene will be rejected and only the scene received last executed.
- i** The scene call-up delay has no influence on the storage of scene values. A scene storage telegram within a scene call-up delay will terminate the delay and thus the scene call-up.

Setting scene numbers

The scene number can be defined for each scene of the device.

The data point type of the scene extension object allows up to a maximum of 64 scenes to be addressed.

The scene function must be enabled on the "General" parameter page.

The scene configuration is set to "Variable (1 ... 64 scenes)"

- Set the "Scene number" parameter on the "Scenes" parameter page for each scene to the number used to address the scenes.

- i** A setting of "0" deactivates the corresponding scene to prevent it from being called up.
- i** If the same scene number is configured for several scenes, only the scene with the lowest sequential number will be addressed. In this case, the other scenes will be ignored.

Example 1:

KNX scene number 42 was assigned to the internal scene with number 2 by means of the configuration. If the product receives a call-up telegram with KNX scene number 42 by means of the KNX scene extension object, the internal scene with number 2 will be called up.

Example 2:

For the internal scenes with numbers 2 and 5, the KNX scene number 42 was assigned by means of the configuration. If the product receives a call-up telegram with KNX scene number 42 by means of the KNX scene extension object, the internal scene with number 2 will be called up. The internal scene with number 5 is ignored.

Scene functions

For each scene, you must define which scene command (e.g.: activate FB group 1, activate disabling function, deactivate disabling function) is to be set when the scene is called up. Different settings are available for the device or each function block.

- Set the "Function" parameter to the desired operating mode for each scene on the "Scenes" parameter page.

The configured scene command is called up if a scene is called up.

13.1.5.9.1 "Scenes" parameter

Function blocks (FB) -> FB x - General -> Scenes

Designation	Free text Max. 40 characters long text
This parameter gives the "FBx" a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	
Delay scene recall	Inactive Active
A scene is called up by means of the object "Scenes - Scene extension units". The scene call-up can be delayed after receiving a call-up telegram (parameter activated) if necessary. Alternatively, the scene will be called immediately after receiving the telegram (parameter deactivated).	
Delay time	0 ... 59 min 0 ... 10 ... 59 s
This parameter is used to define the time by which the scenes are delayed after being called up. The setting is made in minutes and seconds.	
Extended scene call-up	Inactive Active
The extended scene call-up allows up to 64 scenes of the function block to be called up in sequence. The scene is called up here by means of the 1-bit communication object "Scenes - Scene recall". Each ON telegram received by means of this object calls up the next scene. Each OFF telegram received calls up the previous scene. This parameter enables the extended scene call-up, if necessary.	
With overflow	Inactive Active
<p>The extended scene call-up can take place with or without overflow at the scene limits. An overflow occurs when the last scene of the selected configuration is reached when counting up or scene 1 when counting down and an additional telegram is received in the last counting direction.</p> <p>Active: After reaching the last scene of the selected configuration, a further ON telegram of the overflow is executed and scene 1 is called up. Similarly, after reaching scene 1, the overflow is executed by another OFF telegram and the last scene of the selected configuration is called up.</p> <p>Inactive: A scene overflow is not possible. After reaching the last scene of the selected configuration, another ON telegram of the extended scene call-up will be ignored. In the same way, further OFF telegrams are ignored if scene 1 was called up last.</p> <p>This parameter is visible only if the extended scene call-up is used.</p>	

Scene configuration	Variable (1...64 scenes) Fixed (64 scenes)
<p>The scene configuration selected here decides whether the number of scenes is variable (1 ... 64) or alternatively fixed to the maximum (64).</p> <p>Variable (1...64 scenes): In this setting, the number of scenes used can be selected anywhere within a range of 1 to 64. The "Number of scenes" parameter decides how many scenes are visible in the ETS and can therefore be used. It is possible to specify which scene number (1 ... 64) controls each scene.</p> <p>Fixed (64 scenes): In this setting, all scenes are always visible and can therefore be used. The scenes are actuated by means of permanently assigned scene numbers (1 ... 64) (scene number 1 -> scene 1, scene number 2 -> scene 2...). Individual scenes can be deactivated if necessary. To do this, remove the tick from the corresponding scene under "Scene active".</p>	
Number of scenes	1...10...64
<p>This parameter defines how many scenes are visible for the function block in the ETS and can therefore be used.</p> <p>This parameter is visible only if the "Scene configuration" parameter is set to variable (1...64 scenes)</p>	
Scene number	0...1*...64 *: The predefined scene number depends on the scene (1...64).
<p>It is possible to set which scene number (1 ... 64) actuates each scene.</p> <p>A setting of "0" deactivates the corresponding scene to prevent it from being called up or stored. If the same scene number is configured for several scenes, only the scene with the lowest sequential number will be addressed. In this case, the other scenes will be ignored.</p> <p>This parameter is visible only if the "Scene configuration" parameter is set to variable (1...64 scenes).</p>	

Function	Activate disabling function Deactivate disabling function Simple manual operation – just like with EIN Simple manual operation – as with the OFF setting Continuous manual operation – as with ON Continuous manual operation – as with OFF Permanent manual operation - deactivate
<p>This parameter is used to defines the function that is executed when the scene is called up.</p> <p>Select the following settings only if the "Disabling function" has been enabled and configured:</p> <p>Activate disabling function: When the scene is called up, a telegram is sent to the object "Disabling", which activates the disabling function. If configured, the function block sends the telegram at the "Start of disabling". Automatic mode is deactivated. This state is maintained until disabling is deactivated again. This can be done by a telegram or automatically if configured.</p> <p>Deactivate disabling function: When the scene is called up, a telegram is sent to the object "Disabling", which deactivates the disabling function. If configured, the function block sends the "End of disabling" telegram. Automatic mode is active again.</p> <p>Select the following settings only if "Manual operation" has been enabled and "Simple manual operation" has been configured:</p> <p>Simple manual operation – as with ON: When the scene is called up, an ON telegram is sent to the 'Simple manual operation' object. The function block behaves in the same way as with operation via an extension unit.</p> <p>Simple manual operation – as with OFF: When the scene is called up, an OFF telegram is sent to the 'Simple manual operation' object. The function block behaves in the same way as with operation via an extension unit.</p> <p>Select the following settings only if "Manual operation" has been activated and "Permanent manual operation" has been configured:</p> <p>Permanent manual control – same as ON: When the scene is activated, an ON telegram is sent to the 'Permanent manual control' object. The configured behaviour at "Start of detection" is executed regardless of the brightness and motion. Automatic mode is stopped. The evaluation of movements and brightness is disabled.</p> <p>Permanent manual operation - As with OFF: An OFF telegram is sent when the scene is called up. The configured behaviour at the "End of detection" is executed. This also takes place if the run-on time has not yet expired. Automatic mode is stopped. The evaluation of movements and brightness is disabled.</p> <p>Permanent manual operation - Deactivate: Permanent manual operation is deactivated when the scene is called up. The disabling is revoked and automatic mode is reactivated.</p>	

13.1.5.9.2 Object list "Scenes"

Function	Name	Type	DPT	Flag
Scenes - Scene extension unit	FB x - Input	1-byte	17,001	C, -, W, -, U
<p>1-byte object used to call up, switch or save one of a maximum of 64 scenes from a scene extension unit.</p> <p>This object is visible only if the scene function for the function block is activated in the ETS.</p>				
Function	Name	Type	DPT	Flag
Scenes - Extended scene recall	FB x - Input	1-bit	1,001	C, -, W, -, U
<p>1-bit object for extended scene call-up. Each ON telegram received calls up the next scene in sequence. Each OFF telegram received calls up the previous scene. An ON or OFF telegram always calls up scene 1 first after a reset (bus voltage return, ETS programming operation).</p> <p>This object is visible only if the scene function and the extended scene call-up are activated for the function block in the ETS.</p>				

13.2 Gesture control

When gesture control is enabled, the device can be controlled by interpreting gestures and movements. The parameters can be used to determine which command is executed when a gesture is recognised, and how the device should respond both during and after gesture detection. The aim of gesture control is to trigger a virtual key press in response to a recognised gesture.

To prevent physical button presses from triggering gestures unintentionally, the gesture recognition system operates with a processing delay. If a button is pressed within this time period, gesture recognition is cancelled. In addition, a defined delay period until the next gesture is detected prevents the hand movement from being recognised as a gesture again after the button has been pressed.

There is a behavioural distinction in the case of a brief presence where the evaluation delay is not reached. You can configure whether or not a button press should be simulated if the physical buttons are not pressed.

Evaluation delay

The evaluation delay at the beginning of a motion detection ensures that no reaction to just a brief motion (e.g. when quickly striding through a room) takes place. The motion is only processed during a longer-lasting detection and - if configured - the telegram is transmitted. During the detection of the first motion impulse of a new motion, the configured delay time of the transmission delay is initially started.

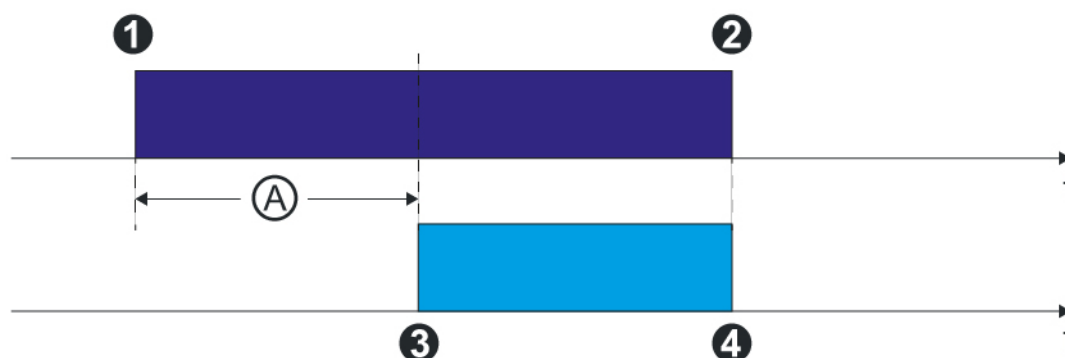


Figure 36: Evaluation delay during the monitoring period

1	Start gesture	2	End of gesture
3	Start of trigger	4	End of trigger

If no further movement is detected within the monitoring period, the device does not send a telegram. A newly detected motion after that restarts the evaluation delay.

Operation button

If a button is pressed manually whilst gesture control is active, the button press is assigned to the gesture currently in progress. Gesture control then remains active and is not interrupted. The button is not interpreted as a standalone control action.

A defined time period is provided for gesture-based activation, within which the virtual button can be triggered by pressing a physical button (0 s – 10 s, default value: 2 s). If the virtual button is triggered by a recognised gesture and the physical button is then pressed, this has no effect on the gesture that was recognised previously.

If the button is pressed manually before a gesture is triggered, the virtual button will not be triggered, as the button actuation occurred before the defined "trigger time" had elapsed.

When the virtual button is triggered by a gesture, no further event can be generated until the user leaves the gesture area. Only once you have left the gesture area is it possible to trigger the action again, depending on how the mechanical buttons are subsequently operated.

