KNX

Product documentation

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GIRA

Presence detector Mini Komfort

Art. no. 2222 530, 2222 550

Product image non-binding

Table of contents

1 Information on the product

1.1 Product catalogue

Product name:	Presence detector Mini Komfort
Ordering no.	2222 530
Use:	Physical sensor
Design:	Installation Flush-mounted with flush-mounting kit (accessories) Surface-mounted with surface-mounting kit (accessories)
Product name:	Presence detector Mini Komfort
Ordering no.	2222 550
Use:	Physical sensor
Design:	Installation Flush-mounted with flush-mounting kit (accessories) Surface-mounted with surface-mounting kit (accessories)

1.2 Purpose

Application

The presence detector is installed on a horizontal ceiling and it monitors an area below it. The device is used for the demand-orientated control of lighting systems, room thermostats and other electrical consumers in interior rooms and, due to its compact design, is suitable both for clamp-mounting in dry false ceilings and for ceiling mounting in flush or surface-mounted appliance boxes (accessory). The device is operated to detect motion (as a motion detector) and evaluate presence (as a presence detector) and for room surveillance (for monitoring), depending on the configuration.
When used as a "Motion detector", the device is usually installed in passageways of buildings in order to switch on the lighting automatically whenever necessary. If lighting is switched on by a motion detector, it is not switched off again until no-one is in the monitored area.
The "Presence detector" application is normally used in areas where people spend long periods of time (e.g. workplace as well as bathroom/toilet...) to control the lighting or heating/ventilation. The device can evaluate slightest movements in this application. Unlike the motion detector functionality, in brightness-dependent mode, the brightness is evaluated continuously if the lighting is switched on, even during an active motion detection process. Thus, for example, lighting can be switched off when a defined brightness threshold is exceeded, e.g. by incoming daylight.
When used for "Monitoring", the device always works brightness independently. Signal telegrams indicate whether or not people are present in the monitored area. Here, the number of motion pulses can be specified within a monitoring time whereby it is possible to adapt the motion evaluation to meet the individual requirements. Motion is identified only when the device has determined the set number of motion pulses. This application is appropriate when the device is to be used as a detector for KNX signalling systems.

Motion detection and brightness sensors

The device detects motion digitally by means of 3 PIR sensors with a total detection field of 360°, in which each PIR sensor covers a subarea of 120°. The sensitivity of the motion detection, which is a measure for the range of the PIR evaluation, can be configured here separately for the PIR sensors in the ETS.
To determine the workplace brightness or ambient brightness, the device has a brightness sensor, which is located behind the lens. The sensor detects the reflected mixed light composed of artificial light and daylight from the area or objects below the device. A reflection coefficient programmed at the factory enables the device to determine the effective brightness of the workplace or floor surface. The reflection coefficient of the device can be adapted to other workplace or floor surfaces using the calibration function if necessary.
The brightness value determined by the device can be made available to other bus subscribers by means of an object for display or evaluation purposes. In addition, the comfort presence detector has up to three mutually independent brightness limit values that are compared continuously with the determined brightness value. If a limit value configured in the ETS or predefined externally is exceeded or fallen below, the device can transmit switching, brightness value or scene call-up telegrams to the bus and thus trigger appropriate reactions in other bus subscribers.

Function blocks 1 … 5

The Comfort presence detector has 5 function blocks for the motion detector and presence operation. Each function block can be regarded as a virtual device that operates independently and can be assigned individually to 3 PIR sensors. Each function block is fully configurable to the "Motion detector", "Presence detector" or "Presence detector - Monitoring" application to allow different switching and control tasks affecting various areas of a room to be executed with just one device. Up to two outputs, which can be configured separately, are available per function block. 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).

Light control function block

A complete and multi-functional light control is implemented in the light control function block. The light control allows the brightness level of an assigned lighting device to be kept constantly at a specified brightness setpoint even under changing external light influences (daylight and/or artificial light). The light control is activated and deactivated by means of presence information. This presence information can be transmitted to the light control by its own motion evaluation system or another bus subscriber (e.g. another presence detector or motion detector).
The light control enables the actuation of up to three separate dimming channels and allows extensive adjustment of the brightness setpoint even during ongoing operation of the device (setpoint shift, external specification, teach-in function). The start-up, main and step-down control phase can be adjusted individually to meet the control requirement.

Orientation light function block

The presence detector has an orientation light function. The orientation light is used for orientation in a room. The orientation light can be customised to the respective environment and purpose. You can also specify when and how brightly the orientation light is to shine. It is not possible to measure the ambient brightness when the orientation light is switched on.

Function block switchover

The function block switchover can be used if necessary. The function block switchover makes it possible to toggle between two function block groups, in which assigned function blocks, for example, can be switched over depending on the time of day or the state of the KNX system. This enables continuous switching and thus changing of the device function during operation of the device (e.g. light control at day, orientation light and motion detector for service light at night / presence detector when present, monitoring for KNX signalling systems when absent).
Extensive parameters allow each function block to be adapted to a wide range of control tasks. 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 (PIR and brightness sensors). A disabling function allows demand-oriented disabling of individual function blocks. In addition, manual operation of the actuated KNX actuator and thus, deactivation of the PIR automatic is possible any time.

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. The transmission of the determined time takes place in "Seconds" data format. This function, for example, allows simple monitoring of people's movements in assisted living or senior living.

Control mode

The operating mode can be configured in the ETS for function blocks with the "Motion detector" or "Presence detector" application. 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. For example, the control mode can be configured to "Auto ON, auto OFF", "Manual ON, auto OFF" or "Auto 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).

Manual operation

Each function block also allows manual operation. The various configuration options make it easy to switch on the actuator with the automatic function active, to deactivate the automatic function permanently or temporarily, or operate the actuator in parallel with automatic function deactivated.

Use as

The function blocks can be used in some applications as a single device, as a main or extension unit, or only as a single device or main 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 and status LED
The presence detector has a walking test function. The walking test function serves as a guide for the project design and setting of the PIR detection field. The walking test indicates the reaction of the device when detecting movements with a blue status LED, which is clearly visible behind the sensor window. The walking test can be activated and deactivated by means of an object during operation of the device. Optionally, the status LED can indicate any detected movements even during normal operation.

Measurement of the room temperature
The device has an integrated temperature sensor that allows the ambient room temperature to be measured and forwarded. A temperature value received by means of an object can optionally supplement the room temperature measurement performed by the internal temperature sensor to improve the measurement result.

Measurement of the room humidity / dew point
The device has an integrated humidity sensor that can be used to measure and forward the ambient room humidity.
A dew point temperature, which can be sent to the bus, can be determined from the measurement of the room temperature and the room humidity. An alarm can also be sent to the bus before the dew point temperature is reached to prevent moisture damage if necessary.

Installation
The device is supplied by the bus voltage. An additional power supply is not necessary.

1.3 Device components

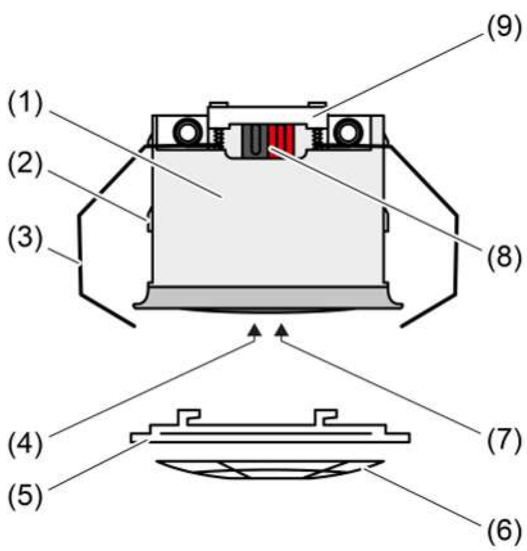


Figure 1: Device components

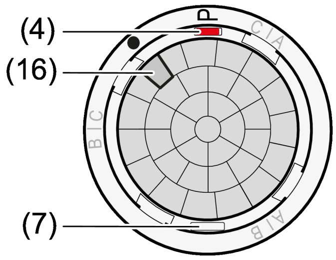


Figure 2: Top view

(1)	Presence detector
(2)	Guide for spring clips
(3)	Spring clamp
(4)	Programming button (red)
(5)	Design ring
(6)	Cover
(7)	Opening for humidity sensor
(8)	KNX bus connection
(9)	Mounting aid
(16)	Brightness sensor position

1.4 As-delivered state

In the unprogrammed delivery state, the device behaves passively. It does not transmit any telegrams to the bus when motion is detected. As soon as the device has been programmed in the ETS, it is ready for operation.

1.5 Technical data

General

Ambient temperature	-25 ... +55 °C
Storage/transport temperature	-25 ... +70 °C
Relative humidity	10 ... 100% (no condensation)
Protection class	III
Degree of protection	IP44 (depending on installation)

Motion detection

Detection angle	360°
Range	(see chapter "Mounting and electrical connection" ▸ Page 14)

Brightness sensor

Measuring range	10 ... 2000 lx

Accuracy > 80 lx	± 20%
Accuracy ≤ 80 lx	± 10 lx
Resolution	1.9 lx

Temperature sensor

Measuring range	Approx. -20 ... +55 °C
Accuracy	± 1 K

Humidity sensor

Measuring range	10 ... 95 % rel. humidity.
Accuracy	≤ 3.5%

i Within a range of 30 ... 80% and 17°C ... 24°C, the accuracy is ≤ 2.5%.

Dimensions

Dimensions Ø×D	53.5 x 38 mm (with design ring)
Ceiling cut-out Ø×D	44 x 35 mm

KNX supply

KNX medium	TP
Commissioning mode	S mode
Rated voltage KNX	DC 21 ... 32 V SELV
5 ... 15 mA	5 ... 15 mA
Bus connection type	Device connection terminal

1.6 Accessories

Flush-mounted installation kit	Art. no. 2226 5..
Surface-mounted installation kit	Art. no. 2227 5..

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.

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

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

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

3 Mounting and electrical connection

Detection field and range

The device is used to detect extremely sensitive movements by means of 3 digital PIR sensors with a total detection field of 360° (see figure 4), in which each PIR sensor covers a subarea of 120°. The diameter of the detection field depends on the mounting height and the direction of motion of persons in the detection field .

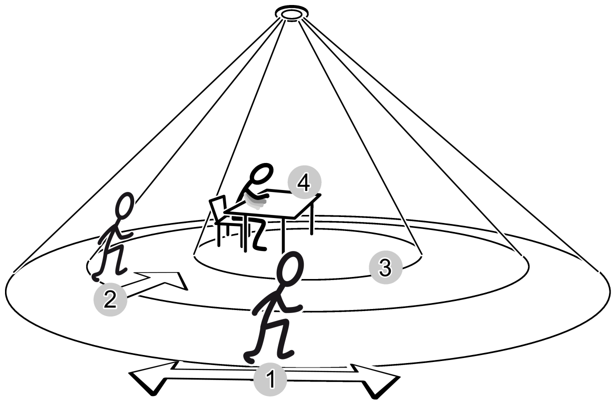


Figure 3: Detection range depending on the direction of motion

1: Range for tangential motion on the ground
2: Range for radial motion on the ground
3: Presence detection range, e.g. arm movement at the desk
4: Range of fine detection at the desk, e.g. mouse movements

The detection field will become larger the greater the mounting height is, while the detection density and sensitivity are reduced at the same time.

Installation height	1:	2:	3:	4:
2.20 m	12.30 m	8.70 m	4.80 m	3 m
2.50 m	14.00 m	9.90 m	5.40 m	3.40 m
3.00 m	16.80 m	11.90 m	6.50 m	4.10 m
3.50 m	19.60 m	13.90 m	7.60 m	4.80 m
4.00 m	2.40 m	15.80 m	8.60*)	*)
5.00 m	28.00 m	19.80 m	10.80 *)	*)

Diameter of detection field for direction of motion

*): When used as a presence detector, the mounting height should not be greater than 3.5 m. Otherwise presence detection will be possible only to a limited degree, and fine detection not at all.

The device has three independent PIR sensors for motion detection, whose fields of detection overlap in the close area (see figure 4). The arrangement of the A, B and C sensor areas is clearly evident under the decor ring (see figure 5).

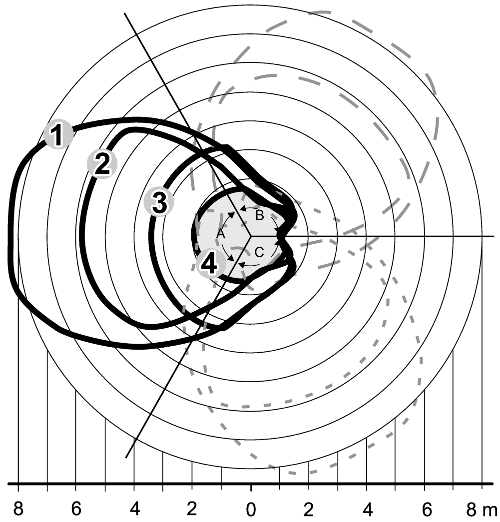


Figure 4: Detection field with PIR sectors A, B and C at a mounting height of 3.00 m

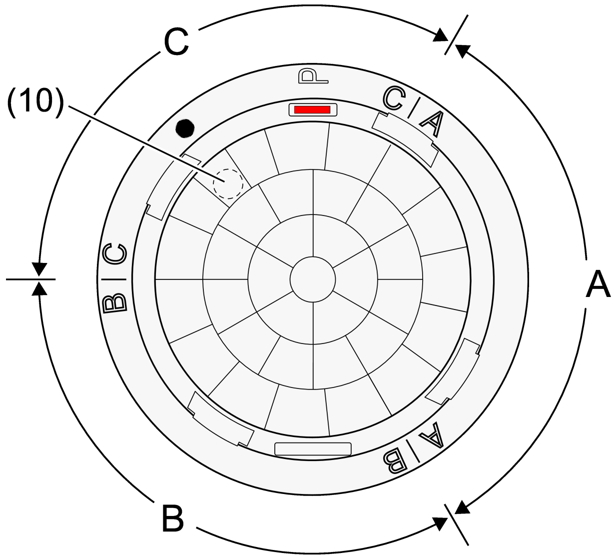


Figure 5: Labelling of the PIR sectors on the device

If the PIR sectors A, B, C are evaluated separately, the project design must take into account the alignment of the device.

The sensitivity of the motion detection can be configured separately for the PIR sectors in the ETS.
The digital signal evaluation of all PIR sensors can be additionally influenced in terms of sensitivity to reduce or even completely suppress any undesired motion detections in spacious installation environments (large detection radius) at long range.
For an accurate function description of the sensitivity setting, refer to the chapter Software description.

Aligning the device

The presence detector (1) is ideally mounted on the ceiling above a workplace or a bright surface. The device measures the reflected brightness (mixed light of artificial light and daylight) of the areas beneath it. The brightness sensor (16) is attached behind the lens with lateral offset and thus enables an asymmetric measuring surface. In this way, for example, it is possible to include several work places in the measurement without any laterally entering light to distort the measurement.

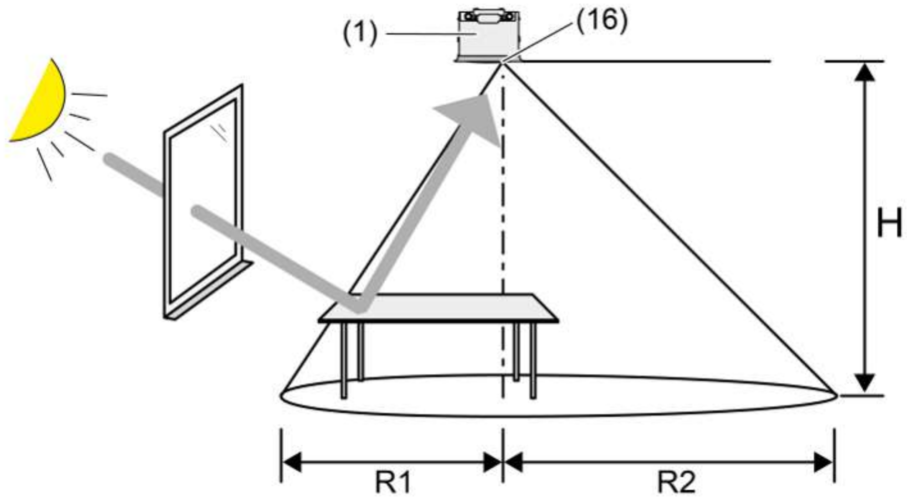


Figure 6: Alignment of the brightness sensor

- Select a vibration-free installation location. Strong vibrations can lead to varying brightness measurements.
- Align the device so that the brightness sensor (16) is not facing the window when mounting the device.

Pay attention to the correct alignment already when mounting the device.

To avoid influencing the brightness measurement unfavourably, care must already be taken when mounting the device to ensure that no direct light falls onto the lens (e.g. sunlight or direct lighting aligned upwards). Strong reflections can also influence the brightness measurement if they fall directly onto the device lens.

Installation height H	R1	R2
2.20 m	1.5 m	2.3 m
2.50 m	1.8 m	2.6 m
3.00 m	2.0 m	3.0 m
3.50 m	2.5 m	3.6 m
4.00 m	2.8 m	4.2 m
5.00 m	3.5 m	5.2 m

Radii of the asymmetrical measuring area, dependent on the installation height

Selecting installation location

When used as a presence detector, the device is installed ideally on the ceiling above a workplace. The device then monitors the surface below it. When used as a motion detector, the device is installed e.g. in corridors or passageways on the ceiling.

- Select a vibration-free installation location. Vibrations can lead to undesired switching operations.
- Avoid interference sources in the detection field. Interference sources, e.g. heaters, ventilation, air conditioners and cooling lamps can lead to undesired detection processes.

If necessary, the detection field can be limited using the push-on cover in order to minimise the influence of interference sources.

To avoid unfavourably influencing the brightness measurement, care must already be taken when mounting the device to ensure that no direct light (sunlight, artificial light) falls onto the lens. Strong reflections can also influence the brightness measurement if they fall directly onto the device lens.

Connecting and mounting the device in a suspended ceiling

In the delivered state, the device is prepared for mounting in a suspended ceiling. The spring clamps are pre-mounted.

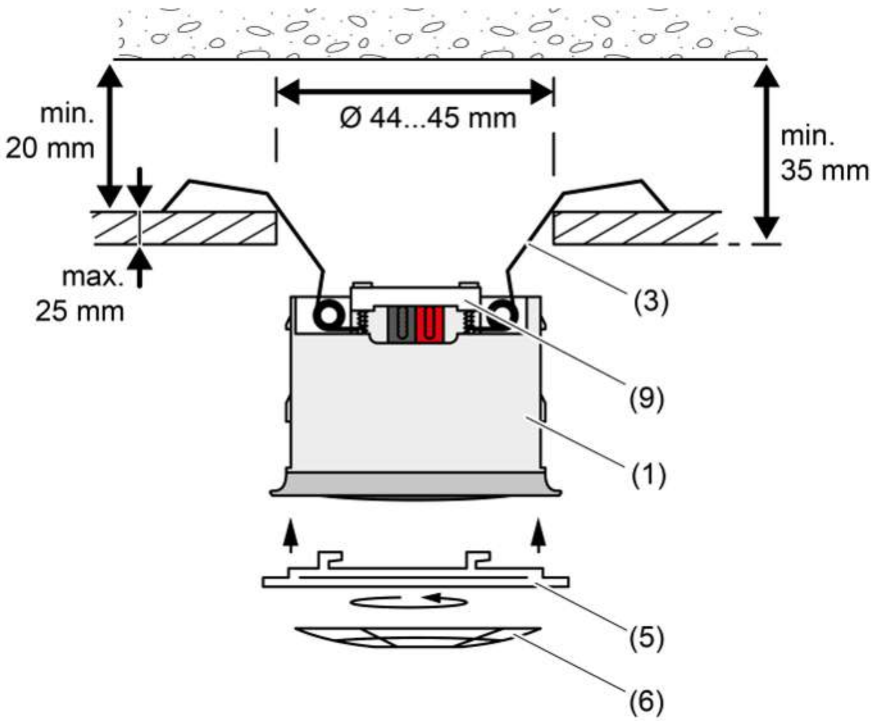


Figure 7: Mounting in a suspended ceiling

Max. thickness of the suspended ceiling of approx. 25 mm. Installation depth of min. 35 mm. Distance between suspended ceiling and concrete ceiling of min. 20 mm.

- Connect the KNX bus line.
- Clamp the KNX bus line with cable fixation (9).
- Bend back the spring clamps (3) and push the presence detector (1) into the suspended ceiling.
- Attach the design ring (5) and turn it clockwise.
- If necessary, cut out the cover (6) and clip it into the design ring.

i In suspended ventilated ceilings, we recommend using air-tight, cavity wall appliance boxes and, as a result, the described mounting type for flush-mounted appliance boxes.

Mounting in combination with the mounting kit for flush or surface-mounted box mounting

For mounting in a flush or surface-mounted box, it is necessary to dismantle the pre-mounted spring clamp and mount the spring clips. The clamping springs are included in the mounting kits (see accessories).

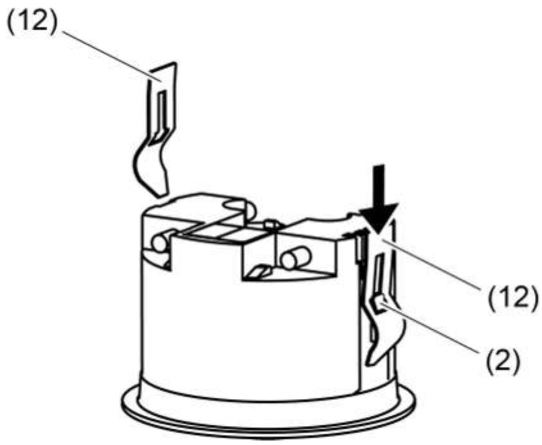


Figure 8: Mounting the spring clips as preparation for flush or surface box mounting

- Remove the spring clamp.
- Push the spring clips (12) in the correct position onto the side guides (2) from behind until they snap into place.

Connecting and mounting the device in an appliance box for flush mount

The spring clips must be mounted in advance.

A suitable flush-mounted appliance box is mounted in the ceiling at the designated installation location.

The large design ring is included in the mounting kit for flush box mounting (see accessories).

i In ventilated suspended ceilings, we recommend using air-tight, cavity wall appliance boxes.

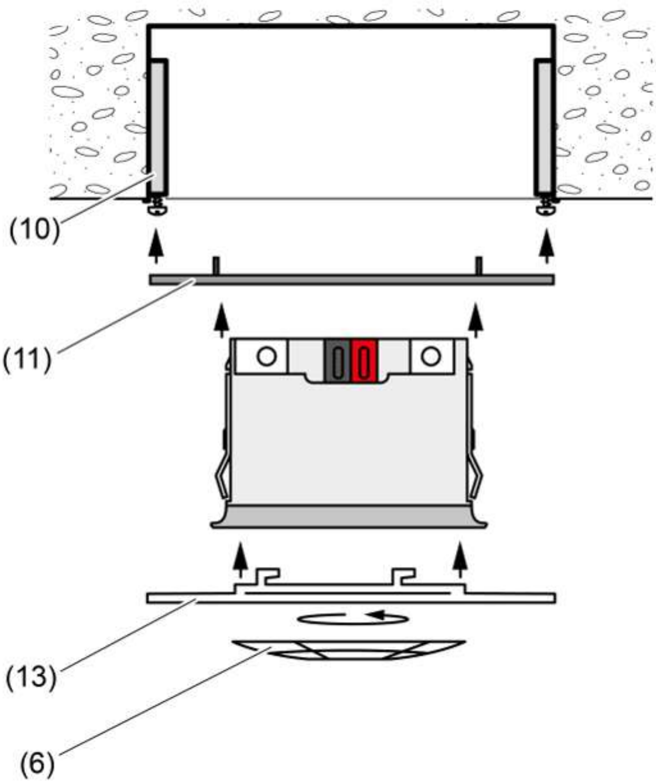


Figure 9: Mounting in a flush-mounted / cavity wall appliance box

- Mount the supporting frame (11) on the appliance box (10).
- Connect the KNX bus line.
- Snap the presence detector into the supporting frame.
- Attach the large design ring (13) and turn it clockwise.
- If necessary, cut out the cover (6) and clip it into the design ring.

Connecting and fitting the device in a surface-mounted housing

The spring clips must be mounted in advance.

Use the surface-mounted housing included in the mounting kit for surface box mounting.