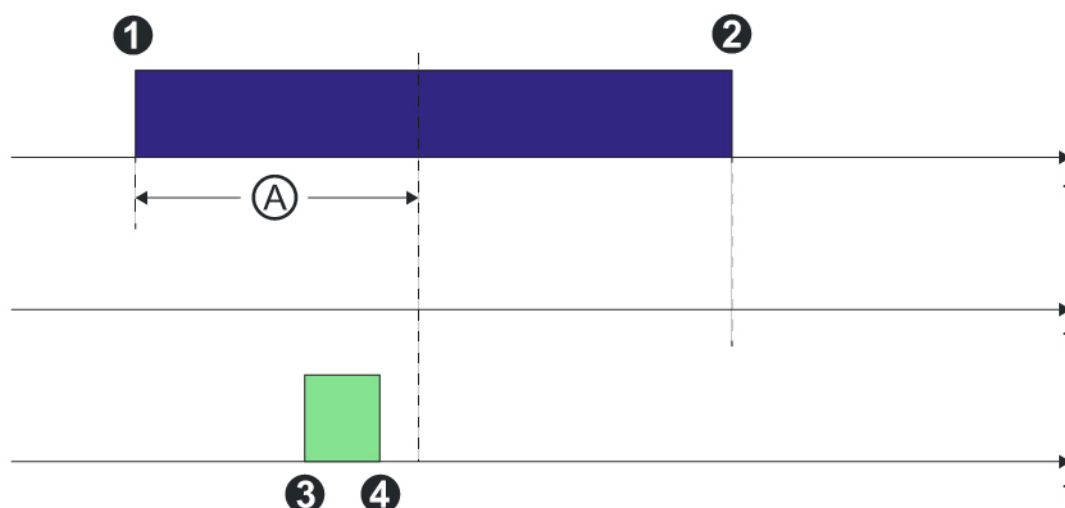


Figure 37: Manual triggering by a gesture during the monitoring period

1	Start gesture	2	End of gesture
3	Start of trigger	4	End of trigger

Summary

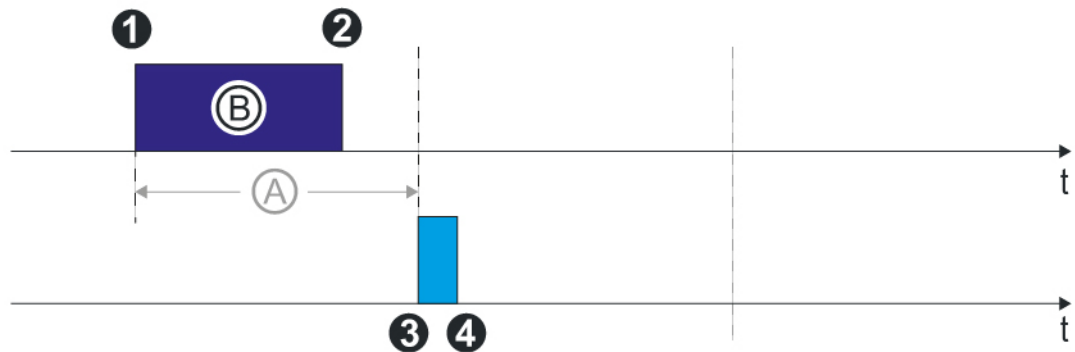


Figure 38: Summary of the monitoring period

1	Start gesture	2	End of gesture
3	Start of trigger	4	End of trigger

If movement is detected within the detection field, the system does not trigger an immediate response at first. Instead, a defined delay period begins once motion detection has ended ("trigger time").

If you leave the detection field before the end of the movement detection or before the delay time has elapsed, the movement is recorded as a brief presence. If the behaviour for short-press detection is set to "Execute command", a short key press is simulated once the evaluation delay has elapsed.

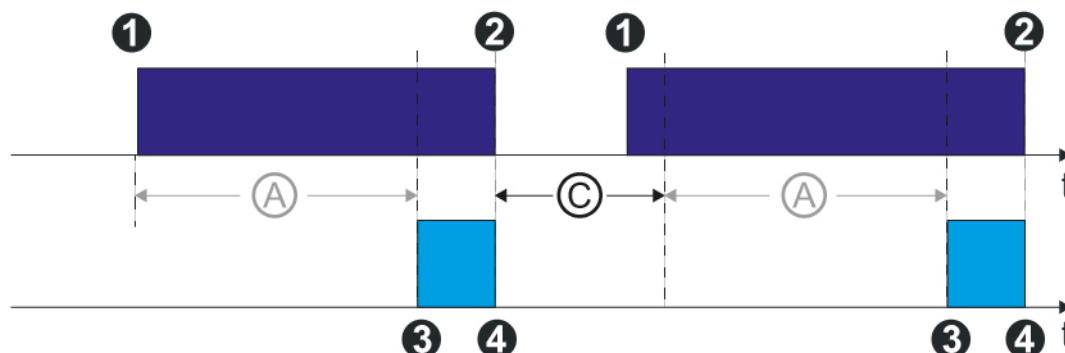
Time until the next time entry

Figure 39: Time until the next time entry

1	Start gesture	2	End of gesture
3	Start of trigger	4	End of trigger

The time until the next trigger begins when gesture capture ends. From this point onwards, a defined blocking or waiting period is activated (A), during which no new gesture can be recognised or triggered.

After a physical or virtual button has been pressed, there is also a configurable delay before a new gesture can be recognised (0 s – 10 s, default: 2 s). Over this period, successive user actions are separated from one another. Each gesture is recorded within its own time slot until the end of gesture recognition is reached.

The time-delayed release begins shortly before the end of the respective gesture detection. This trigger is limited to a specific time window and ends when gesture capture ends. Only once the time until the next trigger has elapsed can another gesture be recognised and processed.

13.2.1 "Gesture Control" parameter table

"General" parameter page

Gesture control	Active Inactive
At this point, the device's gesture control can be enabled centrally. If "Active", the ETS shows further communication object and parameters.	

"Gesture Control" parameter page

Designation	Free text Max. 40 characters long text
This parameter gives the "FBx" a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	
Function	Switching Value transmitter Scene extension unit
This parameter determines the channel function and specifies which additional parameters and communication objects are available for gesture control.	

The following parameters are available, depending on the function selected.

Command for gesture recognition	No reaction ON OFF TOGGLE
This parameter determines the response when gesture recognition is active. This parameter is visible only if function "Switching" is set.	
Gesture capture ends when the button is released	No reaction ON OFF TOGGLE
This parameter determines the response when gesture detection ends. This parameter is visible only if function "Switching" is set.	

Functionality	no function 1-byte 2-byte 3-byte 6-byte
The "value transmitter" function distinguishes between 1-byte, 2-byte 3-byte and 6-byte values. This parameter is visible only if function "Value transmitter" is set.	
Value range Value on gesture capture	1-byte (0...255) 1-byte (0...100%) 1-byte (-128...127) 1-byte (0...255%)
The 1-byte value transmitter offers these value ranges for setting. The other parameters and objects of the function are based on the setting of this parameter. This parameter is visible only if function "Value transmitter" is set.	
Value range Value on gesture capture	2-byte (0...65535) 2-byte (-32768...32767) 2-bytes temperature value 2-byte brightness value 2-bytes colour temperature value
The 2-byte value transmitter offers these value ranges for setting. The other parameters and objects of the function are based on the setting of this parameter. This parameter is visible only if function "Value transmitter" is set.	
Temperature reading at the time of gesture detection	0... 20 ...40
This parameter defines the object value when the button is pressed. This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte temperature value".	
Brightness value for gesture recognition	0, 50, ..., 300 , ..., 1500
This parameter defines the object value when the button is pressed. This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte brightness value".	
Colour temperature during gesture detection	1000, 1100, ..., 2700 , ..., 10000
This parameter defines the object value when the button is pressed. This parameter is only visible if "Function = 2-byte" and "Value range = 2-byte temperature value".	

Value range	3-bytes colour value RGB/HSV
<p>The 3-byte value transmitter offers these value ranges for setting.</p> <p>The other parameters and objects of the function are based on the setting of this parameter.</p>	
Colour space	RGB HSV
<p>This parameter defines the colour space of the function. With RGB, communication can take place via individual objects or via a combination object. With HSV, communication takes place via individual objects.</p> <p>This parameter is only visible if "Value range = 3-byte colour value RGB/HSV"</p>	
Communication	Individual objects Combi object
<p>When the colour space is set to RGB, communication via the bus can take place either via individual objects (red, green, blue) or via a combination object (RGB).</p> <p>This parameter is only visible if "Value range = 3-byte colour value RGB/HSV"</p>	
Value range	6-bytes colour value RGBW/HSVW 6-bytes colour temperature value + brightness
<p>The 6-byte value transmitter offers these value ranges for setting.</p> <p>The other parameters and objects of the function are based on the setting of this parameter.</p> <p>The other parameters and objects of the function are based on the setting of this parameter.</p>	
Colour space	RGBW HSVW
<p>This parameter defines the colour space of the function. With RGBW, communication can take place via individual objects or via a combination object. With HSVW, communication takes place via individual objects.</p> <p>This parameter is only visible if "Value range = 6-byte colour value RGBW/HSVW".</p>	
Communication	Individual objects Combi object
<p>When the colour space is set to RGBW, communication via the bus can take place either via individual objects (red, green, blue, white) or via a combination object (RGBW).</p> <p>This parameter is only visible if "Value range = 6-byte colour value RGBW/HSVW"</p>	

Value during gesture capture (RGB/HSV)	#000000 ... #FFFFFF
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Colour value transmitter red", "Colour value transmitter green", "Colour value transmitter blue" or – "Colour value transmitter RGB", "Colour value transmitter RGBW" or – "Colour hue (H)", "Saturation (S)", "Brightness (V)" <p>The parameter is visible with "Function = 3-byte RGB/HSV" or "Function = 6-byte RGBW/HSVW".</p> <p>The value (RGB/HSV) is configured by means of a colour picker.</p> <p>With the "6-byte RGBW / HSVW" function, the W value is configured using a separate slider.</p>	
Value on gesture detection (W)	0 ... 255 255
<p>This parameter is used to determine the object values of the following output objects when the button is pressed:</p> <ul style="list-style-type: none"> – "Colour value transmitter White" or – "Colour value transmitter RGBW" <p>Visible only if "Function = 6-byte RGBW/HSVW" and "Colour space = RGBW".</p>	
Colour temperature (1000, 1100, ..., 10000 K)	1000, 1100, ..., 2700 , ..., 10000
<p>This parameter determines the colour temperature of the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 6-byte" and "Value range = 6-byte temperature value + brightness".</p>	
Brightness	0 ... 100 %
<p>This parameter determines the brightness of the object value when the button is pressed.</p> <p>This parameter is only visible if "Function = 6-byte" and "Value range = 6-byte temperature value + brightness".</p>	
Time window	0 ... 100 min 0 ... 1 ... 59 s 0 ... 900 ms
<p>This parameter determines the time period in which the actuator adjusts the colour temperature and brightness after the button has been pressed.</p> <p>This parameter is only visible if "Function = 6-byte" and "Value range = 6-byte temperature value + brightness".</p>	

Delay scene	external Internal
<p>This parameter determines how a scene is called up.</p> <p>external: Scenes are triggered via a KNX telegram sent over the bus.</p> <p>Internal: Scene selection is carried out internally via the actuator and is triggered without a KNX telegram.</p>	

External scene number (1 ... 64)	1...64
Internal scene number (1 ... 8)	1...8
<p>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. This is where the scene number to be sent when a gesture is activated is defined.</p>	

Parameter page "Gesture control" > "Times"

Evaluation delay (s)	1... 2 ...10
<p>This parameter defines the evaluation delay time.</p> <p>Definition of the evaluation delay in seconds.</p>	

What to do in the event of a brief recording	No reaction Execute command
<p>This parameter defines the behaviour in the event of a short circuit.</p>	

Time remaining until the next time entry (s)	1... 2 ...10
<p>This parameter defines the time interval that must elapse before a gesture is detected again.</p>	

Show info graphic	Active Inactive
<p>When the infographic is enabled, the flowcharts showing the sequence of commands for "Evaluation delay", "Button operation", "Quick detection" and "Time until next gesture detection" are displayed, along with a corresponding text description for each.</p>	

Activate disabling function	Inactive Active
<p>This parameter enables the gesture control disabling function.</p>	

Polarity of disabling object	1 = disable / 0 = enable 0 = disable / 1 = enable
<p>The disabling function is activated and deactivated via the separate 1-bit communication object "Disabling function". The telegram polarity for this object can be set here.</p> <p>This parameter is only visible if the disabling function is enabled.</p>	

13.2.2 Object list "Gesture control"

The following communication objects are available for gesture control, depending on the set operating concept. The name of the object can be specified by the parameter "Name of ..." parameter.

Function	Name	Type	DPT	Flag
Disabling	Gesture control - Input	1-bit	1,003	C, -, W, -, U
1-bit object used to activate and deactivate the disabling function (telegram polarity configurable).				
This object is visible only if the "Disabling function" parameter is enabled (active).				

Function	Name	Type	DPT	Flag
Switching	Gesture control - Output	1-bit	1,001	C, -, W, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Switching feedback	Gesture control - Input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Value transmitter 0...255	Gesture control - Output	1-byte	5,010	C, -, -, T, -
1-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value transmitter 0... 100 %	Gesture control - Output	1-byte	5,001	C, -, -, T, -
A 1-byte object for sending percentage value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value range -128...127	Gesture control - Output	1-byte	6,010	C, -, -, T, -
1-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value range 0...255%	Gesture control – output	1-byte	5,004	C, -, -, T, -
A 1-byte object for sending percentage value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value transmitter 0...65535	Gesture control - Output	2-byte	7,001	C, -, -, T, -
2-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value transmitter -32768...32767	Gesture control - Output	2-byte	8,001	C, -, -, T, -
2-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Temperature value transmitter	Gesture control - Output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values.				