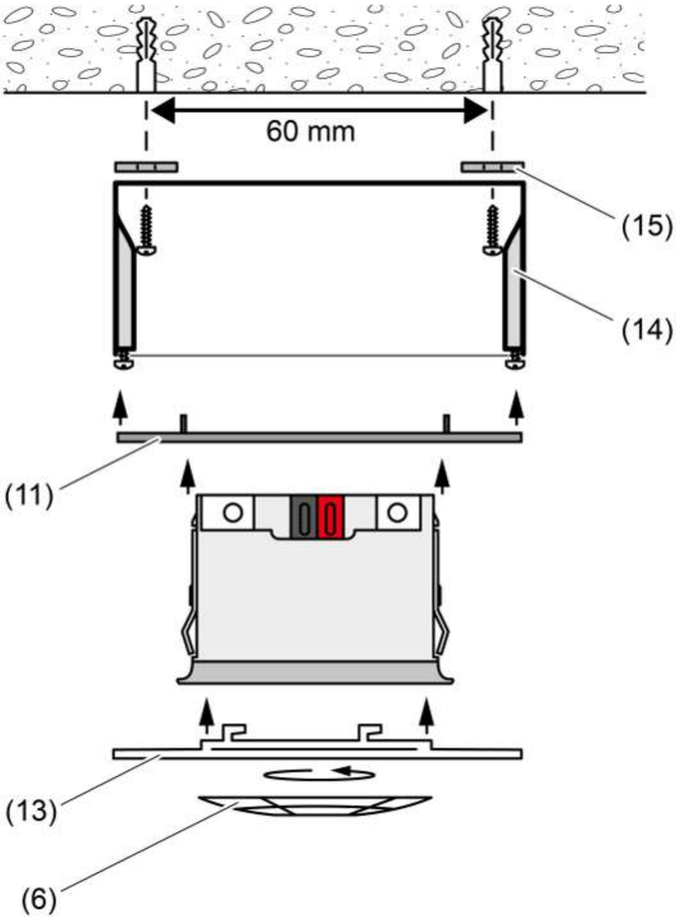


Figure 10: Mounting in the flush-mounted housing (accessories)

- In humid environments and for IP44 mounting: Provide the screw holes of the surface-mounted housing (14) with the supplied seals (15).
- Seal the cable entry with the supplied rubber grommet. Cut the rubber grommet appropriately for the bus cable. Route the bus line into the box.
- Mount the surface-mounted housing onto the room ceiling at the designated installation location. Hole spacing of 60 mm.
- Mount the supporting frame (11) on the surface-mounted housing (14).
- Connect the KNX bus line.
- Snap the presence detector into the supporting frame.
- Attach the large design ring (13) and turn it clockwise.
- If necessary, cut out the cover (6) and clip it into the design ring.

4 Commissioning

Programming the physical address and application program

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

i The red programming button (4) can be accessed by removing the cover (6) (optionally) and the design ring (5).

Testing the detection field

The device must be mounted and connected and the physical address and application program must be loaded.

In the case of main unit and extension arrangements, check the detection fields of the devices individually one after the other.

Activate the walking test.

The "Use walking test" parameter is set to "Activated" so that the "Activate/Deactivate walking test" object is visible.

- Switch on the walking test with a telegram to the "Activate/Deactivate walking test" object.

  The device then works independently of the brightness and indicates detected movements with the blue status LED. All PIR sectors are active according to their preset sensitivity.
- Pace off the detection field, paying attention to reliable detection and interference sources.
- Limit the detection field as required. To do this, change the sensitivity of the ETS parameter setting preferably or, alternatively, use the clip-on cover.
- After a successful test, switch off the walking test by sending a telegram to the "Activate/Deactivate walking test" object.

  The walking test is deactivated. The device works according to the configuration.

Limiting the detection field using the push-on cover

As an alternative to restricting the detection field with the ETS, the cover (6) can also be used by reducing the sensitivity or switching off individual sensors.

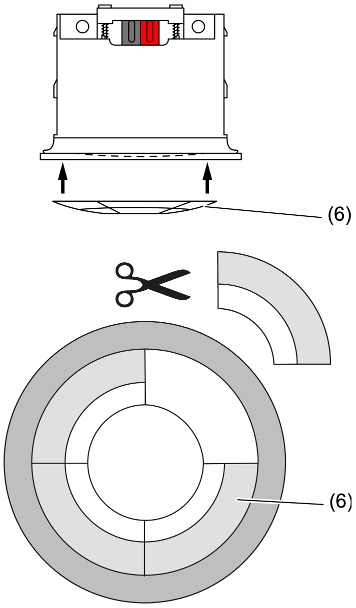


Figure 11: Cover mounting

- Pull off the push-on cover.
- Use the scissors to cut out the push-on cover along the marked lines as required.
- Push on the push-on cover.

4.1 Safe-state mode

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

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

Activating safe-state mode

- Switch off the bus voltage or remove the KNX device connection terminal.
- Wait approx. 10 seconds.
- Press and hold down the programming button.
- Switch on the bus voltage or attach the KNX device connection terminal.
- Wait until the programming LED flashes slowly.
- Release the programming button.

Safe-state mode is activated.

The programming mode can be switched on and off as usual also in safe-state mode by briefly pressing the programming button again. The programming LED stops flashing if the programming mode is active.

Deactivating safe-state mode

- Switch off the bus voltage (wait approx. 10 seconds) or carry out the ETS programming procedure.

4.2 Master reset

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

In secure operation, a master reset will deactivate the device security. The device can then be recommissioned with the device certificate.

Performing a master reset

Prerequisite: safe-state mode is activated.

- Press and hold down the programming button for > 5 s.

  The programming LED flashes quickly.

- Release the programming button.

  The device performs a master reset, restarts and is ready for operation again after approx. 5 s.

4.3 Resetting the device to the default settings

The device can be reset to the default 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). The device will lose its physical address and configuration by restoring the default settings.

4.4 Firmware update

The device can be updated. The firmware is easy to update with the Gira ETS Service app (additional software).

5 Application programmes

ETS search paths:	Phys. sensors / Movement detector / Presence detector mini Komfort
Configuration:	S-mode standard

Applications for mini Comfort presence detector:

Name	Comfort A01A21 presence detector
Version	2.1 For ETS from version 5.7.7 or 6.3.0
From mask version	System B
Summarized description	Multifunctional presence detector application: 3 PIR sensors with separately adjustable sensitivity, function blocks for motion evaluations 1 ... 5, light control and orientation light with function block switching. Sensors for brightness, temperature and humidity, brightness limit values, logic functions, day/night switchover, RGB LED for status indication.

6 Scope of functions

- The device is operated to detect motion (as a motion detector) and evaluate presence (as a presence detector) and for room surveillance (for presence detection monitoring), depending on the configuration.
- Evaluation of the smallest movements in presence detector mode.
- Continuous evaluation of the brightness during active motion detection in presence detector mode. As a result, the lighting can be switched off when a defined brightness threshold is exceeded e.g. by incoming daylight.
- Configurable number of motion pulses within a monitoring time in monitoring operation. Motion is identified only when the device has determined the set number of motion pulses. This application is appropriate when the device is to be used as a detector for KNX signalling systems.
- Motion is detected digitally by means of 3 PIR sectors with a total detection field of 360°. Each PIR sector covers a subarea of 120°.
- The sensitivity of the motion detection can be configured separately for the three PIR sectors in levels.
- Brightness sensor used to determine the workplace or ambient brightness. Determination of the effective brightness of the workplace or floor surface by means of an adjustable reflection coefficient. Optional calibration of the sensor by means of an object using an externally measured brightness value.
- Evaluation of the measured brightness by up to three mutually independent brightness limit values. If a limit value configured in the ETS or specified externally is exceeded or fallen below, the device can transmit switching, brightness value or scene call-up telegrams to the bus.
- Up to 5 function blocks that work independently are available and up to 3 PIR sectors can be assigned individually. Each function block is fully configurable to the "Motion detector", "Presence detector" or "Presence detector - Monitoring" application to allow different switching and control tasks affecting various areas of a room to be executed with just one device.
- 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).
- Light control function block: A complete and multi-functional light control is implemented in the device. The light control allows the brightness level of an assigned lighting device to be kept constantly at a specified brightness setpoint even under changing external light influences (daylight and/or artificial light). Activation and deactivation of the light control by means of presence information. This presence information can be transmitted from its own motion evaluation system or from another bus subscriber (e.g. another presence detector or monitor) to the light control.

- The light control enables the actuation of up to three separate dimming channels and allows extensive adjustment of the brightness setpoint even during ongoing operation of the device (setpoint shift, external specification, teach-in function). The start-up, main and step-down control phase can be adjusted individually to meet the control requirement.
- Orientation light function block: The presence detector has an orientation light function. The orientation light is used for orientation in a room. The orientation light can be customised to the respective environment and purpose. You can also specify when and how brightly the orientation light is to shine.
- Function block switchover for bus-controlled toggling between two function block groups in which assigned function blocks, for example, can be switched over depending on the time of day or state of the KNX system. This makes it possible to continuously switch over during operation of the device and thus change its function (e.g. presence detector for light control at day, motion detector for service light at night / presence detector if present, detector for KNX signalling systems if absent).
- 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 (PIR and brightness sensors).
- Demand-oriented disabling of individual function blocks.
- Manual operation of the actuated KNX actuator and thus deactivation of the PIR automatic system is possible.
- For activity monitoring, a function block in brightness-independent operation can determine the time period after a last motion and transmit to the bus by means of a communication object. This function, for example, allows simple monitoring of people's movements in assisted living or senior living.
- Control mode, which can be set for function blocks of the "Motion detector" or "Presence detector" application. The control mode specifies the functionality of the motion detection and defines whether the start and end of a motion detection process is identified automatically. The operation can be configured to "Auto ON, auto OFF", "Manual ON, auto OFF" or "Auto ON, manual OFF".
- The device can be used as a single device or main or extension unit in the "Motion detector" or "Presence detector" applications. 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 PIR detection field. The walking test indicates the reaction of the device when detecting movements with a blue status LED, which is clearly visible behind the sensor window. Optionally, the status LED can indicate any detected movements even during normal operation.

7 Notes on the software

ETS project design and commissioning

The project design and commissioning of the device is performed using the ETS from version 5.7.7 or 6.3.0.

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 (see chapter "As-delivered state" ▸ Page 11) described cannot be restored by unloading with the ETS.

8 General setting and reset behaviour

8.1 Function overview

The device contains various functional units, which perform a variety tasks and have various integrated and external interfaces in the form of sensors and KNX communication objects. Various control or regulation tasks can be performed in the KNX system by activation of KNX actuators and sensors on the objects.

The device combines the functions of up to 5 motion/presence detectors, a light control, an orientation light, a brightness sensor with limit value evaluation, a temperature sensor and a humidity sensor with dew point calculation in just one bus device. The following function blocks and functional units implement this variety of functions.

- "Motion/presence detector" function block
  Contains up to 5 function blocks (FB) that operate logically independent of each other and can each be configured separately to the "Motion detector", "Presence detector" " or "Presence detector - Monitoring" application.
- "Light control" function block
  Contains powerful functions of a constant light control. This function block can be linked internally to the motion and brightness sensors, or alternatively, externally to other bus devices by means different communication objects.
- "Orientation light" function block
  The orientation light is used for orientation in a room and is implemented by an LED under the lens. The orientation light can be customised to the respective environment and purpose. You can also specify when and how brightly the orientation light is to shine, depending on the motion and ambient brightness.
- "Function block switchover" functional unit
  This functional unit allows function blocks 1 ... 5, the light control function block and the orientation light function block to be switched over. Each function block can be assigned to one of two function block groups. Only one function block group is active at a time during operation. When switching over the function block group, the assigned function blocks of the group to be switched off are deactivated and then the function blocks of the other function block groups are activated. Function blocks that are not assigned to any function block groups are not influenced.
- "Motion" functional unit
  This unit implements the evaluation and processing of the signals from the motion sensors of the device. The prepared signals are made available to various other functional units and can additionally be made available to other bus devices by means of objects as well.
- "Brightness" functional unit
  This unit implements the evaluation and processing of the signals from the brightness sensor of the device. The prepared signals are made available to various other functional units and can additionally be made available to other bus devices by means of objects as well.

– "Brightness limit values" functional unit
  This functional unit evaluates the determined brightness. It can compare this brightness value continuously with up to three different limit values and transmit pre-configured telegrams of different data formats to the bus if the brightness value exceeds or does not reach the limit values.
– "Temperature sensor" functional unit
  The device has an integrated temperature sensor that makes it possible to measure the local room temperature. The measured value can be forwarded to other KNX devices by means of an object.
– "Humidity sensor" functional unit
  The device has an integrated humidity sensor that can be used to measure the humidity. This makes it possible to monitor the humidity in a room. The processed measured value can be forwarded to other KNX devices by means of an object in the event of a change or cyclically.
– "Dew point'" functional unit
  The device can determine the dew point temperature from the measured temperature and the measured humidity and forward it to other KNX devices (e.g. visualisations, room temperature controllers) by means of a object. A dew point alarm can be issued before the dew point temperature is reached.
– Logic and arithmetic
  The device contains up to 8 logic functions. These functions can be used to perform simple logical operations in a KNX installation. Logic functions can be networked, enabling the execution of complex operations, by linking input and output objects.
– Heartbeat function
  The heartbeat function makes it easy to check whether the application is running without errors in the device. For this purpose, the Heartbeat communication object sends a telegram with the value "1" with a settable cycle time.

The individual functional units are described in detail in the following chapters of the software description.

8.2 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 "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" parameter page. It is recommended to configure different delay times in the individual 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.

8.3 "General" parameters

General -> Enabled functions

Scenes	**Inactive** Active
The device has a versatile scene control. Scenes that can be used to activate day or night operation or switch the function block groups can be activated here. Day/night switchover or function block switchover must be activated to use the scenes sensibly.	

Temperature measurement	**Inactive** Active
The device has an integrated temperature sensor. This temperature sensor can be used to measure the ambient temperature and forward it to other KNX devices (e.g. visualisation systems, room temperature controllers) by means of a 2-byte object. This parameter enables the temperature measurement.	

Humidity measurement	**Inactive** Active
The device has an integrated humidity sensor. This humidity sensor can be used to measure the humidity and forward it to other KNX devices (e.g. visualisation systems, room temperature controllers) by means of a 2-byte object. This parameter enables the humidity measurement.	

Determine dew point	**Inactive** Active
The device can determine the dew point temperature from the measured temperature and the measured humidity and forward it to other KNX devices (e.g. visualisation systems, room temperature controllers) by means of a 2-byte object. This parameter enables the dew point temperature to be determined. Because active measurement of the temperature and humidity is required to determine the dew point, the corresponding sensors are also activated.	

General -> Function blocks

Number of function blocks	0 … **1** … 5
Up to five 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.	

Light control	Inactive Active
This parameter enables the light control. The light control allows the brightness level of an assigned lighting device to be kept constantly at a specified brightness setpoint even under changing external light influences (daylight and/or artificial light). The light control is activated and deactivated by means of presence information.	

Orientation light	Inactive Active
The white LEDs of the device can be used as orientation lights. This parameter enables the orientation light function block.	

Function block switchover	Inactive Active
Function block switchover can be enabled here. If the function is activated (enabled), you can switch between two function blocks, e.g. one for at day and one for at night.	

General -> Brightness limit values

Number of brightness limit values	0 … 3
Up to three limit values can be evaluated. An upper and a lower brightness threshold can be configured for each brightness limit value, and a configured telegram is sent to the bus if the brightness exceeds or falls below this threshold. This parameter defines the number of limit values and thus the number of output objects that can be configured in the ETS. If set to "0", the brightness limit values function is deactivated	

General -> LED

Number of status indicators (RGB LED)	0 … 8
The RGB LED can be used for up to 8 status indicators. This parameter is used to define the number. If set to zero, no status is indicated. The "Acknowledgement" and "Status" objects are enabled. The status indicator can be stopped by sending a telegram to the "Acknowledgement" object.	

Motion status indicator (blue LED)	Inactive Active
The blue status LED indicates movements detected during the active walking test. If this is to take place also during normal operation, the "Motion status indicator (blue LED)" parameter page, on which the function of the blue status LED is configured, is enabled here.	

General -> Other functions

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, e.g. "sensitivity" 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**
If this parameter is active, the outputs of function blocks 1 ... 5 are output by means of a common object at day and at night. If the parameter is inactive, separate output objects will be available for day and night. 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
This parameter is used to define when day/night switchover is to take place. **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. **Immediately:** The switchover takes place immediately and for all function blocks together. This parameter is visible only if day/night switchover is set to active.	

After bus voltage return	No reaction Query current state **State before bus voltage failure**
This parameter specifies which state (day/night mode) is active after the bus voltage returns. **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. **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". **State as before bus voltage failure:** The device restores the state that was active before the bus voltage failure. This parameter is visible only if day/night switchover is set to active.	

General -> Other functions

Heartbeat function	**Inactive** Active
If the parameter is activated, the heartbeat functions and thus the "Heartbeat" object are enabled. This function monitors the device state and sends it regularly to the bus.	

Cycle time for sending the device state	**0** … 23 h 1 … **2** … 59 min
This parameter defines the time with which the device sends a telegram with the value "1" when the application is running. To limit the bus load, times shorter than 1 minute are excluded.	

Number of logic functions	**0** … 8
The device contains up to 8 logic functions. These functions can be used to perform simple logical operations in a KNX installation. The logic functions are enabled with this parameter. No logic functions are available in the zero setting. The "Logic functions" parameter page appears, on which the logic functions can be configured.	

General -> Reset behaviour

Changeable parameters can be reset via object	**Inactive** Active
This parameter is used to enable the object "Changeable parameters - Reset". A reset telegram to this object resets all parameters that can be changed by means of objects to the settings in the ETS.	

(Reset behaviour) After bus voltage return	No reaction **Send current states**
Defines the transmission behaviour of the device after the bus voltage returns. **No reaction:** No telegrams are sent to the bus. **Send current states:** The current states of the function blocks are sent to the bus.	

Delay after bus voltage return	**0** … 59 min 0 … **17** … 59 s
A delay time can be set here in minutes and seconds to prevent all bus devices from sending their state to the bus at the same time after the bus voltage returns. This prevents the bus from being overloaded and ensures that the most important devices can send their status first.	

8.4 "General" objects

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

Function	Name	Type	DPT	Flags
Day/night switchover - Switching	Entire presence detector - Input	1-bit	1.024	C, -, W, T, 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	Entire presence detector - Output	1-bit	1.024	C, R, -, T, A
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
Heartbeat	Heartbeat - Output	1-bit	1.002	C, R, -, T, A
1-bit object for cyclical signalling of the device function. When the application of the device is running, the communication object transmits the value "1" with the set cycle time.				

Function	Name	Type	DPT	Flags
Changeable parameters - Reset	Entire presence detector - 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.				

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.

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.

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.

9.1 "Scenes" parameter

Scenes

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 defines the time by which the scenes are delayed when 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 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
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 is reached when counting down and an additional telegram in the last counting direction is received by the actuator. Parameter activated: After reaching the last scene of the selected configuration, another 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. Parameter deactivated: 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. This parameter is visible only if the extended scene call-up is used.	

Scene configuration	Variable (1...64 scenes) Fixed (64 scenes)
The scene configuration selected here decides whether the number of scenes is either variable (1 ... 64) or, alternatively, fixed to the maximum (64). 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 for the switching output in the ETS and can therefore be used. It is possible to specify which scene number (1 ... 64) controls each scene. 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. To do this, remove the tick from the corresponding scene under "Scene active".	

Number of scenes	1 ... 64
This parameter defines how many scenes are visible in the ETS and can therefore be used. This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes)	

Scene number	0 ...1*...64 *: The predefined scene number depends on the scene (1...64).
It is possible to set which scene number (1 ... 64) actuates each scene. A setting of "0" deactivates the corresponding scene to prevent it from being called up or stored. If the same scene number (1…16) 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. Scene number 0 deactivates a scene. This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes).	

Function	**Activate day mode** Activate night mode Activate FB group 1 Activate FB group 2
This parameter is present for each scene separately. The number depends on the setting of the "Number of scenes" parameter. This parameter is used to configure the function executed when the scene is called up. "Activate day mode" All function blocks are switched to day mode when the scene is called up. This setting makes sense only if the "Day/night switchover" parameter is set to active. "Activate night mode" All function blocks are switched to day mode when the scene is called up. This setting makes sense only if the "Day/night switchover" parameter is set to active. "Activate FB group 1" When this scene is called up, all function blocks assigned to FB group 1 are activated and all function blocks assigned to function group 2 are deactivated. Function blocks that are not assigned to any group are not influenced. This setting makes sense only if the "Function block switchover" parameter is set to active. "Activate FB group 2" When this scene is called up, all function blocks assigned to FB group 2 are activated and all function blocks assigned to function group 1 are deactivated. Function blocks that are not assigned to any group are not influenced. This setting makes sense only if the "Function block switchover" parameter is set to active.	

9.2 "Scenes" objects

Only the scene objects of the scenes that apply to the entire device are described here. The scene objects of the function blocks are described in the corresponding chapters of the function blocks.

Function	Name	Type	DPT	Flags
Scene extension unit	Scenes - Input	1-byte	17,001	C, -, W, -, U
1-byte object to which a telegram is sent with the scene number to activate the device. The scenes apply to the entire device. These scenes can be used to activate day or night mode or to activate function block group 1 or 2.				

Function	Name	Type	DPT	Flags
Extended scene call-up	Scenes - Input	1-bit	1,001	C, -, W, -, U
-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). This object is visible only if the scene function and the extended scene call-up are activated in the ETS.				

10 Sensor system

10.1 Motion

Motion detection

The device detects motion extremely sensitively by means of 3 digital PIR sectors with a total detection field of 360°, in which each PIR sector covers a subarea of 120°. The sensitivity of the motion detection, which is, among other things, a measure for the range of the PIR evaluation, can be configured here separately for the PIR sectors in the ETS.
The PIR sectors can be assigned individually to up to 5 function blocks and the light control and orientation light function blocks of the device. The assignment is made on the "General" parameter page of the corresponding function block.

Sensitivity of motion detection

The sensitivity of the motion detection is a measure of the range of the PIR evaluation and can be configured uniformly for all PIR sensors or separately for the PIR sectors A, B and C in the ETS. In the ETS, the setting for motion evaluation can be made uniformly for all function blocks on the "Sensors - Motion" parameter page or separately for each function block on the "Motion evaluation" parameter page of the respective function block.
In addition, the sensitivity for the initial detection and presence phases can be set individually to adapt it ideally to the location and purpose. If day/night switchover is active, a different sensitivity value can be configured for the initial detection phase for day and night. The sensitivity for the presence phase is the same at day and night.

The sensitivity is set in 10 levels, which can be set by means of parameters. Level 1 is the lowest sensitivity and level 10 the highest. Optionally, the sensitivity can also be set and adjusted by means of objects. The "Sensitivity can be set via object" parameter must be activated for this purpose.
Up to 12 objects appear when the parameter is activated, depending on the configuration of the sensitivity evaluation. These are 1-byte objects "PIR sensor ... - Sensitivity" and "PIR sensor ... - Sensitivity - Status", which can be used to specify a new sensitivity or read out the status of the sensitivity.

The 1-byte objects are a data type that does not correspond to any KNX standard data type.
The 1-byte objects have the following structure:

	Explanation
Bit 0 to bit 3	Sensitivity (default setting or status) 0 = deactivate sensor The affected PIR sensor can be deactivated by setting the sensitivity level to "0". 1 = sensor sensitivity 1 2 = sensor sensitivity 2 3 = sensor sensitivity 3

	Explanation
	4 = sensor sensitivity 4 5 = sensor sensitivity 5 6 = sensor sensitivity 6 7 = sensor sensitivity 7 8 = sensor sensitivity 8 9 = sensor sensitivity 9 10 = sensor sensitivity 10
Bit 4	C flag (Sensitivity -> valid = 1, invalid = 0 With "invalid", the state configured in the ETS is activated.)
Bit 5 to bit 7	Reserved (unused)

Locking of motion detection (fault detection by thermal radiation)

Switching lamps on and off in the detection field can lead to motion detection due to changing heat radiation. This applies in particular to luminaires operated with incandescent lamps or halogen lamps. To avoid this faulty detection process, the "Avoid faulty detection" parameter must be activated on the "Sensors -> Motion" parameter page.

Parameters that appear can be used to set the time a motion is ignored and whether this ignoring should be applied only when switching the lighting on, off or on and off. When a status telegram is received from the actuator, detected motion is ignored for a configured time to prevent motion from being evaluated due to the changing heat radiation.

i An expiring ignore period is restarted by receiving a new status telegram.