Function	Name	Type	DPT	Flag
Brightness value transmitter	Gesture control - Output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values.				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter	Gesture control - Output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin.				

Function	Name	Type	DPT	Flag
Colour value transmitter RGB	Gesture control - Output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in one communication object.				

Function	Name	Type	DPT	Flag
Colour value transmitter RGBW	Gesture control - Output	6-byte	251,600	C, -, -, T, -
6-byte object for sending the colour information red, green, blue and white in one communication object.				

Function	Name	Type	DPT	Flag
Colour value transmitter Red	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the red colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter Green	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the green colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter Blue	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the blue colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter White	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter White	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour hue (H)	Gesture control - Output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360°.				

Function	Name	Type	DPT	Flag
Saturation (S)	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Brightness (V)	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness (V) from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
White value (W)	Gesture control - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter + brightness	Gesture control - Output	6-byte	249,600	C, -, -, T, -
6-byte object for sending the time window, colour temperature and brightness.				

Function	Name	Type	DPT	Flag
Scene extension unit (external) 1...64	Gesture control - Output	1-byte	18,001	C, -, -, T, -
A 1-byte object for sending scene values.				

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

Function	Name	Type	DPT	Flag
Disabling	Gesture control - Input	1-bit	1,003	C, -, W, -, U
1-bit object used to activate and deactivate the disabling function (telegram polarity configurable).				
This object is visible only if the "Disabling function" parameter is enabled (active).				

Function	Name	Type	DPT	Flag
Switching	Gesture control - Output	1-bit	1,001	C, -, W, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Switching feedback	Gesture control - Input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Value transmitter 0...255	Gesture control - Output	8-bit	5,010	C, -, -, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Value transmitter 0...255	Gesture control - Output	1-byte	5,010	C, -, -, T, -
1-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value transmitter 0... 100 %	Gesture control - Output	1-byte	5,001	C, -, -, T, -
A 1-byte object for sending percentage value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value range -128...127	Gesture control - Output	1-byte	6,010	C, -, -, T, -
1-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value range 0...255%	Gesture control – output	1-byte	5,004	C, -, -, T, -
A 1-byte object for sending percentage value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value transmitter 0...65535	Gesture control - Output	2-byte	7,001	C, -, -, T, -
2-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Value transmitter -32768...32767	Gesture control - Output	2-byte	8,001	C, -, -, T, -
2-byte object to transmit value telegrams for gesture control.				

Function	Name	Type	DPT	Flag
Temperature value transmitter	Gesture control - Output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values.				

Function	Name	Type	DPT	Flag
Brightness value transmitter	Gesture control - Output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values.				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter	Gesture control - Output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter	Button/rocker <i>n</i> - output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter RGB	Button/rocker <i>n</i> - output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in a communication object on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter RGB	Button/rocker <i>n</i> - output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in a communication object on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter RGBW	Button/rocker <i>n</i> - output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the colour information red, green, blue and white in a communication object on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter RGBW	Button/rocker <i>n</i> - output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the colour information red, green, blue and white in a communication object on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Red	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value red from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Red	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value red from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Green	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value green from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Green	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value green from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Blue	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value blue from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Blue	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value blue from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter White	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value white from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter White	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value white from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour hue (H)	Button/rocker <i>n</i> - output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360° on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour hue (H)	Button/rocker <i>n</i> - output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360° on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 saturation (S)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 saturation (S)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 brightness (V)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 brightness (V)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 white level (W)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 white level (W)	Button/rocker <i>n</i> - output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter + brightness	Button/rocker <i>n</i> - output	6-byte	249,600	C, -, -, T, -
6-byte object for transmitting the time window, colour temperature and brightness on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter + brightness	Button/rocker <i>n</i> - output	6-byte	249,600	C, -, -, T, -
6-byte object for transmitting the time window, colour temperature and brightness on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 scene (external) 1...64	Button/rocker <i>n</i> - output	1-byte	18,001	C, -, -, T, -
1-byte object for transmitting scene values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 scene (external) 1...64	Button/rocker <i>n</i> - output	1-byte	18,001	C, -, -, T, -
1-byte object for transmitting scene values on channel 2 if 2-channel operation is activated.				

13.3 LED alarm signal

The push-button sensor 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 push-button sensor signals an alarm by all status LEDs of the push-button sensor flashing synchronously. This alarm indication can be separately enabled with the parameter "LED alarm signalling" on the "General" parameter page.

When LED alarm signalling is enabled, the ETS displays the "Alarm signalling" communication object and further alarm function parameters.

The "Alarm signalling" object is used as an input for activating or deactivating the alarm signal indication. The polarity of the object can be selected. When the object value corresponds to the "Alarm" condition, all status LEDs are always flashing red with a frequency of approx. 2 Hz. If there is an alarm, the behaviour of the status LED as configured in the ETS for normal operation have no significance. The LEDs adopt their originally configured behaviour only after the alarm 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.

-  Regardless of the colour configuration of the status LED in normal operation and with a superposed function, the LEDs always flash red when a indication alarm signal is active.
-  When an indication alarm signal is active, the status LEDs of the push-button sensor always flash with the regular brightness ("Brightness of all status LEDs" parameter). The push-button sensor automatically deactivates night reduction as long as the indication alarm signal is active and updates it when the alarm signal is switched off and the night reduction object still is at "1"-active.

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

- If this parameter is set to "Yes", active alarm indication can be deactivated by a button actuation on the push-button sensor. 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 "No" has been selected, alarm indication 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, LED alarm signalling cannot be reset by a disabled button.

If alarm indication can be deactivated by pressing any button, the parameter "Use alarm acknowledge object?" defines whether an additional telegram for acknowledging the alarm is to be transmitted to the bus via the separate object "Acknowledge alarm message".

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.

13.3.1 "LED Alarm Message" parameter table

"General" parameter page

LED alarm signal	Activated Deactivated
<p>This parameter can be used to enable alarm signal indication.</p> <p>When alarm signalling is enabled, the ETS displays further parameters and up to two further communication objects.</p>	

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

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

Reset alarm signalling by a button actuation?	Yes No
<p>If this parameter is set to "Yes", active alarm indication can be deactivated by a button actuation on the push-button sensor.</p> <p>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.</p> <p>If "No" has been selected, alarm indication can only be deactivated via the alarm signalling object. A button actuation will always execute the configured button function.</p>	

Use the alarm acknowledge object?	Yes No
<p>If an indication alarm can be deactivated by a button actuation, this parameter defines whether an additional alarm acknowledge telegram is to be transmitted to the bus via the separate object "Alarm signalling acknowledge" after triggering by this button actuation.</p>	

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

13.3.2 Object list "LED alarm message"

Function	Name	Type	DPT	Flag
Alarm signal	LED alarm signalling - input	1-bit	1,001	C, -, W, -, U
1-bit object for the reception of an alarm signalling (polarity configurable).				
Function	Name	Type	DPT	Flag
Alarm message acknowledgement	LED alarm signalling - output	1-bit	1,001	C, -, -, T, -
1-bit object for transmitting the acknowledgement of an alarm signalling (polarity configurable).				

13.4 LED orientation lighting

All status LEDs of the push-button sensor can be used as orientation lights if necessary. The colour of the orientation light can be freely selected from the colour range available for the status LED. You can also set the brightness at which the status LED will light up when orientation light is switched on. When the LED orientation light is on, all status LEDs of the push-button sensor will always light up in the set colour and brightness. With LED night reduction activated, the corresponding parameter page can be used to configure a separate brightness for the orientation light during night reduction LED night reduction.

The LED orientation light is activated on the "General" parameter page and can subsequently be configured on the "LED orientation lighting" parameter page.

For orientation, the status LEDs can be:

- switched on continuously,
- switched on via an object, or
- switched on for a set period of time after pressing a button.

In accordance with the available selection options, random levels can be configured for the regular brightness and for the brightness with activated LED orientation lighting in the ETS. It is advisable to set the brightness value for LED orientation lighting to a lower level than regular brightness.

13.4.1 Parameter table: "LED orientation lighting"

"General" parameter page

LED orientation lighting	Activated Deactivated
<p>The LED orientation light can be enabled here.</p> <p>If orientation lighting is enabled, the ETS shows further parameters and at most one more communication object.</p>	

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

Colour	Red Green Blue Yellow Cyan Orange Violet White
<p>The colour for all status LEDs with LED orientation lighting switched on can be selected here.</p>	
Functionality	always OFF always ON Control via object Automatic control
<p>This parameter defines the function of LED orientation lighting.</p> <p>always OFF: LED orientation lighting is permanently switched off.</p> <p>always ON: LED orientation lighting is permanently switched on.</p> <p>Control via object: LED orientation lighting can be switched on and off via the "Switching orientation lighting" object.</p> <p>automatic control: LED orientation lighting is switched on with every press of a button and switched off after a parameterized on-time.</p>	
Control via object value	1 = static ON / 0 = static OFF 1 = static OFF / 0 = static ON 1 = flashing / 0 = static OFF 1 = static OFF / 0 = flashing
<p>With the "Control via object" function set, this parameter defines the object values for the "Switching orientation lighting" object.</p>	

Switch-off after Minutes (0...20)	0...20
With the "automatic control" function set, this parameter defines the on-time for LED orientation lighting in minutes.	
Seconds (0...59)	0...3...59
With the "automatic control" function set, this parameter defines the on-time for LED orientation lighting in seconds.	
Brightness	Level 0 (OFF) Level 1 (dark) Level 2 Level 3 Level 4 Level 5 (bright)
The brightness for all status LEDs with LED orientation lighting switched on can be selected here.	

13.4.2 Object list "LED orientation lighting"

Function	Name	Type	DPT	Flag
Switching orientation lighting	LED orientation lighting - input	1-bit	1,001	C, -, W, -, U
1-bit object for switching the orientation light on or off. The telegram polarity can be configured.				

13.5 LED night reduction

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

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.

After a button has been actuated while night reduction is active, the illuminated LEDs of the device can be controlled to light up with regular brightness for 30 seconds.

This behaviour can be activated or deactivated using the "Brightness increase for 30 seconds" parameter. Increasing the brightness, especially with significantly reduced brightness values or LEDs even switched off, permits status changes to be identified more easily (or identified at all) in night mode.

- i** 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 recommended, however, to set the brightness value for the night reduction lower than the regular brightness.
- i** After a device reset, the regular brightness for switched-on LEDs is always effective. Switch-over by night reduction will only take place when a telegram is written to the respective object after a reset.
- i** 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.
- i** 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 LED night reduction as long as LED alarm signalling is active and updates it when LED alarm signalling is switched off and the night reduction object still is at "1"-active.

13.5.1 Parameter table: "LED night-time dimming"

"General" parameter page

LED night reduction	Activated Deactivated
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The LED night reduction can be enabled here.

If night reduction is enabled, the ETS shows further parameters and another communication object.

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

Polarity of the night reduction object	1 = active / 0 = not active 0 = active / 1 = not active
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The night reduction object is used as an input for activating or deactivating the LED night reduction. This object defines the polarity of the "Switching night reduction" object.

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

Increase brightness for 30 seconds	Activated Deactivated
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After a button has been actuated while night reduction is active, the illuminated LEDs of the device can be controlled to light up with regular brightness for 30 seconds. This behaviour can be activated or deactivated using this parameter.

Brightness of orientation lighting in night reduction	Level 0 (OFF) Level 1 (dark) Level 2 Level 3 Level 4 Level 5 (bright)
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The brightness of orientation lighting can be defined on the "LED orientation lighting" parameter page. The illumination brightness of the LED orientation lighting with active night reduction can be set here in 6 levels.

13.5.2 Object list "LED night-time dimming"

Function	Name	Type	DPT	Flag
Switching night reduction	LED night reduction - input	1-bit	1,001	C, -, W, -, U
1-bit object for activating or deactivating the night reduction (brightness of all LEDs changed). This makes it possible, for example, to reduce the brightness during night-time hours to a value configured in the ETS ("1" = Night reduction ON; "0" = Night reduction OFF).				

13.6 Disabling function

Configuration

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

- i** An active disable applies only to the functions of the rockers or buttons. The functions of the status LED, scene function, temperature measurements and room humidity measurement are not affected by the disabling function.
- i** With LED alarm signalling configured, the alarm indication cannot be reset by a disabled button.

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

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

- i** 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 push-button sensor completely or partially.

The disabling function must be activated.

- Set the "Button assignment" parameter to "All buttons assigned".

The disabling function affects all buttons. As soon as any button of the device is pressed while a disabling function is active, the push-button sensor executes the "behaviour when a disabling function is active".

- Set the "Button assignment" parameter to "Individual buttons assigned".

The disabling function affects only the buttons that are assigned on the "Disable function" 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.

- Set the parameter "Behaviour when a disabling function is active" to "No response when pressed".

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 when a disabling function is active" to "No response when pressed like...". Also configure the parameters "All assigned left / right buttons behave like" and "All assigned top / bottom buttons behave like" to the required button number or to the required disabling function 1 or 2.

All buttons assigned to the disabling function behave as defined in the parameters of the disabling function. Different or identical reference buttons can be configured separately for all the left / right and top / bottom operating buttons. The two disabling functions of the push-button sensor 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 disabling functions 1 and 2 have separate communication objects. 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.

13.6.1 "Disabling function" parameter table

"General" parameter page

Disabling function	Activated Deactivated
<p>With this parameter, the disabling function of the push-button sensor can be centrally activated.</p> <p>If "activated", the ETS shows further communication object and parameters.</p>	

"Disable function" parameter page

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

Button assignment	All buttons assigned Individual buttons assigned
<p>"All buttons assigned": The disabling function affects all buttons. As soon as any button of the device is pressed while a disabling function is active, the "Behaviour when a disabling function is active" is executed.</p> <p>"Individual buttons assigned": The disabling function affects only 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.</p>	

Assign button <i>n</i> ?	Activated Deactivated
<p>With the setting "Individual buttons assigned", these parameters define the assignment of the buttons to the disabling function.</p>	

Behaviour when the disabling function is active	No reaction to button-press Reaction to a button-press like...
<p>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.</p> <p>"No reaction to button-actuation": The disabled buttons do not respond when pressed.</p> <p>"Reaction to a button-press like...": All buttons assigned to the disabling function behave as defined in the parameters for the two specified reference buttons of the push-button sensor. Different or identical reference buttons can be configured separately for all the left and right operating buttons. The two virtual disabling functions of the push-button sensor can also be configured as a reference button. The telegrams are transmitted to the bus via the communication objects of the specified reference buttons.</p>	

All assigned left buttons behave as	Button 1 Button 2 ... (Selection depends on device variant!) Disabling function 1 Disabling function 2
<p>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 the left buttons behave like the one configured here.</p> <p>The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions.</p> <p>This parameter is only visible with "Behaviour when a disabling function is active = Reaction to a button-press like..." and "Installation position = standard installation position".</p>	
All assigned right buttons behave as	Button 1 Button 2 ... (Selection depends on device variant!) Disabling function 1 Disabling function 2
<p>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 the right buttons behave like the one configured here.</p> <p>The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions.</p> <p>This parameter is only visible with "Behaviour when a disabling function is active = Reaction to a button-press like..." and "Installation position = standard installation position".</p>	
All assigned upper buttons behave as	Button 1 Button 2 ... (Selection depends on device variant!) Disabling function 1 Disabling function 2
<p>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 upper buttons behave like the one parameterized here.</p> <p>The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions.</p> <p>This parameter is only visible with "Behaviour when a disabling function is active = Reaction to a button-press like..." and "Installation position = turned by -90°".</p>	

All assigned lower buttons behave as	Button 1 Button 2 ... (Selection depends on device variant!) Disabling function 1 Disabling function 2
<p>If a specific button function is to be assigned during disabling to all or to individual buttons, this parameter can be used to select the desired button the function of which will then be executed. During disabling, all assigned lower buttons behave like the one parameterised here.</p> <p>The desired functions can either correspond to the function of an existing button or they can be configured as special disabling functions.</p> <p>This parameter is only visible with "Behaviour when a disabling function is active = Reaction to a button-press like..." and "Installation position = turned by -90°".</p>	

Parameter page "Disabling function -> Disabling function 1 / Disabling function 2"

- i** The functions "Switching", "Dimming and colour temperature", "Colour control and brightness", "Shading", "Value transmitter", "Scene extension unit", "2-channel operation" and "Controller extension" are available for the two disabling functions. These functions behave like the button functions of the device (same parameters).

13.6.2 Object list "Disabling function"

Function	Name	Type	DPT	Flag
Disabling	Disabling function - input	1-bit	1,002	C, -, W, -, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function: Switching

Function	Name	Type	DPT	Flag
Switching	Disabling function <i>n</i> - Output	1-bit	1,001	C, -, -, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Switching feedback	Disabling function <i>n</i> - Input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function: Dimming and colour temperature

Function	Name	Type	DPT	Flag
Switching	Disabling function <i>n</i> - Output	1-bit	1,001	C, R, -, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Dimming brightness	Disabling function <i>n</i> - Output	4-bit	1,007	C, -, W, T, -
4-bit object for the transmission of relative dimming telegrams.				

Function	Name	Type	DPT	Flag
Dimming brightness + colour temperature	Disabling function <i>n</i> - Output	3-byte	250,600	C, -, W, T, -
3-byte object for sending dimming telegrams for adjusting the brightness and the colour temperature in combination.				

Function	Name	Type	DPT	Flag
Switching feedback	Disabling function <i>n</i> - Input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Dimming colour temperature	Disabling function <i>n</i> - Output	4-bit	3,007	C, -, W, T, -
4-bit object for sending relative dimming telegrams to adjust the colour temperature.				

Function: Colour control and brightness

Function	Name	Type	DPT	Flag
Switching	Disabling function <i>n</i> - Output	1-bit	1,001	C, -, -, T, -
1-bit object for transmission of switching telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Switching feedback	Disabling function <i>n</i> - Input	1-bit	1,001	C, -, W, -, U
1-bit object for receiving feedback telegrams (ON, OFF).				

Function	Name	Type	DPT	Flag
Colour value RGB	Disabling function <i>n</i> - Output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the RGB colour values. This object is only visible with "Colour space = RGB" and "Communication = Combi object".				

Function	Name	Type	DPT	Flag
Colour value RGBW	Disabling function <i>n</i> - Output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the RGBW colour values. This object is only visible with "Colour space = RGBW" and "Communication = Combi object"				

Function	Name	Type	DPT	Flag
Colour value Red	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the red colour value. This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects".				

Function	Name	Type	DPT	Flag
Colour hue (H)	Disabling function <i>n</i> - Output	1-byte	5,003	C, -, -, T, -
1-byte object for transmitting the colour hue. This object is only visible with "Colour space = HSV or HSVW".				

Function	Name	Type	DPT	Flag
Colour value Green	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the green colour value. This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects".				

Function	Name	Type	DPT	Flag
Saturation (S)	Disabling function n - Output	1-byte	5,001	C, -, -, T, -

1-byte object for transmitting the saturation.

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value Blue	Disabling function n - Output	1-byte	5,001	C, -, -, T, -

1-byte object for transmitting the blue colour value.

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Brightness (V)	Disabling function n - Output	1-byte	5,001	C, -, -, T, -

1-byte object for transmitting the brightness value.

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value White	Disabling function n - Output	1-byte	5,001	C, -, -, T, -

1-byte object for transmitting the white colour value.

This object is only visible with "Colour space = RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
White value (W)	Disabling function n - Output	1-byte	5,001	C, -, -, T, -

1-byte object for transmitting the white level.

This object is only visible with "Colour space = HSVW".

Function	Name	Type	DPT	Flag
Colour value RGB feed-back	Disabling function n - Input	3-byte	232,600	C, -, W, -, U

3-byte object for receiving feedback telegrams (RGB colour values).

This object is only visible with "Colour space = RGB" and "Communication = Combi object"

Function	Name	Type	DPT	Flag
Colour value RGBW feedback	Disabling function n - Input	6-byte	251,600	C, -, W, -, U

6-byte object for receiving feedback telegrams (RGBW colour values).

This object is only visible with "Colour space = RGBW" and "Communication = Combi object"

Function	Name	Type	DPT	Flag
Colour value Red feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (red colour value).

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Colour hue (H) feedback	Disabling function n - Input	1-byte	5,003	C, -, W, -, U

1-byte object for receiving feedback telegrams (colour hue H).

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value Green feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (green colour value).

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Saturation (S) feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (saturation S).

This object is only visible with "Colour space = HSV or HSVW".

Function	Name	Type	DPT	Flag
Colour value Blue feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U

1-byte object for receiving feedback telegrams (blue colour value).

This object is only visible with "Colour space = RGB or RGBW" and "Communication = Individual objects"

Function	Name	Type	DPT	Flag
Brightness (V) feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U
1-byte object for receiving feedback telegrams (brightness value V). This object is only visible with "Colour space = HSV or HSVW".				

Function	Name	Type	DPT	Flag
Colour value White feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U
1-byte object for receiving feedback telegrams (white colour value). This object is only visible with "Colour space = RGBW" and "Communication = Individual objects"				

Function	Name	Type	DPT	Flag
White level (W) feedback	Disabling function n - Input	1-byte	5,001	C, -, W, -, U
1-byte object for receiving feedback telegrams (white value W). This object is only visible with "Colour space = HSVW".				

Function: Shading

Function	Name	Type	DPT	Flag
Short-time operation	Disabling function n - Output	1-bit	1,008	C, -, -, T, -
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.				

Function	Name	Type	DPT	Flag
Long-time operation	Disabling function n - Output	1-bit	1,008	C, -, W, T, -
1-bit object for the transmission of telegrams with which a venetian blind or shutter drive motor can be moved upwards or downwards.				

Function: Value transmitter

Function	Name	Type	DPT	Flag
Value transmitter 0...255	Disabling function n - Output	1-byte	5,010	C, -, W, T, -
1-byte object for the transmission of values from 0 to 255.				

Function	Name	Type	DPT	Flag
Value transmitter 0... 100 %	Disabling function n - Output	1-byte	5,001	C, -, W, T, -
1-byte object for the transmission of values from 0 to 100%.				

Function	Name	Type	DPT	Flag
Value transmitter -128...127	Disabling function <i>n</i> - Output	1-byte	6,010	C, -, W, T, -
1-byte object for the transmission of values from -128 to 127.				

Function	Name	Type	DPT	Flag
Value transmitter 0... 255 %	Disabling function <i>n</i> - Output	1-byte	5,004	C, -, W, T, -
1-byte object for the transmission of values from 0 to 255%.				

Function	Name	Type	DPT	Flag
Value transmitter 0...65535	Disabling function <i>n</i> - Output	2-byte	7,001	C, -, W, T, -
2-byte object for the transmission of values from 0 to 65535.				

Function	Name	Type	DPT	Flag
Value transmitter -32768...32767	Disabling function <i>n</i> - Output	2-byte	8,001	C, -, W, T, -
2-byte object for the transmission of values from -32768 to 32767.				

Function	Name	Type	DPT	Flag
Temperature value transmitter	Disabling function <i>n</i> - Output	2-byte	9,001	C, -, W, T, -
2-byte object for transmitting temperature values from 0 to 40 °C.				

Function	Name	Type	DPT	Flag
Brightness value trans- mitter	Disabling function <i>n</i> - Output	2-byte	9,004	C, -, W, T, -
2-byte object for transmitting brightness values from 0 to 1500 Lux.				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter	Disabling function <i>n</i> - Output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin.				

Function	Name	Type	DPT	Flag
Colour value transmitter RGB	Disabling function <i>n</i> - Output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in one communication object.				

Function	Name	Type	DPT	Flag
Colour value transmitter RGBW	Disabling function <i>n</i> - Output	6-byte	251,600	C, -, -, T, -
6-byte object for sending the colour information red, green, blue and white in one communication object.				

Function	Name	Type	DPT	Flag
Colour value transmitter Red	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the red colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter Green	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the green colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter Blue	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the blue colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour value transmitter White	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white colour value from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour hue (H)	Disabling function <i>n</i> - Output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360°.				

Function	Name	Type	DPT	Flag
Saturation (S)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Brightness (V)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness (V) from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
White value (W)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent.				