Example of solving a problem
The presence detector is monitoring a desk workstation and a pendant light with halogen lamps is located in the detection field. If the workplace is vacated, the luminaire is switched off when the run-on time elapses. The cooling halogen lamp interprets motion and switches the lighting on again.
Solution:
The status of the actuator is linked to the input object "Fault detection protection - Ignore motion - Activate" via a separate group address, so that the ignore time is activated when the lighting is switched off. During the first critical seconds of the halogen lamps cooling down, no motion is evaluated and the lighting remains switched off.

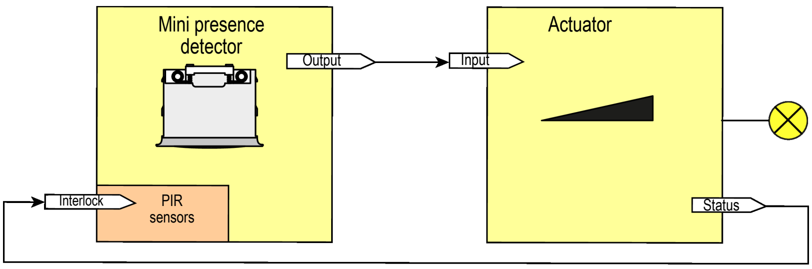


Figure 12: Faulty detection due to thermal radiation

10.1.1 "Motion" parameter

Sensors -> Motion

Sensor setting	**The same for all PIR sensors** For each PIR sensor individually
This parameter is used to define whether the sensitivity is the same for all PIR sensors or is separate for each PIR sensor. "The same for all PIR sensors" The same sensitivity setting is used for all PIR sensors. The sensitivity can be set separately for each PIR sensor. This may limit the influence of sources of interference such as heaters in individual sectors. Additional parameters appear.	

Sensitivity

Differentiated according to initial detection phase and presence phase	**Inactive** Active
This parameter is used to specify whether the sensitivity can be set separately for the initial detection of a motion and for retriggering. "Active" The sensitivity can be set separately for the initial detection phase of a movement and re-triggering during the presence phase. "Inactive" It is the same for the initial detection of a movement and the retriggering during presence. Additional parameters appear.	

PIR sensors A – B - C	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensors A – B - C) At day	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensors A – B - C) At night	1 … **6** … 10
This parameter is used to set the sensitivity of the PIR sensors for nighttime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensors A – B - C) Initial detection phase	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for the initial detection phase (initial detection of a movement). The setting applies uniformly to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensors (A - B - C) initial detection phase) At day	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for the detection phase (initial detection of a movement) for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensors (A - B - C) initial detection phase) At night	1 … **6** … 10
This parameter is used to set the sensitivity of the PIR sensors for the detection phase (initial detection of a movement) for night mode. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensors (A - B - C) presence phase) At day and night	1 … **6** … 10
This parameter is used to set the sensitivity of the PIR sensors for the presence phase (initial detection of a movement) for day and night time operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

PIR sensor… (A, B, C)	1 … 8 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C). This setting is made separately for each PIR sensor. The setting is made in increments of 1 (very low) to 10 (very high). These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor… (A, B, C)) Initial detection phase	1 … 8 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor... (A, B, C) initial detection phase) At day	1 … 8 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase for daytime operation. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor... (A, B, C) initial detection phase) At night	1 … **6** … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase for nighttime operation. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensors A – B - C) Presence phase	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensors A – B – C presence phase) At day and night	1 … **10**
This parameter is used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting applies to day and night time operation. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to the same value for all sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor… (A, B, C)) Presence phase	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the presence phase. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor... (A, B, C) presence phase) At day and night	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting applies to day and night time operation. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

Sensitivity can be set via object	Active **Inactive**
The sensitivity of the PIR sensors in the device is reset by sending a telegram to one of the 1-byte objects "PIR sensor - Sensitivity" according to DPT "non standard", which can be enabled by this parameter. The values are retained until a new specification is made by a telegram. An ETS programming operation sets the parameters automatically to the ETS pre-settings if this is provided for in the configuration.	

Overwrite values in device during ETS programming	Active **Inactive**
This parameter can be used to specify whether the sensitivity values are overwritten during an EST programming operation. The values are retained until a new specification is made by a telegram. To automatically set the values to the ETS specifications during an ETS programming operation, set this parameter to active. This parameter is visible only if the "Sensitivity can be set via object" parameter is set to active.	

Show info graphic	Inactive Active
This parameter can be used to display the infographic used to differentiate the motion detection process according to the initial detection and presence phase.	

Faulty detection due to thermal radiation

Avoid faulty detection	Active Inactive
Switching lamps on and off in the detection field can lead to motion detection due to changing heat radiation. This applies in particular to luminaires operated with incandescent lamps or halogen lamps. This parameter can be used to temporarily ignore the movement. This prevents faulty switching processes, e.g. due to a lamp cooling down. Set the parameter to active for this purpose. Additional parameters appear.	

Ignore motion if switching status	OFF ON ON and OFF
This parameter is used to specify whether motion is to be ignored only when switching on or off, or in both cases. OFF: The motion is ignored for the configured time after the actuator is switched off. ON: The motion is ignored for the configured time after the actuator is switched on. ON and OFF: The motion is ignored for the configured time after the actuator is switched on and off. This parameter is visible only if the "Avoid faulty detection" parameter is set to active.	

Duration of ignoring	1 … 3 … 59 s
This parameter defines how long the motion is ignored. The setting is made in seconds. Movements are detected again at the end of the ignore period. This parameter is visible only if the "Avoid faulty detection" parameter is set to active.	

10.1.2 "Motion" objects

Function	Name	Type	DPT	Flags
Faulty detection protec-tion - Ignore motion - Activate	Motion - Input	1-bit	1.003	C, -, W, - U
1-bit object used to temporarily ignore a detected movement. This prevents faulty switching processes, e.g. due to lamps cooling down.				

Function	Name	Type	DPT	Flags
Faulty detection protec-tion - Ignore motion - Status	Motion - Output	1-bit	1.002	C, R, -, T, A
1-bit object used to output whether a detected movement is ignored.				

Function	Name	Type	DPT	Flags
PIR sensors A - B - C - Sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C to the bus. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B C sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object for standardised specification of the sensitivity of PIR sensors A - B -C by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C presence sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C presence sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensors A - B - C during an ongo-ing detection process, by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C initial detection sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C for the initial detection to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C initial detection sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A - B C for the initial detection by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Presence sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Presence sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A during an ongoing detection process by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A for initial detection to the bus. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A for the initial detection by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B to the bus. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B during an ongoing detection process by means of a telegram.				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B for initial detection to the bus. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U

1-byte object used to specify the sensitivity of PIR sensor B for initial detection by a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).

Function	Name	Type	DPT	Flags
PIR sensor C – Sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A

1-byte object used to output the active sensitivity of PIR sensor C to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42).

Function	Name	Type	DPT	Flags
PIR sensor C – Sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U

1-byte object used to specify the sensitivity of PIR sensor C by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A

1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [▸ Page 42).

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U

1-byte object used to specify the sensitivity of PIR sensor C during an ongoing detection process by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity - Status	Motion - Output	1-byte	Non standard	C, R, -, T, A

1-byte object used to output the active sensitivity of PIR sensor C for initial detection to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42).

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity	Motion - Input	1-byte	Non standard	C, -, W, -, U

1-byte object used to specify the sensitivity of PIR sensor C for initial detection by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).

10.2 Brightness

Brightness measurement

To determine the workplace brightness or ambient brightness, the device has a brightness sensor, which is located behind the lens. The brightness sensor can be assigned separately to up to 5 function blocks and the light control and orientation light function blocks of the device. The sensor detects the reflected mixed light composed of artificial light and daylight from the area or objects below the device. A configured reflection coefficient enables the device to determine the effective brightness of the workplace surface or floor surface. The reflection coefficient of the device can be adapted to other workplace or floor surfaces using the calibration function if necessary.

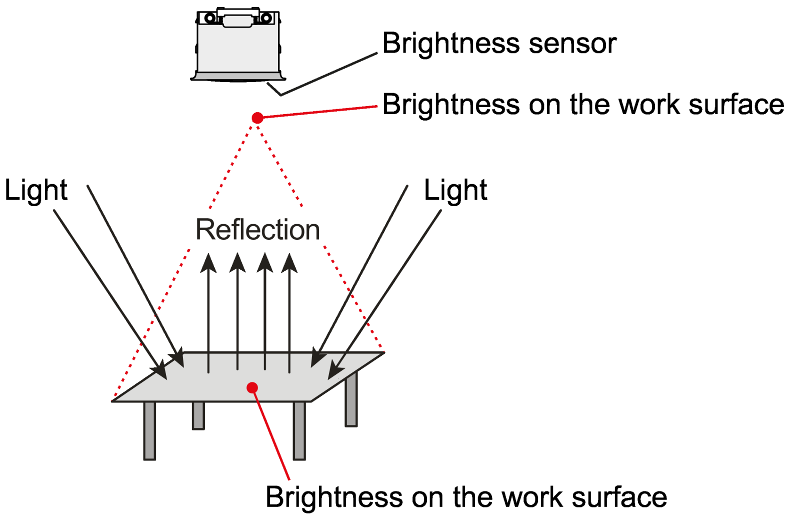


Figure 13: Determining the brightness by measuring reflected mixed light composed of artificial light and daylight

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.

Calibration function

The value for the brightness to be determined on the work surface or floor surface by the device depends on the measured brightness. This is derived from the reflected brightness on the underlying surface. To determine the brightness on the measuring surface from the measured brightness on the device, the reflection coefficient of the surface must be known. In the default setting, the reflection coefficient for the measuring surface is set to 0.3. This already makes an adjustment to many surfaces possible.

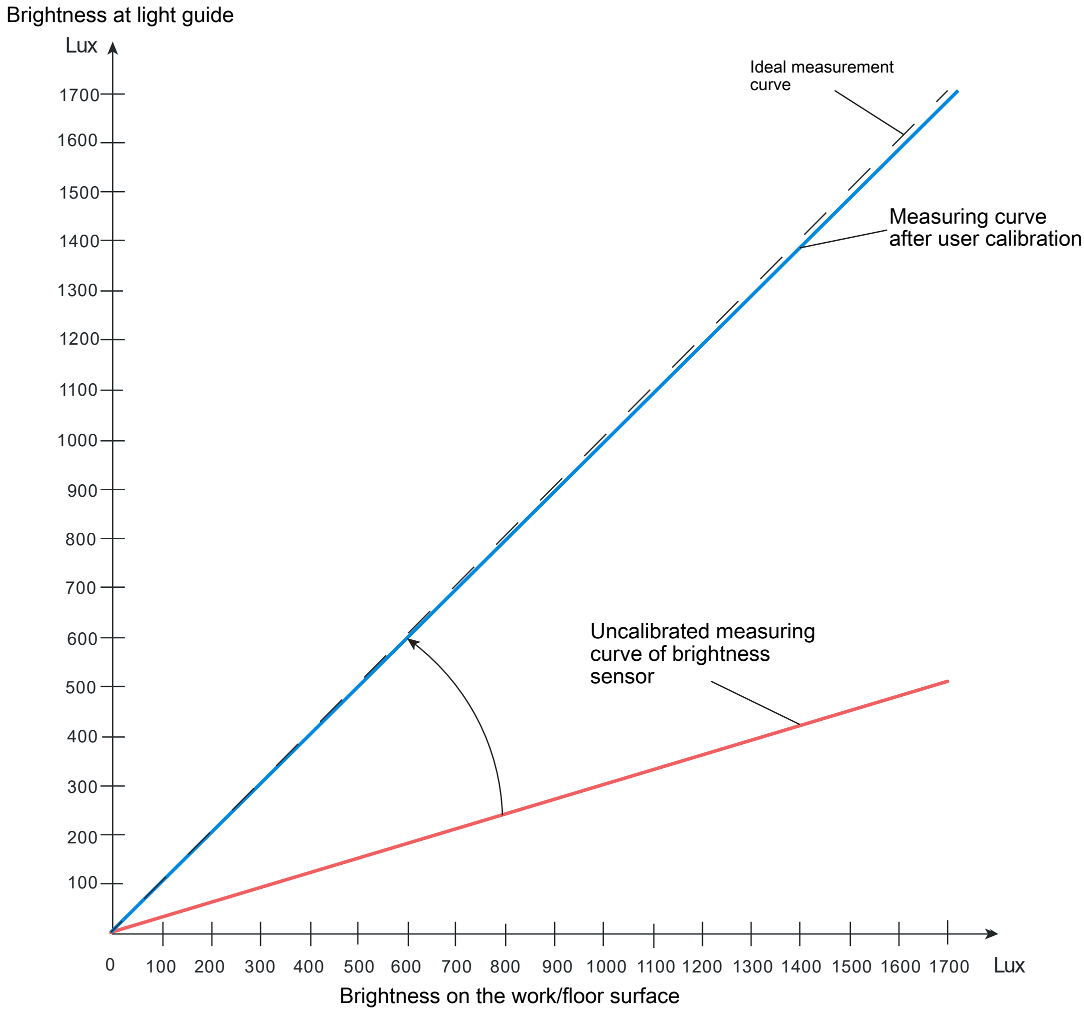


Figure 14: Determining the brightness on the work/floor surface in the default setting Reflection factor 0.3 corresponds to the surface finish e.g. light oak

To compensate for any deviations between the brightness determined in the default setting and the actual brightness on the work surface, the brightness measurement can be calibrated using a calibration function (adjustment of the reflection coefficient) and thus adapted to other surface finishes. This can take place in two ways.