Function	Name	Type	DPT	Flag
Colour temperature value transmitter + brightness	Disabling function <i>n</i> - Output	6-byte	249,600	C, -, -, T, -
6-byte object for sending the time window, colour temperature and brightness.				

Function: Scene extension unit

Function	Name	Type	DPT	Flag
Scene extension unit	Disabling function <i>n</i> - Output	1-byte	18,001	C, -, -, T, -
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor.				

Function: 2-channel operation

Function	Name	Type	DPT	Flag
Channel 1 switching	Disabling function <i>n</i> - Output	1-bit	1,001	C, -, W, T, U
1-bit object for transmitting switching telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 switching	Disabling function <i>n</i> - Output	1-bit	1,001	C, -, W, T, U
1-bit object for transmitting switching telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...255	Disabling function <i>n</i> - Output	1-byte	5,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...255	Disabling function <i>n</i> - Output	1-byte	5,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...100 %	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...100 %	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value -128...127	Disabling function n - Output	1-byte	6,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value -128...127	Disabling function n - Output	1-byte	6,010	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...255 %	Disabling function n - Output	1-byte	5,004	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...255 %	Disabling function n - Output	1-byte	5,004	C, -, -, T, -
1-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value 0...65535	Disabling function n - Output	2-byte	7,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value 0...65535	Disabling function n - Output	2-byte	7,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 value -32768...32767	Disabling function n - Output	2-byte	8,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 value -32768...32767	Disabling function <i>n</i> - Output	2-byte	8,001	C, -, -, T, -
2-byte object for transmitting value telegrams on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 temperature value	Disabling function <i>n</i> - Output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 temperature value	Disabling function <i>n</i> - Output	2-byte	9,001	C, -, -, T, -
2-byte object for transmitting temperature values on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 brightness value	Disabling function <i>n</i> - Output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 brightness value	Disabling function <i>n</i> - Output	2-byte	9,004	C, -, -, T, -
2-byte object for transmitting brightness values on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter	Disabling function <i>n</i> - Output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter	Disabling function <i>n</i> - Output	2-byte	7,600	C, -, -, T, -
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter RGB	Disabling function <i>n</i> - Output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in a communication object on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter RGB	Disabling function <i>n</i> - Output	3-byte	232,600	C, -, -, T, -
3-byte object for transmitting the colour information red, green and blue in a communication object on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter RGBW	Disabling function <i>n</i> - Output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the colour information red, green, blue and white in a communication object on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter RGBW	Disabling function <i>n</i> - Output	6-byte	251,600	C, -, -, T, -
6-byte object for transmitting the colour information red, green, blue and white in a communication object on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Red	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value red from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Red	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value red from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Green	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value green from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Green	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value green from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter Blue	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value blue from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter Blue	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value blue from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter White	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value white from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter White	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the colour value white from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour hue (H)	Disabling function <i>n</i> - Output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360° on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour hue (H)	Disabling function <i>n</i> - Output	1-byte	5,003	C, -, -, T, -
1-byte object for sending the colour hue (H) from 0 ... 360° on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 saturation (S)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 saturation (S)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the saturation (S) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 brightness (V)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 brightness (V)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 white level (W)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 white level (W)	Disabling function <i>n</i> - Output	1-byte	5,001	C, -, -, T, -
1-byte object for transmitting the white value (W) from 0 to 100 per cent on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 colour value transmitter + brightness	Disabling function <i>n</i> - Output	6-byte	249,600	C, -, -, T, -
6-byte object for transmitting the time window, colour temperature and brightness on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 colour value transmitter + brightness	Disabling function n - Output	6-byte	249,600	C, -, -, T, -
6-byte object for transmitting the time window, colour temperature and brightness on channel 2 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 1 scene (external) 1...64	Disabling function n - Output	1-byte	18,001	C, -, -, T, -
1-byte object for transmitting scene values on channel 1 if 2-channel operation is activated.				

Function	Name	Type	DPT	Flag
Channel 2 scene (external) 1...64	Disabling function n - Output	1-byte	18,001	C, -, -, T, -
1-byte object for transmitting scene values on channel 2 if 2-channel operation is activated.				

Function: controller extension

Function	Name	Type	DPT	Flag
Operating mode switchover	Disabling function n - controller extension - output	1-byte	20,102	C, -, -, T, -
1-byte object for switching a room temperature controller between the Comfort, Standby, Night and Frost/heat protection operating modes. This object is only visible if "Functionality = operating mode switchover".				

Function	Name	Type	DPT	Flag
Operating mode switchover feedback	Disabling function n - controller extension - input	1-byte	20,102	C, -, W, -, U
1-byte object for receiving the operating mode of a room temperature controller. This object is only visible if "Functionality = operating mode switchover".				

Function	Name	Type	DPT	Flag
Operating mode forced-control	Disabling function n - controller extension - output	1-byte	20,102	C, -, -, T, -
1-byte object for switching a room temperature controller under forced control between the Automatic, Comfort, Standby, Night and Frost / heat protection operating modes. This object is only visible if "Functionality = forced operating mode switchover".				

Function	Name	Type	DPT	Flag
Forced object operating mode feedback	Disabling function <i>n</i> - controller extension - input	1-byte	20,102	C, -, W, -, U

1-byte object for receiving the operating mode of a room temperature controller.
This object is only visible if "Functionality = operating mode switchover".

Function	Name	Type	DPT	Flag
Presence function	Disabling function <i>n</i> - controller extension - output	1-bit	1,018	C, -, -, T, -

1-bit object for changing over the presence status of a room temperature controller.
This object is only visible if "Functionality = presence function".

Function	Name	Type	DPT	Flag
Presence function feedback	Disabling function <i>n</i> - controller extension - input	1-bit	1,018	C, -, W, -, U

1-bit object for receiving the presence status of a room temperature controller.
This object is only visible if "Functionality = presence function".

Function	Name	Type	DPT	Flag
Preset setpoint shifting	Disabling function <i>n</i> - controller extension - output	2-byte	9,002	C, -, -, T, -

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 -670760 K and 670760 K.
This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via offset (DPT 9.002)".

Function	Name	Type	DPT	Flag
Current setpoint shifting	Disabling function <i>n</i> - controller extension - input	2-byte	9,002	C, -, W, -, U

2-byte object for receiving the feedback from the current basic setpoint shift in Kelvin.

This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via offset (DPT 9.002)".

Function	Name	Type	DPT	Flag
Preset setpoint shifting	Disabling function n - controller extension - output	1-byte	6,010	C, -, -, T, -

1-byte object for presetting a basic setpoint shift. The value "0" means that no shift is active. The value is depicted in a two's complement in the positive or negative direction.

This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via levels (DPT 6.010)".

Function	Name	Type	DPT	Flag
Current setpoint shifting	Disabling function n - controller extension - input	1-byte	6,010	C, -, W, -, U

1-byte object for receiving the feedback from the current basic setpoint shift.

This object is only visible if "Function = Setpoint shift" and "Type of setpoint shift = Via levels (DPT 6.010)".

13.7 Scene function

Scene control

The push-button sensor can be used in two different ways as part of a scene control system:

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

In the following subsections the internal scene function will be dealt with in greater detail.

Scene definition and scene recall

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

- Switching
- Value (0...255)
- Value / Venetian blind position (0...100%)
- Colour temperature value
- Colour value RGB/HSV
- Colour value RGBW/HSVW

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

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

It is possible that the values for the individual scenes preset by the parameters are modified later on with the storage function (see chapter "Scene function" ► Page 333) when the system is in operation. If the application program is then loaded again with the ETS, these locally adapted values will normally be overwritten by the parameters. Due to the fact that it may take considerable efforts to readjust the values for all scenes in the system, the parameter "Overwrite scene values during ETS download ?" offers the possibility of retaining the scene values stored in operation.

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

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

In some situations there may be the requirement that a group of actuators is not controlled by all, but only by certain scenes. A classroom, for instance, may require open blinds for the "Welcome" and "Break" scenes, closed blinds in the "PC presentation" scene and no change in the "Discussion" scene. In this example, the parameter "Permit transmission ?" can be set to "No" for the "Discussion" scene. The scene output is then deactivated during the corresponding scene.

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

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

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

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

- i** When a new scene recall (also with the same scene number) occurs during a current scene recall - even in consideration of the pertaining transmit delays - the scene processing started first will be aborted and the newly received scene number will be processed. A running scene is also aborted when a scene is being stored!
- i** During a scene recall - even if delayed - the operating areas of the push-button sensor are normally operational.

Storing scenes

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

The value storage function for the corresponding scene number is enabled with the parameter "Permit storing ?" enabled ("Yes") or disabled ("No"). When the storage function is disabled, the object value of the corresponding output is not sampled during storage.

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

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

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

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

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

The storage process will always be executed completely by the push-button sensor and cannot not be aborted before it has ended. Recalling scenes in the course of a storage process is not possible, the operating areas of the pushbutton sensor remaining nevertheless normally operational.

13.7.1 "Scene Function" parameter table

"General" parameter page

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

"Scene function -> Scene data types" parameter page

Overwrite scene values during ETS download?	Yes No
If the values of the actuator groups that have been changed on site by the user are to be reset to the values preset in the ETS during an application download by the ETS, the setting "Yes" must be chosen. If "No" is selected, the ETS values will not overwrite the scene values stored in the push-button sensor, if any.	

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

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

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

Colour space	RGBW HSVW
<p>This parameter defines the colour space when the scene output executes the "Colour value RGBW/HSVW" function. With RGBW, communication can take place via individual objects or via a combination object. With HSVW, communication takes place via individual objects.</p> <p>This parameter is only visible if "Value range = 6-byte colour value RGBW/HSVW"</p>	
Communication	Individual objects Combi object
<p>When the colour space is set to RGBW, communication via the bus can take place either via individual objects (red, green, blue, white) or via a combination object (RGBW).</p>	

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

Name of scene <i>n</i>	Scene <i>n</i> Max. 40 characters long text
<p>This parameter gives the scene a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.</p>	
Scene number for scene <i>n</i>	1 ... 64
<p>If the internal scenes are to be recalled via the extension object, a definite number is required for each of them. This parameter serves to specify the extension number of the first scene.</p> <p>If several internal scenes have the same scene number, only the first scene with this number can be called up.</p>	

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

Switching command	ON OFF
<p>This parameter can be used to predefine the switching command of the first scene output.</p> <p>This parameter is only visible if "Data types scene output 1 = switching"!</p>	
Value (0 ... 255)	0...255
<p>This parameter can be used to predefine the value of the first scene output.</p> <p>This parameter is only visible if "Data types scene output 1 = value (0 ... 255)"!</p>	
Value / Venetian blind position (0 ... 100 %)	0...100
<p>This parameter can be used to predefine the value of the first scene output.</p> <p>This parameter is only visible if "Data types scene output 1 = value / Venetian blind position (0 ... 100%)"!</p>	

Colour temperature (1000, 1100, ..., 10000 K)	1000, 1100, ..., 2700 , ..., 10000
<p>This parameter can be used to predefine the value of the first scene output.</p> <p>This parameter is only visible if "Data types scene output 1 = colour temperature value"!</p>	
Value (RGB/HSV)	#000000 ... #FFFFFF
<p>This parameter can be used to predefine the value of the first scene output.</p> <p>The value (RGB/HSV) is configured by means of a colour picker.</p> <p>This parameter is only visible if "Data types scene output 1 = colour value RGB/HSV" and "Data types scene output 1 = colour value RGBW/HSVW"!</p> <p>With "Data types scene output 1 = colour value RGBW/HSVW", the W-value is configured using a separate slider.</p>	
Value (W)	0 ... 255
<p>This parameter can be used to predefine the value of the first scene output.</p> <p>This parameter is only visible if "Data types scene output 1 = colour value RGBW/HSVW"!</p>	
Allow save?	Activated Deactivated
<p>If the user is to be given the possibility of changing the value of the actuator group (scene output) within this scene and of storing it during regular operation, this parameter must be set to "activated".</p>	
Allow transmission?	Activated Deactivated
<p>If the state of an actuator group is to remain unchanged during the recall of a scene, this parameter can be set to "deactivated". In this case, the push-button sensor does not transmit a telegram via the scene output concerned during the recall of the scene. The scene output is deactivated for this scene.</p>	
Transmission delay	0 ...120000
<p>When the push-button sensor sends the telegrams to the various scene outputs, it can insert a settable waiting time of 2 min. max. before each telegram. This parameter sets the time in 100 millisecond increments.</p> <p>This can be used to reduce bus loading, but also to have certain lamps switched on only after the shutters are really closed.</p> <p>If no delay is selected ("0"), the push-button sensor sends the output telegrams with maximum speed. With this setting it may happen in some cases that the telegram sequence is not compatible with output numbering.</p>	

13.7.2 Object list "Scene function"

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

Function	Name	Type	DPT	Flag
Extension unit	Scenes - Input	1-byte	18,001	C, -, W, -, U
1-byte object for recalling or for storing one of 64 scenes max. from a scene push-button sensor.				

Function	Name	Type	DPT	Flag
Switching	Scene - Scene output <i>n</i>	1-bit	1,001	C, -, W, T, U
1-bit objects for controlling up to eight actuator groups (ON, OFF).				

Function	Name	Type	DPT	Flag
Value (0...255)	Scene - Scene output <i>n</i>	1-byte	5,010	C, -, W, T, U
1-byte objects for controlling up to eight actuator groups (0...255).				

Function	Name	Type	DPT	Flag
Value / Venetian blind position (0...100 %)	Scene - Scene output <i>n</i>	1-byte	5,001	C, -, W, T, U
1-byte object with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour temperature value	Scene - Scene output <i>n</i>	2-byte	7,600	C, -, W, T, U
2-byte object for transmitting colour temperature values from 1000 to 10000 Kelvin, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour value RGB	Scene - Scene output <i>n</i>	3-byte	232,600	C, -, W, T, U
3-byte object for transmitting the colour information red, green and blue in one communication object, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour value RGBW	Scene - Scene output <i>n</i>	6-byte	251,600	C, -, W, T, U
6-byte object for transmitting the colour information red, green, blue and white in one communication object, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour value Red	Scene - Scene output <i>n</i>	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the red colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour value Green	Scene - Scene output n	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the green colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour value Blue	Scene - Scene output n	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the blue colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour value White	Scene - Scene output n	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the white colour value from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Colour hue (H)	Scene - Scene output n	1-byte	5,003	C, -, W, T, U
1-byte object for sending the colour hue (H) from 0 ... 360°, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Saturation (S)	Scene - Scene output n	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the saturation (S) from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
Brightness (V)	Scene - Scene output n	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the brightness value (V) from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

Function	Name	Type	DPT	Flag
White value (W)	Scene - Scene output n	1-byte	5,001	C, -, W, T, U
1-byte object for transmitting the white value (W) from 0 to 100 per cent, with which one of the eight internally stored scenes can be recalled or stored again.				

13.8 Room temperature measurement

Basic principles

The push-button sensor possesses an integrated temperature sensor, using which the room temperature can be detected. Alternatively (e.g. if the push-button sensor has been installed in an unfavourable location or in case of operation in difficult conditions, for example, in a moist atmosphere) or additionally (e.g. in large rooms or halls), a second, wired remote sensor or an external sensor linked via bus telegrams can be used to determine the actual value.

Temperature measurement is activated on the "General" parameter page and configured on the "Temperature measurement" parameter page. The device offers up to two temperature measurements, depending on the project design of the "Room temperature measurement by" parameter.

The room temperature measurement ("Room temperature measurement" parameter page) is the first temperature measurement. The room temperature measurement is always available if temperature measurement has been activated on the "General" parameter page.

The second temperature measurement is referred to as the 'further temperature measurement'. The further temperature measurement can be performed by the wired remote sensor, unless the wired remote sensor is already used for room temperature measurement.

When choosing the installation location for the push-button sensor or the external sensors, the following points should be considered:

- The push-button sensor 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 sunlight.
- 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 push-button sensor features 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 "Actual temperature".

The room temperature measurement can optionally be complemented with a wired remote sensor or an external sensor. The wired remote sensor is connected to the device connection terminal for the remote sensor Device components. The external sensor is linked to the device (for example an additional push-button sensor or a KNX room temperature controller) via the bus by means of the additional 2-byte com-

munication object "External sensor". The push-button sensor offers another temperature measurement by the wired sensor, unless the wired sensor is already used for room temperature measurement.

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

- "Internal sensor"

The temperature sensor integrated in the push-button sensor is activated. Thus, the actual temperature value is determined only locally on the device. The wired sensor can be used for another temperature measurement.

- "Internal and wired sensor"

With this setting the internal as well as the wired temperature sensor is active. The wired sensor must be a temperature sensor (see accessories). When evaluating the internal and the wired sensors, the real actual temperature is made up from the two measured temperature values. The weighting of the temperature values is defined by the "Creation of measuring value internal against wired" parameter. 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 due to exposure to sunlight, heater or door/window directly next to it) are weighted less heavily.

The wired sensor cannot be used for another temperature measurement.

- "Internal sensor and external temperature"

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 "External sensor" 2-byte object or another bus device with temperature detection.

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 "Creation of measuring value internal against external" parameter. 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 due to exposure to sunlight, heater or door/window directly next to it) are weighted less heavily.

The wired sensor can be used for another temperature measurement.

Example:

The push-button sensor 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

External sensor: 22.3 °C

Measured value formation: 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 temperature

The temperatures determined by room temperature measurement and by the further temperature measurement can be transmitted to the bus using the 2-byte objects "Actual temperature" or "Wired sensor" respectively.

The parameters "Transmission after room temperature change by" in the parameter node "Temperature measurement -> Room temperature measurement" or "Transmission after temperature change by" in the parameter node "Temperature measurement -> Further temperature measurement" define the temperature values by which the actual value of the respective temperature measurement has to change for the actual value to be automatically transmitted via the objects "Actual temperature" or "Wired sensor". Possible temperature value changes lie within a range of 0.1 K and 25.5 K. The "0" setting here deactivates the automatic transmission of the actual temperature.

Additionally, the determined temperatures for the room temperature measurement or further temperature measurement can be transmitted cyclically. The "Cyclical transmission of ..." parameters define the cycle time (1 to 255 minutes). The value "0" will deactivate the cyclical transmission of actual values.

Setting the "Read" flag on the "Actual temperature" and "Wired sensor" objects make it possible to read out the current actual values at any time over the bus. It has to be pointed out that with deactivated cyclical transmission and deactivated automatic transmission, no more temperature telegrams will be transmitted in case of changes!

Calibrating the measured values

In some cases, it may be necessary to calibrate the individual temperature values when measuring the room temperature. Calibration will become 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 determined by a reference measurement using a calibrated temperature measuring device.

The "Calibration" parameters can be used to parameterize the positive (temperature increase between 0.1 and 12.7 K) or negative (temperature decrease between –12.8 and –0.1 K) temperature calibration in 0.1 K increments. Thus, the calibration is set statically only once.

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

- i** The "Actual temperature" object is always used to transmit the adjusted temperature value to the bus.
When determining the measured value with combined sensors, both calibrated values are used to calculate the actual value.

13.8.1 Parameter table: "Room temperature measurement"

"General" parameter page

Temperature measurement	Activated Deactivated
This parameter activates the temperature measurement. Additional parameters and objects become visible.	

"Temperature measurement -> Room temperature measurement" parameter page

Designation	Room temperature measurement Max. 40 characters long text
This parameter gives the room temperature measurement a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Room temperature measurement using	Internal sensor Internal and wired sensor Internal sensor and external temperature (external = via communication object)
<p>The "Room temperature measurement using" parameter specifies the sensors to detect the room temperature.</p> <p>"internal temperature sensor": The temperature sensor integrated in the push-button sensor 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.</p> <p>"internal and wired sensor" or "internal sensor and external temperature": These settings are used to combine the selected temperature sources. The sensors can be either a wired remote sensor directly connected to the controller, or KNX room temperature controllers connected via the "External sensor" 2-byte object, or controller extensions with temperature detection.</p>	

Determination of measured value from internal to wired	10% to 90% 20% to 80% 30% to 70% 40% to 60% 50% to 50% 60% to 40% 70% to 30% 80% to 20% 90% to 10%
--	---

The weighting of the measured temperature value for the internal and wired sensors is specified here. This results in an overall measured value, which is drawn on for the further evaluation of the room temperature.

This parameter is only visible with "Room temperature measurement using = internal and wired sensor"!

Determination of measured value from internal / external ratio	10% to 90% 20% to 80% 30% to 70% 40% to 60% 50% to 50% 60% to 40% 70% to 30% 80% to 20% 90% to 10%
--	---

The weighting of the measured temperature value for the internal and external sensors is specified here. This results in an overall measured value, which is drawn on for the further evaluation of the room temperature.

This parameter is only visible with "Room temperature measurement using = internal sensor and external temperature (external = via communication object)"!

Transmit when room temperature changes 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.

Cyclical transmission of room temperature	0... 15 ...255
---	-----------------------

This parameter specifies whether and at what time in minutes the determined room temperature is to be periodically output via the "Actual temperature" object. If the setting is "0", the current room temperature will not be transmitted cyclically to the bus.

Calibration	-12.8...0...12.7
Determines the value in Kelvin by which the sensor's measured value is adjusted. This parameter is provided for the internal sensor and the wired sensor.	

"Temperature measurement -> Further temperature measurement" parameter page

The following parameters are visible if the "Room temperature measurement using" parameter is not set to "internal and wired sensor".

Designation	Further temperature measurement Max. 40 characters long text
This parameter gives the further temperature measurement a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Temperature measurement via the wired sensor	Activated Deactivated
This parameter activates the temperature measurement that can be performed by the wired sensor in addition to the room temperature measurement. The additional temperature measurement is exclusively performed by the wired sensor.	

Transmission when room temperature change by	0... 0.2 ...25.5
Determines the size of the value change of the wired sensor temperature in Kelvin after which the current value is automatically transmitted to the bus via the "Wired sensor" object. If set to "0", the actual value will not be transmitted to the bus depending on a temperature change.	

Cyclical transmission of temperature	0... 15 ...255
This parameter specifies whether and at what time in minutes the determined wired sensor temperature is to be cyclically output via the "Wired sensor" object. If the setting is "0", the current wired sensor temperature will not be transmitted cyclically to the bus.	

Calibration	-12.8...0...12.7
Determines the value in Kelvin by which the sensor's measured value is adjusted.	

13.8.2 Object list "Room temperature measurement"

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

Function	Name	Type	DPT	Flag
Actual-temperature	Room temperature - output	2-byte	9,001	C, R, -, T, A
2-byte object for outputting the actual temperature (room temperature) determined by the push-button sensor. Possible value range: -99.9 °C to +99.9 °C / Measuring range of internal temperature sensor: -40 °C to +125 °C. The temperature value is output always in "°C" format.				

Function	Name	Type	DPT	Flag
External sensor	Room temperature - Input	2-byte	9,001	C, -, W, -, U
2-byte object for coupling an external KNX room temperature sensor or a controller extension. Thus cascading of several temperature sensors to measure the room temperature. Possible range of values: -99.9 °C to +99.9 °C. The temperature value must be specified always in "°C" format.				

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

Function	Name	Type	DPT	Flag
Wired sensor	Room temperature - output	2-byte	9,001	C, R, -, T, A
2-byte object for outputting the temperature determined by the wired sensor. Possible range of values: -99.9 °C to +99.9 °C. The temperature value is output always in "°C" format.				

13.9 Room humidity measurement

The push-button sensor possesses an integrated humidity sensor that can be used to detect the room humidity.

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

Transmission of room humidity

The determined room humidity can be transmitted to the bus via the "Actual humidity" 2-byte object.

The parameter "Transmission after room humidity change by" in the parameter node "Room humidity measurement" defines the humidity value by which the humidity measurement actual value has to change for the actual value to be transmitted automatically via the "Actual humidity" object. Humidity value changes between 0% and 25% are possible. Setting to "0" at this point will deactivate the automatic transmission of the room humidity.

In addition, the determined room humidity can be transmitted cyclically. The "Cyclical transmission of room humidity" parameter determines the cycle time (1 to 255 minutes). The value "0" will deactivate the cyclical transmission of the actual value.

Setting the "Read" flag on the "actual humidity" object makes it possible to read out the current actual value at any time over the bus. It has to be pointed out that with deactivated cyclical transmission and deactivated automatic transmission, no more humidity telegrams will be transmitted in case of changes!

13.9.1 Parameter table: "Room humidity measurement"

"General" parameter page

Room humidity measurement	Activated Deactivated
This parameter activates the room humidity measurement. Additional parameters and objects become visible.	