If the "Sensor calibration via" parameter is set to "reflection factor", the "Reflection factor" parameter can be set to a different value. There are various surfaces with their typical reflection factors to choose from.

Alternatively, the calibration can be calibrated with a brightness value determined with a suitable measuring device. During the calibration, the brightness value currently measured by the internal sensor is assigned an externally measured brightness value below the presence detector. This specification is made by means of the 2-byte communication object "Brightness value - Sensor calibration". For this object to be visible and external calibration to be possible, the sensor calibration in the ETS must be set to "Object with separately measured brightness" on the parameter page "Sensors -> Brightness" using the "Sensor calibration via" parameter.

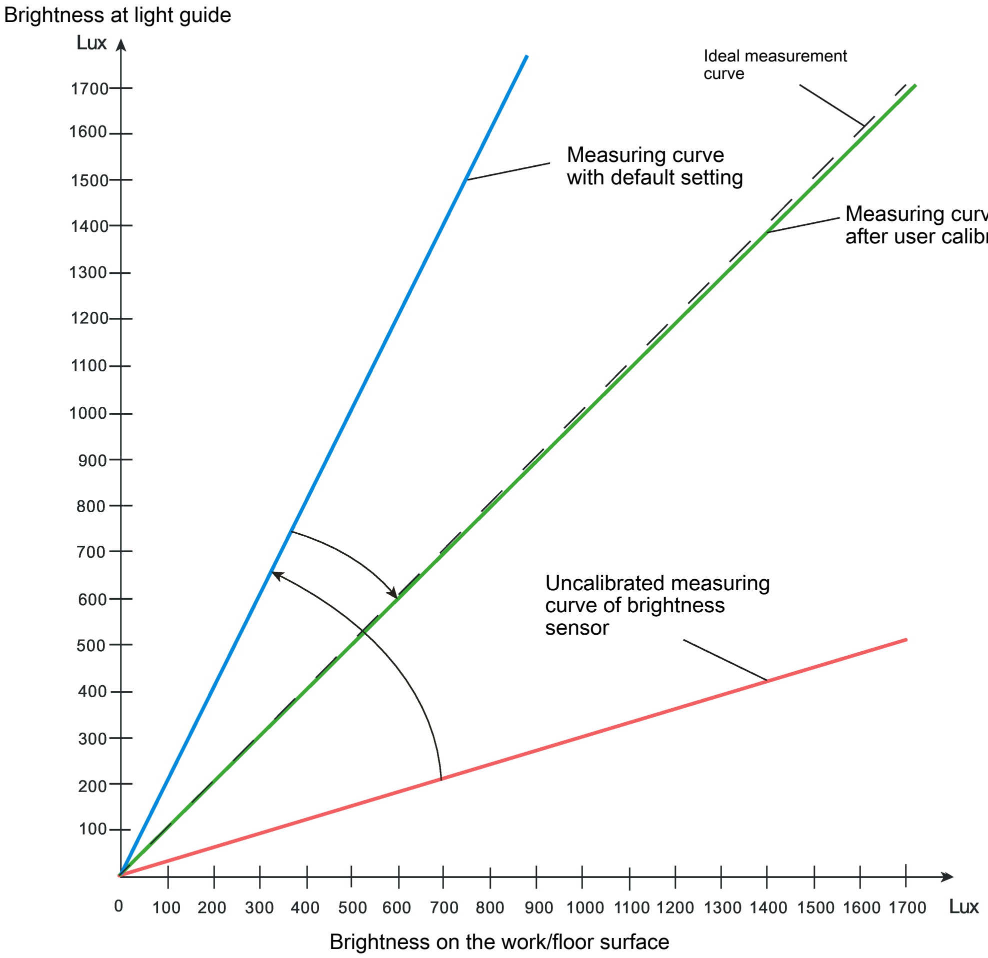


Figure 15: Correction of the determined brightness on the work/floor surface by means of user calibration
e.g. a reflection factor of 0.5 corresponds to the surface finish e.g. light wood fibre boards

Whether or not a subsequent user calibration is necessary can be determined purely subjectively or by reference measurement. User calibration should be performed if the brightness evaluation or light control 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 in the default setting by means of the object "Brightness value - Status". Here, the read-out brightness value is to be compared with the measured value of a suitable brightness meter (calibrated luxmeter) located on the work surface or floor surface. If the deviation between the brightness values is too great, user calibration should be performed. During the comparison measurement on the surface, 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 necessary if an unfavourable installation location has been chosen for the device (installed not directly above a desktop in an office in the application as presence detector) or the device - for example, in the application as motion detector - measures the reflected light of a dark floor surface.

The following steps must be carried out for user calibration...

- Set the brightness level in the room as desired.
- Then transmit the brightness on the work/floor surface (measuring surface) that was measured several times and averaged - with the aid of the ETS, for example - to the object "Brightness value - Sensor calibration". As a result, the device assigns the externally 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" and no measured brightness value has yet been transmitted, the device does not evaluate any brightness until user calibration has been performed! In this case, the light control will therefore have no function until the calibration process has been carried out properly. Function blocks 1 ...5 work brightness independently. The brightness value tracked internally by means of the object "Brightness value - Status" can be influenced by the parameter "Behaviour if calibration is not carried out" if the calibration has not yet been carried out. Depending on the setting, the device will either transmit no brightness value (value "0" in the object) or the value "0x7FFF" (hexadecimal) is sent to indicate an invalid brightness measured value.

An old user calibration is replaced permanently by a new calibration (maintained even after bus voltage failure or ETS programming operation).
The sensor calibration must be carried out again after the calibration method has been changed, the application programme has been unloaded or a master reset has been carried out.

10.2.1 "Brightness" parameter

Sensors -> Brightness

Sensor calibration via	**Reflection factor** Object with separately measured brightness value
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: **Reflection factor:** The reflection factor used in the default setting (0.3 e.g. light oak) is replaced by a selection of reflection factors. Typical values have been selected for this purpose from various surfaces. **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 input object "Brightness value - Sensor calibration" that appears can be used to transmit the brightness value to the presence detector. Another parameter appears.	

Reflection factor	0.1 (e.g. dark oak) 0.2 (e.g. granite) **0.3 (e.g. light oak)** 0.4 (e.g. limestone) 0.5 (e.g. light wood fibre boards) 0.6 (e.g. maple, birch) 0.7 (e.g. fresh snow) 0.8 (e.g. plastering, gypsum) 0.9 1
The sensors detect the reflected mixed light composed of artificial light and daylight from the area or objects below the device. A reflection coefficient programmed at the factory enables the device to determine the effective brightness of the workplace or floor surface. The reflection coefficient of the device can be adapted to other workplace or floor surfaces by means of this parameter if necessary by using the calibration function.	

Behaviour if calibration is not carried out	**Do not send brightness value** Transmit invalid brightness value ($7FFF)
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. This parameter is visible only if the "Sensor calibration via" parameter is set to Object with separately measured brightness value.	

Brightness value transmission behaviour

Send brightness value	**On change** Cyclically On change and cyclically
This parameter is used to define when the current brightness value is automatically sent to the bus. **On change:** The brightness is sent as soon as it has changed by the set value. The specification is made in lux. **Cyclically:** The brightness is sent to the bus in a fixed cycle. **On change and cyclically**: The brightness is sent in a fixed cycle and additionally when there is a change by the set value.	

On change by	5 … **20** … 200 lux
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. This parameter is visible only if the "Send brightness value" parameter is set to "On change" or "On change or cyclically".	

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

10.2.2 "Brightness" objects

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

Function	Name	Type	DPT	Flag
Brightness value - Status	Brightness - Output	2-byte	9,004	C, R, -, T, A
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. The brightness value is always output in "Lux" format.				

Function	Name	Type	DPT	Flag
Brightness value - Sensor 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.				

10.3 Temperature

Basic principles

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

The temperature measurement is activated on the "General" parameter page and configured on the "Sensors -> Temperature" parameter page.

When choosing the installation location of the device or the external sensor, the following points should be considered:

- The external 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 presence detector has an integrated temperature sensor. This temperature sensor can be used to measure the ambient temperature and forward it, for example, to a room temperature controller by means of the 2-byte object "Temperature value - Status".

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

The "Temperature measurement by" parameter in the parameter node "Sensors -> Temperature" specifies the sensor used to determine the room temperature. The following settings are possible:

- "Internal sensor"
  The temperature sensor integrated in the presence detector is activated. Thus, the actual temperature value is determined only locally on the device.
- "Internal sensor and external value via bus"
  In this setting, both the internal sensor and the external value are active via the bus. The external sensor must either be a KNX room temperature controller coupled by the "Temperature value - External sensor" 2-byte object or another bus device with temperature detection.

When evaluating the internal sensor and the external value via the bus, the actual temperature is formed from the two measured temperature values. The weighting of the temperature values is defined by the parameter "Weighting of measured value". It is thus possible to adjust the actual temperature measurement, depending on the different locations of the sensors or a possible non-uniform heat distribution inside the room. 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.

Example:

The presence detector is installed in the centre of the room on the ceiling. An additional external temperature sensor is installed next to the room entrance door (external value via bus).
Internal sensor: 22.5 °C
External value via bus: 21.3 °C
Measured value formation: 30% to 70%

-> $T_{\text{internal result}} = T_{\text{internal}} = \cdot 22.5 \times 0.3 = 6.75$ °C,
-> $T_{\text{external result}} = T_{\text{external}} = 21.3$ °C x $0.7 = 14.91$ °C
-> $T_{\text{result}} = T_{\text{Internal result}} + T_{\text{external result}} = \underline{21.66\ °C}$

Transmission of the temperature

The temperatures determined by the room temperature measurement and by the external value via the bus can be sent to the bus by means of the 2-byte object "Temperature value - Status" or "Temperature value - External sensor - Status".

The "Send temperature" parameter on the parameter page "Sensors -> Temperature" defines when a temperature value is to be sent automatically to the bus; when it changes by a defined value and/or cyclically.

The "On change by" parameter defines the temperature value by which the determined temperatures must change so that the actual value is automatically sent by means of the objects "Temperature value - Status", "Temperature value - External sensor - Status" or "Temperature value - Internal sensor - Uncalibrated - Status". The temperature value change can be set between 0.1 K and 25.5 K. The "0" setting here deactivates the automatic transmission of the actual temperature.

In addition, the temperatures determined by the "Internal sensor" or the "External value via bus" can be sent cyclically. The "Cycle time" parameter defines the cycle time (3 seconds to 23:59:59 hours).

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.

Default setting

If the "Sensor calibration via" parameter is set to the "default setting", the calibration is performed with the "Calibration" parameter. This is done separately for "Internal sensor" and "External value via bus". The temperature calibration can be configured in 0.1 K steps within a range of -20 … 20 K. Thus, the calibration is set statically only once.
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.

The "Temperature measurement - Status" object is always used to transmit the calibrated temperature value to the bus.
When determining the measured value with combined sensors, both calibrated values are used to calculate the actual value.

Calibrating by calibration function

As an alternative to calibrating the temperature measurement in the default setting, the sensor calibration for the internal sensor can be carried out also with the calibration function (parameter "Object with separately measured temperature value"). If the calibration function is enabled, a new calibration process can be performed at any time. The value of the previous calibration is permanently overwritten.

As long as no calibration has been carried out by the calibration function (only relevant to the initial calibration after delivery), either no temperature value or an invalid temperature value (0x7FFF) is output, depending on the configuration. Valid temperature values are always available after the initial calibration.