"Room humidity measurement" parameter page

Name of the room humidity measurement	Room humidity measurement Max. 40 characters long text
This parameter gives the room humidity measurement a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	
Transmission after room humidity change by	0... 2 ...25
Determines the size of the value change of the room humidity as a percentage value after which the current value is automatically transmitted to the bus via the "Measured value" object. If set to "0", the actual value will not be transmitted to the bus depending on a room humidity change.	
Cyclical transmission of room humidity	0... 15 ...255
This parameter specifies whether and at what time in minutes the determined room humidity is to be cyclically output via the "Measured value" object. If the setting is "0", the current room humidity will not be transmitted cyclically to the bus.	

13.9.2 Object list "Room humidity measurement"

The name of the following object can be specified by the parameter "Name of the room humidity measurement".

Function	Name	Type	DPT	Flag
Actual humidity	Room humidity measurement - output	2-byte	9,007	C, R, -, T, A
2-byte object for outputting the room humidity determined by the push-button sensor as a percentage value. The "Actual humidity" measured value is output without decimal places.				

13.10 Air quality

The push-button sensor offers three options for determining the air quality.

The integrated sensor can be used to measure volatile organic compounds (TVOC) and create an air quality index (IAQ) and determine the CO₂ content (eCO₂).

- VOC = Volatile Organic Compounds, in German: Flüchtige organische Verbindungen
- TVOC = Total Volatile Organic Compounds, in German: Gesamtgehalt flüchtiger organischer Verbindungen
- IAQ = Indoor Air Quality, in German: Innenraumluftqualität
- eCO₂ = Equivalent Carbon Dioxide, in German: Äquivalente CO₂-Konzentration

These measurements are typically used:

- in monitoring indoor air quality to ensure compliance with typical Federal Environment Agency (UBA) standards
- for monitoring indoor air quality in offices and living areas

These measurements can be used to carry out automation based on indoor air quality. For example, air purifiers, window openings or ventilation systems can be switched based on the air quality.

VOC measurement

The device measures the total volatile organic compounds in the air when VOC measurement is activated. The total volatile organic compounds are displayed on the bus as a TVOC value in µg/m³.

The TVOC value describes the total concentration of all measured VOCs in the air. VOCs are volatile organic compounds, chemicals that evaporate easily and are released into the air. A high TVOC value negatively affects the quality of indoor air and can be harmful to health. It can cause health problems such as headaches, fatigue or irritation of the eyes, nose or skin.

- i** Possible indoor sources are products and materials used in the construction of buildings and for interior decoration (e.g. floor, wall and ceiling materials, paints, varnishes, adhesives, furniture and decorative materials). Care, cleaning and hobby products, tobacco smoking, even food preparation and the human metabolism are also significant.

The following guide values are recommended for indoor areas.

TVOC (µg/m ³)	Indoor air quality
500 to 800	Good
2500 to 3000	Medium
5000 to 6000	Moderate
9000 to 10000	Low

VOC (IAQ) measurement

The device measures the indoor air quality in relative values when VOC (IAQ) measurement is activated.

The IAQ value stands for "Indoor Air Quality". This is not a single chemical parameter as with VOCs, but a composite assessment of the air quality in an indoor space.

The IAQ value is an index or key figure that uses various measured parameters to assess how "good" or "bad" the air quality in a room is. The following factors, among others, can be included in the calculation:

- VOC content
- Temperature
- Air humidity

The device outputs the IAQ value to the bus as a numerical value. The higher the value, the worse the air quality.

The IAQ value is a practical overall indicator for assessing indoor air quality. The IAQ value helps to recognise whether room ventilation is necessary, for example.

The following table shows typical IAQ values and their evaluation

IAQ value	Indoor air quality
1.5 to 1.9	Good
2.9 to 3.3	Medium
3.9 to 4.3	Moderate
4.5 to 5	Low

eCO₂ measurement

The eCO₂ value stands for "equivalent carbon dioxide" - i. e. "equivalent CO₂ concentration".

The device uses a correlation algorithm between TVOC values and CO₂ values.

This makes it possible to establish a reliable link between the TVOC values and situations in which the CO₂ concentration increases due to human presence.

The range in which CO₂ is measured starts at 400 ppm (the normal value in the air) and goes up to 5000 ppm.

The following table shows typical eCO₂ values and their evaluation

eCO ₂ value (ppm)	Indoor air quality
400 to 440	Good
420 to 460	Medium
580 to 620	Moderate
950 to 1050	Low

The air quality measurements are activated on the "General -> Basic settings" parameter page and configured on the "VOC measurement", "VOC (IAQ) measurement" and "eCO₂ measurement" parameter pages.

13.10.1 "Air Quality" Parameter Table

"General -> Basic settings" parameter page

Air quality	Activated Deactivated
This parameter enables the parameters for the measurements to determine the air quality. The parameters "VOC measurement", "VOC (IAQ) measurement" and "eCO2 measurement" define which measurement is actually used for the determination.	
VOC measurement	Activated Deactivated
This parameter enables the measurements for determining the air quality feature VOC concentration. Additional parameters and objects become visible.	
VOC (IAQ) measurement	Activated Deactivated
This parameter enables the measurements for determining the air quality characteristic VOC (IAQ) concentration. Additional parameters and objects become visible.	
eCO2 measurement	Activated Deactivated
This parameter enables the measurements for determining the air quality feature eCO2 concentration. Additional parameters and objects become visible.	

13.10.2 VOC measurement

The determined VOC concentration can be sent to the bus via the 2-byte object "VOC concentration - actual value - status".

Sending the VOC concentration

The VOC concentration can be sent to the bus on change, cyclically or on change by cyclically.

In the event of a change, the VOC concentration is sent to the bus if the VOC concentration changes by a parametrisable value of 100 to 1000 in $\mu\text{g}/\text{m}^3$.

The device can send the VOC concentration to the bus every 3 seconds to every 24 hours in a freely parametrisable cycle.

Transmission behaviour of alarms

The device can send up to four alarms to the bus for the measurement to determine the air quality VOC.

An alarm is sent to the bus via a 1-bit communication object

Each alarm message must be activated separately on the parameter page of the measurement.

Alarm 1	Good indoor air quality
Alarm 2	Average indoor air quality
Alarm 3	Moderate indoor air quality
Alarm 4	Low indoor air quality

Each alarm must be configured separately in the parameters in the ETS. Lower and upper threshold values can be parameterised with the desired behaviour.

The alarm can be triggered directly or after a parameterised transmission delay.

Sending the alarm

An alarm can be sent to the bus on change, cyclically or on change by cyclically.

The alarm is sent to the bus when the status of the alarm message changes.

The device can send the alarm to the bus every 1 minute to every 24 hours in a freely parametrisable cycle.

13.10.2.1 "VOC Measurement" Parameter Table

Parameter page "Air quality -> VOC measurement"

Designation of the measurement	Max. 40 characters long text
This parameter gives the VOC measurement a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	
Send VOC concentration	On change Cyclical On change and cyclical
Here you can set whether the VOC concentration is sent to the bus when there is a change by a parameterised value or cyclically. The VOC concentration can also be sent when there is a change and cyclically.	
On change by	100...1000 µg/m ³
Determines the size of the change in the value of the VOC concentration, after which the current value is automatically sent to the bus via the "VOC concentration - actual value - status" object.	
Cycle time	0...24 h 0...15...59 min 0...59 s
This parameter defines whether and at what time the determined VOC concentration is to be output cyclically via the "VOC concentration - actual value - status" object.	

Transmission behaviour VOC alarms

The following parameters are available four times for a total of up to four alarm messages via four communication objects via the bus.

The parameter designations, parameter values and parameter functions are described once below.

Alarm ...	Activated Deactivated
This parameter enables a communication object for the transmission behaviour of the first alarm.	
Name ...	Max. 40 characters long text
This parameter gives the first alarm a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Lower threshold value	100... 500 ...10000 µg/m ³
<p>This parameter defines the lower threshold value separately for each alarm.</p> <p>The following default values are preset for alarms 1 to 4:</p> <ul style="list-style-type: none"> – Alarm 1 = 500 µg/m³ – Alarm 2 = 2500 µg/m³ – Alarm 3 = 5000 µg/m³ – Alarm 4 = 9000 µg/m³ 	
Upper threshold value	100... 800 ...10000 µg/m ³
<p>This parameter defines the upper threshold value separately for each alarm.</p> <p>The following default values are preset for alarms 1 to 4:</p> <ul style="list-style-type: none"> – Alarm 1 = 800 µg/m³ – Alarm 2 = 3000 µg/m³ – Alarm 3 = 6000 µg/m³ – Alarm 4 = 10000 µg/m³ 	
Transmission delay	0... 1 ...59 min 0...59 s
<p>This parameter defines the transmission delay separately for each alarm. With the "0" setting, values are sent to the bus without delay.</p>	
Behaviour when exceeding the upper threshold value	Off On No reaction
<p>This parameter defines the behaviour when the upper threshold value is exceeded separately for each alarm.</p>	
Behaviour when falling below the lower threshold value	Off On No reaction
<p>This parameter defines the behaviour when the value falls below the lower threshold separately for each alarm.</p>	
Send alarm <i>n</i>	On change Cyclical On change and cyclical
<p>Here you can set separately for each alarm whether the alarm is sent to the bus every time there is a change or cyclically. The VOC concentration can also be sent when there is a change and cyclically.</p>	
Cycle time	0...24 h 0... 10 ...59 min
<p>This parameter defines separately for each alarm the time at which the alarm is to be issued cyclically via the "VOC - Alarm <i>n</i>" object.</p>	

13.10.2.2 Object list "VOC measurement"

The name of the following object can be specified using the "Name of measurement" parameter on the "VOC measurement" parameter page.

Function	Name	Type	DPT	Flag
VOC concentration - actual value - status	VOC (...) - output	2-byte	9,030	C, R, -, T, A
2-byte object for outputting the VOC concentration determined by the push-button sensor in $\mu\text{g}/\text{m}^3$.				

Function	Name	Type	DPT	Flag
VOC - Alarm 1	VOC (good indoor air quality) - output	1-bit	1,005	C, R, -, T, A
1-bit object to output the first alarm.				

Function	Name	Type	DPT	Flag
VOC - Alarm 2	VOC (average indoor air quality) - output	1-bit	1,005	C, R, -, T, A
1-bit object to output the second alarm.				

Function	Name	Type	DPT	Flag
VOC - Alarm 3	VOC (Moderate indoor air quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the third alarm.				

Function	Name	Type	DPT	Flag
VOC - Alarm 4	VOC (low indoor air quality) - output	1-bit	1,005	C, R, -, T, A
1-bit object to output the fourth alarm.				

13.10.2.3 VOC - Air quality indication

For the VOC measurement, the air quality indication can be assigned as a function of one or more status LEDs of the respective rockers or buttons.

The assignment is made via the function of a status LED "Air quality indication" using the "Function" parameter on the "Status LED - Function" parameter page Basic functions.

The status LED indicates the air quality in the colours green (good), yellow (medium) and red (poor).

The limit values are parameterised on the "Air quality -> VOC measurement -> VOC - Air quality indication" parameter page.

- i** The colour of the status LED, which is configured on the "General -> Basic settings" parameter page, is not taken into account when the "Air quality indication" function is executed.

Quality areas

The VOC - Air quality indication function can display the overall air quality in a range from 0 to 10000 µg/m³.

Three quality areas can be defined in the ETS for

- Good air quality -> Status LED lights up in the colour green
- Medium good air quality -> Status LED lights up in the colour yellow
- Poor air quality -> Status LED lights up in the colour red

In addition to the quality ranges, a hysteresis can be defined in the ETS, whereby a change in the quality range is reported to the status LED with a delay in order to delay a change in the light colour of the status LED. This avoids frequent changes of light colour.

- i** The ETS displays a static infographic for the default settings of the quality areas. This graphic does not adapt dynamically to parameterisations.

13.10.2.3.1 Parameter table: "VOC – Air Quality Indicator"

Parameter page "Air quality -> VOC measurement -> VOC - Air quality indication"

Quality areas

The lower and upper range limits for indicating the air quality via the status LED are parameterised in the Quality ranges table.

The device offers three quality ranges. The entire range is predefined from 0 to 10000 µg/m³. This means that the lower range limit for the "Good air quality" quality range and the upper range limit for the "Poor air quality" quality range are fixed.