To recalibrate, the current room temperature must be measured first. The measured temperature value must then be sent to the input communication object used to calibrate the temperature. The new calibration value determined in this way is saved permanently (retained even after a bus voltage failure or re-configuration) and overwrites the value of a previous calibration.

A calibration process is accepted by the device only if the difference between the measured temperature value of the device and the temperature value received from the input communication object is less than +/- 100 K.

If the calibration value is sent after a recalibration process by means of the communication object "Temperature measurement - Status", this means the calibration was successful. If a deviating temperature value or no temperature value (only with corresponding configuration during initial calibration) is output, this means the calibration was unsuccessful, i.e. the calibration value was outside the range of +/- 100K from the measured temperature value of the device.

The "external value via bus" is still calibrated as described under Default setting.

10.3.1 "Temperature measurement" parameter

Sensors -> Temperature

Temperature measurement by	**Internal sensor** Internal sensor and external value via bus
The "Temperature measurement by" parameter specifies the sensors used to measure the room temperature. **Internal sensor**: The temperature sensor integrated in the device is activated. The temperature value is therefore determined locally only on the device. **Internal sensor and external value via bus**: The selected temperature sources are combined in these settings. The "External value via bus" is a KNX temperature sensor coupled by means of the "External value" 2-byte object.	

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%
The weighting of the measured temperature value for the internal and external values is specified here via the bus. This results in an overall measured value, which is drawn on for the further evaluation of the room temperature. This parameter is visible only if "Temperature measurement by = "Internal sensor and external value via bus"!	

Sensor calibration via	**Default setting** Object with separately measured temperature value
The temperature sensor used in the device can be calibrated by means of a calibration process or an externally measured temperature value. If the room temperature deviates considerably from the measured temperature or if a very precise temperature measurement is required, it may be necessary to calibrate the sensors. This calibration of the temperature measurement is permitted with two methods. Default setting: The device's internal temperature sensor can be calibrated to the room temperature. An additional parameter "Calibration of internal sensor" is available for this purpose. **Object with temperature value measured separately**: After commissioning the device, the device's internal temperature sensor must be calibrated with a 2-byte temperature value telegram via the KNX. The default setting has no effect in this setting. The calibration process should be performed as follows: 1. Use a calibrated temperature measuring device to measure the room temperature at different points in the room. 2. Create a mean temperature value of the different measurements (total of the individual measured values, divided by the number of measured values). 3. Transmit the mean temperature value - for example, using the ETS - to the "Sensor calibration" object. Result: The device assigns its own measured value to the transmitted temperature value, meaning that the reference value in the device is adjusted. After this, the temperature measurement is ready for operation. The sensor calibration is permanently saved in the device and is not lost even if there is a bus voltage failure or an ETS programming operation.	

Calibration

Internal sensor	-20...**0**...20 K
If the room temperature deviates permanently from the measured temperature value, it may be necessary to statically calibrate the measured temperature value, for example to compensate for external temperature influences. To determine the temperature deviation, the actual room temperature should be determined by a reference measurement using a calibrated temperature measuring device. Here, it is then also possible to add an offset in positive or negative direction to the measured value of the sensor and thus shift it. This parameter is available only in the "Default setting".	

External value via bus	-20...**0**...20 K
It may be necessary to statically calibrate the temperature value received externally via the bus, for example to compensate for external temperature influences. For example, calibration will be necessary if the value received externally via the bus is permanently above or below the actual room temperature. To determine the temperature deviation, the actual room temperature should be determined by a reference measurement using a calibrated temperature measuring device. Here, it is then also possible to add an offset in positive or negative direction externally via the bus and thus to shift it.	

Temperature transmission behaviour

Send temperature	On change Cyclically **On change and cyclically**

The temperature determined by the device can be sent to the KNX by means of a 2-byte object "Temperature value - Status".

The "Send temperature" parameter specifies when the temperature is sent automatically.

On change: The temperature is sent if it has changed by a configured value.

Cyclically: The temperature is sent at configured intervals.

On change and cyclically: Cyclical transmission and transmission upon change work independently of each other. The cycle time is not restarted if a changed value has been sent to the bus.

On change by	0.1 … **0.5** ... 25.5 K

The temperature determined by the device can be sent to the KNX by means of the 2-byte object "Temperature value - Status". This parameter specifies the temperature value by which the measured value has to change to have the temperature value transmitted automatically by means of the object.

Cycle time	0 … 23 h 0 ... **15** ... 59 min 0 … 59 s

The determined temperature can be transmitted cyclically. This parameter specifies the cycle time (10 seconds to 23:59:59 hours).

Actual temperature without calibration	**Inactive** Active

2-byte object used to output the determined actual temperature. The actual temperature is determined by the internal sensor. The output value does not take into account the configured value for the calibration. Possible value range: -99.9 °C to +99.9 °C / Measuring range of internal temperature sensor: 0 °C to +50 °C. The temperature value is output in "°C" format.

Behaviour if calibration is missing	**Do not send measured value** Transmit invalid measured value (0x7FFF)
If the temperature sensor is calibrated by a KNX telegram, the device will not evaluate any temperature after the first commissioning until the sensor calibration has been carried out. In this case, the temperature measurement will therefore have no function until a calibration has been carried out properly. The temperature value tracked by means of the object "Temperature measurement - Status" can be influenced by this parameter 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. This parameter is available only for sensor calibration by means of "Object with separately measured temperature value".	

10.3.2 "Temperature measurement" objects

Function	Name	Type	DPT	Flag
Temperature value - Status	Temperature - Output	2-byte	9,001	C, R, -, T, A
2-byte object used to output the actual temperature (room temperature) which, if configured, was calculated from the values of the internal sensor, the external value via the bus and the configured weighting of the two values. The configured temperature calibration is taken into account. Possible value range: -99.9 °C to +99.9 °C / Measuring range of internal temperature sensor: -40 °C to +50 °C. The temperature value is output always in "°C" format.				

Function	Name	Type	DPT	Flag
Temperature value - Internal sensor - Uncalibrated - Status	Temperature - Output	2-byte	9,001	C, R, -, T, A
2-byte object used to output the actual temperature (room temperature) determined by the presence detector without taking into account the configured temperature calibration. Possible value range: -99.9 °C to +99.9 °C / Measuring range of internal temperature sensor: -20 °C to +50 °C. The temperature value is output always in "°C" format. This object is available only if the parameter "Actual temperature without calibration" is available				

Function	Name	Type	DPT	Flag
Temperature value - External sensor	Temperature - Input	2-byte	9,001	C, -, W, -, U
2-byte object used to couple an external KNX temperature sensor. 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. This object is available only with "Internal sensor and external value via bus".				

Function	Name	Type	DPT	Flag
Temperature value - External sensor - Status	Temperature - Output	2-byte	9,001	C, R, -, T, A
2-byte object used to output the temperature received from an external sensor. Possible range of values: -99.9 °C to +99.9 °C. The temperature value is output always in "°C" format. This object is available only with "Internal sensor and external value via bus".				

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr>
<tr><td>Temperature value - Sensor calibration</td><td>Temperature - Input</td><td>2-byte</td><td>9,001</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">2-byte object used to calibrate the internal sensor. An external temperature reference value can be supplied to the device during the sensor calibration process. During the calibration process, the device assigns the measured value specified by means of this object to the current measured temperature value (internal sensor), resulting in a temperature calibration.</td></tr>
</table>

10.4 Humidity

Basic principles

The device has an integrated humidity sensor that can be used to measure the humidity.

ℹ The humidity is measured by a sensor inside the device. The value may therefore deviate from the actual humidity in the room. This therefore also has an influence on the determined dew point temperature.

The humidity measurement is activated on the "General" parameter page and configured on the parameter page "Sensors -> Humidity". The determined room humidity can be transmitted to the bus by means of the "Humidity value -Status" 2-byte object. The "On change by" parameter defines the humidity value by which the actual value of the humidity measurement must change so that the actual value is automatically sent by means of the "Humidity - Status" object. Humidity value changes between 1% and 50% are possible.
In addition, the determined room humidity can be transmitted cyclically. The "Cycle time" parameter defines the time interval.

10.4.1 "Humidity measurement" parameter

Sensors -> Humidity

Send humidity	On change Cyclically **On change and cyclically**
The humidity determined by the device can be sent to the KNX by means of the 2-byte object "Actual humidity". The "Send humidity" parameter specifies when the humidity is sent automatically. **On change:** The "Humidity value - Status" is sent if it has been changed by a configured value. **Cyclically**: The "humidity value - status" is sent at configured intervals. **On change and cyclically:** Cyclical transmission and transmission upon change work independently of each other. The cycle time is not restarted if a changed value has been sent to the bus.	

On change by	1 … **5** ... 50%
The humidity determined by the device can be sent to the KNX by means of the 2-byte object "Humidity value - Status". This parameter defines the value in per cent by which the measured value must change so that the humidity value is automatically sent by means of the "Measured value" object.	

Cycle time	**0** … 23 h 0 ... **15** ... 59 min **0** … 59 s
The determined humidity can be transmitted cyclically. This parameter specifies the cycle time (10 seconds to 23:59:59 hours).	

10.4.2 "Humidity measurement" objects

Function	Name	Type	DPT	Flag
Humidity value - Status	Humidity - Output	2-byte	9.007	C, R, -, T, A
2-byte object used to output the humidity determined by the presence detector. Possible range of values: 0% to 100%. The humidity value is output always in "%" format.				

10.5 Dew point

Basic principles

The device determines the dew point temperature from the measured room temperature and humidity.

The determination of the dew point temperature is activated on the "General" parameter page and configured on the "Sensors -> Dew point" parameter page.

The dew point of water in the formal sense is the condensation point of pure water and thus a value pair from air humidity and room temperature. The temperature value of the dew point, i.e. the dew point temperature, is normally equated with the dew point. This concerns the temperature of the air with a specific humidity at which the condensation on an object is currently forming.

If the humid air is cooled down below the dew point temperature, there will be a phase change from gaseous to liquid and some of the water vapour contained in the air will be released as excess moisture in liquid form as condensation.

Determine dew point temperature

The dew point temperature is calculated by the device on the basis of the determined room temperature and humidity values.
The determined humidity value of the sensor is adjusted by means of the Magnus formula which is an approximation formula used to calculate the saturated vapour pressure depending on the temperature. It is very accurate (< 0.22%) within a range of between 0 °C and 100 °C and is primarily used to determine the dew point in meteorology and building physics.

i The humidity is measured by a sensor inside the device. The value may therefore deviate from the actual humidity in the room. This therefore also has an influence on the determined dew point temperature.

10.5.1 "Dew point temperature" parameter

Sensor -> Dew point

Send dew point temperature	**On change** Cyclical On change and cyclical
The dew point temperature determined by the device can be sent to the KNX by means of the 2-byte object "Dew point temperature - Status". The "Send dew point temperature" parameter specifies when the dew point temperature is sent automatically. **On change:** The dew point temperature is sent if it is changed by a configured value. **Cyclically**: The dew point temperature is sent at configured intervals. **On change and cyclically:** Cyclical transmission and transmission upon change work independently of each other. The cycle time is not restarted if a changed value has been sent to the bus.	

On change by	0.1 … **1** ... 5 K
This parameter defines the value by which the determined dew point temperature must change so that the dew point temperature value is automatically transmitted by means of the object.	

Cycle time	0 … 23 h 0 ... **15** ... 59 min 0 … 59 s
The determined dew point temperature can be transmitted cyclically. This parameter specifies the cycle time (10 seconds to 23:59:59 hours).	

Dew point alarm

Send dew point alarm	**Inactive** Active
The device can send an alarm by means of the 1-bit object "Dew point alarm - Status" before the actual temperature reaches the dew point temperature. The temperature limits are set with the parameters "Activate if actual temperature" and "Deactivate if actual temperature". This parameter enables the transmission of the alarm.	

Activate if actual temperature	0 ... 10 K before reaching the dew point temperature
The device can activate an alarm before the actual temperature reaches the dew point temperature. This parameter defines how large the difference between the dew point temperature and the actual temperature is before the dew point alarm is triggered. The setting is made in steps of 0.1. This parameter is visible only if "Send dew point alarm" is active!	

Deactivate if actual temperature	1 ... 10 K lower than dew point temperat-ure
This parameter defines the value in Kelvin by which the actual temperature must be below the dew point temperature before an active dew point alarm is deactivated again. The setting is made in steps of 0.1. This parameter is visible only if "Send dew point alarm" is active!	