The upper range limit for the "Good air quality" quality range and the lower range limit for the "Poor air quality" quality range are parameterised in the ETS.

The range limits for the "Average air quality" quality range are automatically determined by the parameterisation of the "Good air quality" and "Poor air quality" ranges and are entered by the ETS.

i Ensure that the area boundaries do not overlap.

Good air quality (LED colour green)	0 to 100... 1000 ...5000 µg/m ³
This parameter defines the quality range for the indication of good air quality with the LED colour green.	
The quality range always starts at 0.	
Average air quality (LED colour yellow)	100... 1000 ...5000 to 2000... 4000 ...9900 µg/m ³
This parameter defines the quality range for the indication of medium air quality with the LED colour yellow.	
The quality range is automatically determined by the parameterisation of the "Good air quality" and "Poor air quality" ranges.	
Poor air quality (LED colour red)	2000.... 4000 ...9900 to 10000 µg/m ³
This parameter defines the quality range for the indication of poor air quality with the LED colour red.	
The quality range always ends at 10000.	
Hysteresis	100...1000 µg/m ³
This parameter defines the hysteresis, whereby a change in the quality range is signalled to the status LED with a delay in order to delay a change in the light colour of the status LED. This avoids frequent changes of light colour.	

13.10.3 VOC (IAQ) measurement

The determined VOC (IAQ) concentration can be sent to the bus via the 2-byte object "VOC (IAQ) concentration - actual value - status".

Sending the VOC (IAQ) concentration

The VOC (IAQ) concentration can be sent to the bus on change, cyclically or on change by cyclically.

On change, the VOC (IAQ) concentration is sent to the bus if the VOC (IAQ) concentration changes by a parametrisable value of 0.1 to 1.0.

The device can send the VOC (IAQ) concentration to the bus every 3 seconds to every 24 hours in a freely parametrisable cycle.

Transmission behaviour of alarms

The device can send up to four alarms to the bus for the measurement to determine the air quality VOC (IAQ).

An alarm is sent to the bus via a 1-bit communication object

Each alarm message must be activated separately on the parameter page of the measurement.

Alarm 1	Good indoor air quality
Alarm 2	Average indoor air quality
Alarm 3	Moderate indoor air quality
Alarm 4	Low indoor air quality

Each alarm must be configured separately in the parameters in the ETS. Lower and upper threshold values can be parameterised with the desired behaviour.

The alarm can be triggered directly or after a parameterised transmission delay.

Sending the alarm

An alarm can be sent to the bus on change, cyclically or on change by cyclically.

The alarm is sent to the bus when the status of the alarm message changes.

The device can send the alarm to the bus every 1 minute to every 24 hours in a freely parametrisable cycle.

13.10.3.1 Parameter table: "VOC (IAQ) measurement"

Parameter page "Air quality -> VOC (IAQ) measurement"

Designation of the measurement	Max. 40 characters long text
This parameter gives the VOC (IAQ) measurement a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Transmission behaviour VOC concentration

Send VOC (IAQ) concentration	On change Cyclical On change and cyclical
Here you can set whether the VOC (IAQ) concentration is sent to the bus when it changes by a parameterised value or cyclically. The VOC (IAQ) concentration can also be sent when there is a change and cyclically.	

On change by	0.1...0.5...1
Determines the size of the change in the value of the VOC (IAQ) concentration, after which the current value is automatically sent to the bus via the "VOC (IAQ) concentration - actual value - status" object.	

Cycle time	0...24 h 0...15...59 min 0...59 s
This parameter defines whether and at what time the determined VOC (IAQ) concentration is to be output cyclically via the "VOC (IAQ) concentration - actual value - status" object.	

Transmission behaviour VOC (IAQ) alarms

The following parameters are available four times for a total of up to four alarm messages via four communication objects via the bus.

The parameter designations, parameter values and parameter functions are described once below.

Alarm ...	Activated Deactivated
This parameter enables a communication object for the transmission behaviour of the first alarm.	

Name ...	Max. 40 characters long text
This parameter gives the first alarm a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Lower threshold value	1...1.5...5
<p>This parameter defines the lower threshold value separately for each alarm.</p> <p>The following default values are preset for alarms 1 to 4:</p> <ul style="list-style-type: none"> – Alarm 1 = 1.5 – Alarm 2 = 2.9 – Alarm 3 = 3.9 – Alarm 4 = 4.5 	
Upper threshold value	1...1.9...5
<p>This parameter defines the upper threshold value separately for each alarm.</p> <p>The following default values are preset for alarms 1 to 4:</p> <ul style="list-style-type: none"> – Alarm 1 = 1.9 – Alarm 2 = 3.3 – Alarm 3 = 4.3 – Alarm 4 = 5 	
Transmission delay	0...1...59 min 0...59 s
<p>This parameter defines the transmission delay separately for each alarm. With the "0" setting, values are sent to the bus without delay.</p>	
Behaviour when exceeding the upper threshold value	Off On No reaction
<p>This parameter defines the behaviour when the upper threshold value is exceeded separately for each alarm.</p>	
Behaviour when falling below the lower threshold value	Off On No reaction
<p>This parameter defines the behaviour when the value falls below the lower threshold separately for each alarm.</p>	
Send alarm <i>n</i>	On change Cyclical On change and cyclical
<p>Here you can set separately for each alarm whether the alarm is sent to the bus every time there is a change or cyclically. The VOC (IAQ) concentration can also be sent when there is a change and cyclically.</p>	
Cycle time	0...24 h 0...10...59 min
<p>This parameter defines separately for each alarm the time at which the alarm is to be issued cyclically via the "VOC (IAQ) - Alarm <i>n</i>" object.</p>	

13.10.3.2 Object list "VOC (IAQ) measurement"

The name of the following object can be specified using the "Name of measurement" parameter on the "VOC (IAQ) measurement" parameter page.

Function	Name	Type	DPT	Flag
VOC (IAQ) concentration - actual value - status	VOC (IAQ) (...) - Output	2-byte	---	C, R, -, T, A
2-byte object for outputting the VOC (IAQ) concentration determined by the push-button sensor without a unit.				

Function	Name	Type	DPT	Flag
VOC (IAQ) - Alarm 1	VOC (IAQ) (Good Indoor Air Quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the first alarm.				

Function	Name	Type	DPT	Flag
VOC (IAQ) - Alarm 2	VOC (IAQ) (Average Indoor Air Quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the second alarm.				

Function	Name	Type	DPT	Flag
VOC (IAQ) - Alarm 3	VOC (IAQ) (Moderate Indoor Air Quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the third alarm.				

Function	Name	Type	DPT	Flag
VOC (IAQ) - Alarm 4	VOC (IAQ) (Low Indoor Air Quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the fourth alarm.				

13.10.4 eCO₂ measurement

The determined eCO₂ concentration can be sent to the bus via the 2-byte object "eCO₂ concentration - actual value - status".

Sending the eCO₂ concentration

The eCO₂ concentration can be sent to the bus on change, cyclically or on change by cyclically.

If there is a change, the eCO₂ concentration is sent to the bus if the eCO₂ concentration changes by a parametrisable value of 10 to 500 in ppm.

The device can send the eCO₂ concentration to the bus every 3 seconds to every 24 hours in a freely parametrisable cycle.

Transmission behaviour of alarms

The device can send up to four alarms to the bus for the measurement to determine the air quality eCO₂.

An alarm is sent to the bus via a 1-bit communication object

Each alarm message must be activated separately on the parameter page of the measurement.

Alarm 1	Good indoor air quality
Alarm 2	Average indoor air quality
Alarm 3	Moderate indoor air quality
Alarm 4	Low indoor air quality

Each alarm must be configured separately in the parameters in the ETS. Lower and upper threshold values can be parameterised with the desired behaviour.

The alarm can be triggered directly or after a parameterised transmission delay.

Sending the alarm

An alarm can be sent to the bus on change, cyclically or on change by cyclically.

The alarm is sent to the bus when the status of the alarm message changes.

The device can send the alarm to the bus every 1 minute to every 24 hours in a freely parametrisable cycle.

13.10.4.1 "eCO₂ Measurement" Parameter Table

Parameter page "Air quality -> eCO₂ measurement"

Designation of the measurement	Max. 40 characters long text
This parameter gives the eCO ₂ measurement a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Transmission behaviour eCO₂ concentration

send eCO ₂ concentration	On change Cyclical On change and cyclical
Here you can set whether the eCO ₂ concentration is sent to the bus when there is a change by a parameterised value or cyclically. The eCO ₂ concentration can also be sent when there is a change and cyclically.	

On change by	10... 50 ...500 ppm
Determines the size of the change in the value of the eCO ₂ concentration, after which the current value is automatically sent to the bus via the "eCO ₂ concentration - actual value - status" object.	

Cycle time	0...24 h 0... 15 ...59 min 0...59 s
This parameter defines whether and at what time the determined eCO ₂ concentration is to be output cyclically via the "eCO ₂ concentration - actual value - status" object.	

Transmission behaviour eCO₂ alarms

The following parameters are available four times for a total of up to four alarm messages via four communication objects via the bus.

The parameter designations, parameter values and parameter functions are described once below.

Alarm ...	Activated Deactivated
This parameter enables a communication object for the transmission behaviour of the first alarm.	

Name ...	Max. 40 characters long text
This parameter gives the first alarm a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Lower threshold value	420... 420 ...3000 ppm
<p>This parameter defines the lower threshold value separately for each alarm.</p> <p>The following default values are preset for alarms 1 to 4:</p> <ul style="list-style-type: none"> – Alarm 1 = 420 ppm – Alarm 2 = 420 ppm – Alarm 3 = 580 ppm – Alarm 4 = 950 ppm 	
Upper threshold value	420... 440 ...3000 ppm
<p>This parameter defines the upper threshold value separately for each alarm.</p> <p>The following default values are preset for alarms 1 to 4:</p> <ul style="list-style-type: none"> – Alarm 1 = 440 ppm – Alarm 2 = 440 ppm – Alarm 3 = 620 ppm – Alarm 4 = 1050 ppm 	
Transmission delay	0...1...59 min 0...59 s
<p>This parameter defines the transmission delay separately for each alarm. With the "0" setting, values are sent to the bus without delay.</p>	
Behaviour when exceeding the upper threshold value	Off On No reaction
<p>This parameter defines the behaviour when the upper threshold value is exceeded separately for each alarm.</p>	
Behaviour when falling below the lower threshold value	Off On No reaction
<p>This parameter defines the behaviour when the value falls below the lower threshold separately for each alarm.</p>	
Send alarm <i>n</i>	On change Cyclical On change and cyclical
<p>Here you can set separately for each alarm whether the alarm is sent to the bus every time there is a change or cyclically. The eCO₂ concentration can also be sent when there is a change and cyclically.</p>	
Cycle time	0...24 h 0... 10 ...59 min
<p>This parameter defines separately for each alarm the time at which the alarm is to be issued cyclically via the "eCO₂ - Alarm <i>n</i>" object.</p>	

13.10.4.2 Object list "eCO2 measurement"

The name of the following object can be specified using the "Name of measurement" parameter on the "eCO2 measurement" parameter page.

Function	Name	Type	DPT	Flag
eCO2 concentration - actual value - status	eCO2 (...) - output	2-byte	9,008	C, R, -, T, A
2-byte object for outputting the eCO2 concentration determined by the push-button sensor in ppm.				

Function	Name	Type	DPT	Flag
eCO2 - Alarm 1	eCO2 (Good indoor air quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the first alarm.				

Function	Name	Type	DPT	Flag
eCO2 - Alarm 2	eCO2 (Average indoor air quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the second alarm.				

Function	Name	Type	DPT	Flag
eCO2 - Alarm 3	eCO2 (Moderate indoor air quality) - Output	1-bit	1,005	C, R, -, T, A
1-bit object to output the third alarm.				

Function	Name	Type	DPT	Flag
eCO2 - Alarm 4	eCO2 (low indoor air quality) - output	1-bit	1,005	C, R, -, T, A
1-bit object to output the fourth alarm.				

Gira
Giersiepen GmbH & Co. KG
Elektro-Installations-
Systeme

Industriegebiet Mermbach
Dahlienstraße
42477 Radevormwald

Postfach 12 20
42461 Radevormwald

Deutschland

Tel +49(0)21 95 - 602-0
Fax +49(0)21 95 - 602-191

www.gira.de
info@gira.de