10.5.2 Objects for "dew point temperature"

Function	Name	Type	DPT	Flag
Dew point temperature - Status	Dew point - Output	2-byte	9.001	C, R, -, T, A
2-byte object used to output the dew point temperature determined by the presence detector. Possible range of values: -99.9 °C to +99.9 °C. The temperature value is output always in "°C" format.				

Function	Name	Type	DPT	Flag
Dew point alarm - Status	Dew point - Output	1-bit	1.005	C, R, -, T, A
1-bit object used to activate and deactivate the dew point alarm.				

11 Function block switchover

The function block switchover can be used if necessary. The function block switchover makes it possible to toggle between two function block groups, in which assigned function blocks, for example, can be switched over depending on the time of day or the state of the KNX system. This makes it possible to continuously switch over during operation of the device and thus change its function (e.g. presence detector for light control at day, motion detector for service light at night / presence detector if present, detector for KNX signalling systems if absent).

By assigning a function block to a function block group with the "FB..." parameter on the "FB switchover" parameter page, it is only active if the corresponding function block group is also active. Function blocks of deactivated groups are then also deactivated and do not react. Function blocks that are not assigned to any function block groups are not influenced by the function block switchover and thus always work autonomously.
During the switchover from one function block group to the other, all assigned function blocks of the current group are first deactivated and then the assigned function blocks of the switched over function block group are activated.

The function block switchover can be used if the "Function block switchover" parameter is set to "Active" on the "General" parameter page. The 1-bit object "FB switching - Input - FB groups - Switchover" is visible and the group assignment of the function blocks in the ETS is relevant in this case only.
The function block switchover has a 1-bit status object that can feed back the active group to the bus.

Switchover behaviour

The function block switchover is executed by means of the 1-bit communication object "FB groups - Input - Switchover". The telegram polarity can be configured. The function block group can be switched over when receiving a switchover telegram optionally either directly or only at the end of a current motion detection process. The switchover behaviour is defined by the parameter of the same name as follows...

- "Immediately" setting:
  With immediate switchover of the function block groups, the current motion detection processes of the assigned function blocks of the current group are ended immediately and the "Behaviour at end of detection" is executed. After activating the new function block group, the value for the new function block group is transmitted as positive acknowledgement to the bus by means of the object "FB switchover - Output - FB groups - Status". The polarity of the status telegram corresponds to the telegram polarity for the switchover.
- "After ending a detection" setting:
  To identify the end of a current motion detection process, no assigned function blocks must be in an active motion detection process anymore. The function block group is not switched over if a motion detection process of one or more assigned function blocks is still active at the desired switchover time (receipt of telegram). The group active until now continues to remain active. The value for the current function block group is then initially transmitted as negative acknowledgement by means of the object "FB switch-over - Output - FB groups".

Here too, the polarity of the status telegram corresponds to the telegram polarity for the switchover. At the end of the motion detection process, the function block group as last requested is switched over and the value of the new function block group is transmitted by means of the status object, provided the switchover was not cancelled again by a new switchover telegram.

Before switching over the function block groups, all active disabling functions of the function blocks assigned to the active group are also deactivated. The function blocks activated after the switchover are not disabled and work according to their configuration. If a function block is to be disabled after the switchover, the disabling object of this function block must be described actively with a disabling telegram.

After the bus voltage returns and after ETS programming, the value of the object "FB switchover - Output - FB groups - Status" is updated according to the active group (see "Behaviour on bus voltage return" below) and transmitted to the bus.

Behaviour on bus voltage return

The active function block group can be specified after the bus voltage returns and ETS programming. This is carried out by the parameter "Active group after bus voltage return". The assigned function blocks of the activated group then process their configured behaviour after the bus voltage returns or after ETS programming (according to the configuration of the function block). The assigned function blocks of the deactivated function block group are inactive and do not react.
After the bus voltage returns and after ETS programming, the value of the object "FB switchover - Output - FB groups - Status" is updated to the active function block group.

11.1 "Function block switchover" parameter

General

Function block switchover	**Inactive** Active
Function block switchover can be activated or deactivated here.	

Function blocks (FB) -> FB switchover

Name of FB group 1	FB group 1 Max. 40 characters long text
This parameter gives FB group 1 a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Name of FB group 2	FB group 2 Max. 40 characters long text
This parameter gives FB group 2 a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

The following three parameters are present for each function block separately

FB x Light control FB Orientation light FB	**Not assigned** FB group 1 FB group 2
The function block (FB) is assigned optionally to a function block group by this parameter so that it can be activated and deactivated during the function block switchover. Function blocks not assigned to any function block group ("Not assigned" setting) are not influenced by the function block switchover and thus always work autonomously.	

When activating the FB group	**Ready for detection** Track
This parameter defines the behaviour of the function block when the FB group to which the function block is assigned is activated. "Ready for detection" The function block reacts to a detection process as it was configured. Any telegrams or detection processes received before the FB group was activated are not executed. Track The function block reacts as it was configured. The telegram received last or a detection process that took place before the FB group was activated is executed. This parameter is visible only if the function block is assigned to an FB group.	

When deactivating the FB group	No reaction **Behaviour as at end of detection**
This parameter defines the behaviour of the function block when the FB group to which the function block is assigned is activated. "No reaction" The function block does not send a telegram for outputs 1 and 2 "Behaviour as at end of detection" The function block behaves in the same way as the "End of detection" behaviour was configured for 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 (only in presence detector mode). This parameter is visible only if the function block is assigned to an FB group.	

Switchover behaviour	**At end of all active detections** Immediately
The function block group can be switched over when receiving a switchover telegram optionally either directly or only at the end of a current motion detection process. "Immediately" The function block groups are immediately switched over. After activating the new function block group, the value for the new function block group is transmitted as positive acknowledgement to the bus by means of the object "FB switch-over - Output - FB groups - Status". "At end of detection" The function block group is switched over if no motion detection of one or more assigned function blocks is still active at the desired switchover time (receipt of telegram). The previously active group remains active if a motion detection process is still active. The value for the current function block group is then initially transmitted as negative acknowledgement by means of the object "FB switch-over - Output - FB groups". Provided the switchover was not revoked by a new switchover telegram, the function block group is then switched over and the value of the new function block group is transmitted by means of the status object only at the end of the motion detection.	

Polarity	**0 = group 1 / 1 = group 2** 1 = group 1 / 0 = group 2
This parameter defines the telegram polarity for the function block group switchover. Similarly, the polarity of the status telegrams of the function block group switchover is defined by this parameter.	

Reset behaviour

After the bus voltage returns	**FB group 1 active** FB group 2 active
The active function block group can be specified by this parameter after the bus voltage returns and after ETS programming. The assigned function blocks of the specified group then process their configured behaviour after the bus voltage returns or after ETS programming (according to the configuration of the function block). The assigned function blocks of the deactivated function block group are inactive and do not react.	

11.2 Objects for the function block switchover

Function	Name	Type	DPT	Flag
FB groups - Switching	FB switchover - Input	1-bit	1,001	C, -, W, -, U
1-bit object used to switch over the function block groups (telegram polarity configurable). When read out, this object merely returns the telegram value last written in the object via the bus (after "0" reset). The active group (depending on the configuration) after the bus voltage returns or after ETS programming is not tracked automatically in this object (see "Status" object).				

Function	Name	Type	DPT	Flag
FB groups - Status	FB switchover - Output	1-bit	1,001	C, R, -, T, A
1-bit object for status indication of the actual active function block group (telegram polarity is determined by the configuration of the polarity of the "Polarity" object).				

12 Function blocks 1...5 for motion detection

12.1 Function blocks 1 ... 5 - General

The device contains up to 5 function blocks (FB) that operate logically independently of each other and can each be configured separately for the "Motion detector - Lighting", "Presence detector - Lighting", "Presence detector - Heating / Ventilation / Air conditioning", "Presence detector - Universal" or "Presence detector - Monitoring" application. Furthermore, there is a function block with light control so that motion evaluation (presence signal), brightness evaluation and light control can be executed conveniently with just one bus device.

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).

If a function block is to be used, the number of function blocks must be set in the ETS on the "General" parameter page. Optionally, a function block can also be assigned to a function block group in order to use the function block switchover. Parameters and objects will appear in the ETS function block dependently, provided a function block was enabled.
On the "FBx - General" parameter page, the application of a function block ("Motion detector - Lighting", "Presence detector - Lighting", "Presence detector - Heating / Ventilation / Air conditioning", Presence detector - Universal" or "Presence detector - Monitoring") can be configured with the parameter of the same name. Just like the "Use as" and "Control mode" parameters, this parameter should be configured to the necessary setting at the very start of the device configuration, since all other function block parameters and objects depend on the afore-mentioned parameters.

The different applications of function blocks 1-5 are described in detail in the following chapters.

Motion detector application

When used as a motion detector, the device is normally installed in passageways of buildings to switching on the lighting automatically as required. If lighting is switched on by a motion detector, it will not be switched off until no-one is in the monitored area.

In the motion detector function, 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 "Switch-off pre-warning" parameter to active. 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.

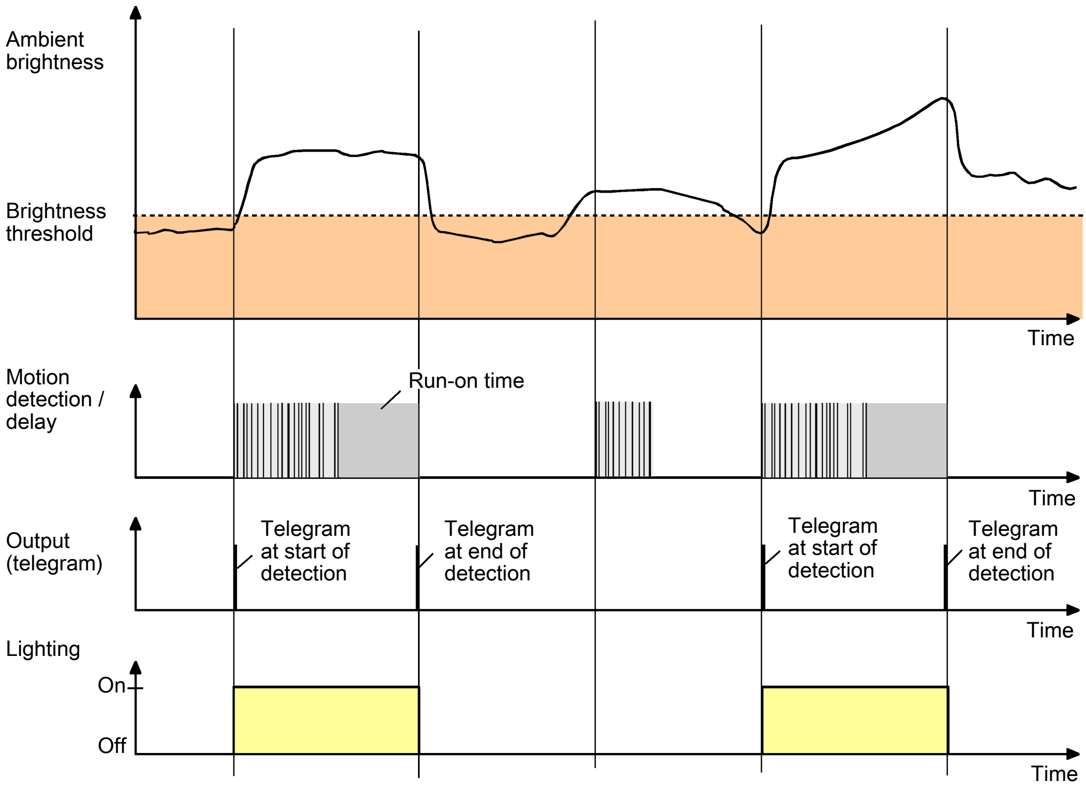


Figure 16: Brightness and motion evaluation with the motion detector

Presence detector application - Lighting, heating/ventilation/air conditioning, universal

The presence detector application is normally used in areas where people spend long periods of time (e.g. workplace as well as bathroom/toilet...) to control the lighting or heating/ventilation. The device can evaluate slightest movements in this application. Unlike the motion detector functionality, in brightness-dependent mode the brightness is evaluated continuously if the lighting is switched on even during an active motion detection process. If the measured brightness exceeds a defined switch-off brightness (e.g. due to incidental light), no further movements are evaluated and the lighting is switched off after a configured run-on time has elapsed even during an active motion detection process.

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

A presence detector detects the presence of a person and transmits the configured telegram at the start of a detection process whenever the determined brightness value is below the set 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. The telegram can also be transmitted after a delay (evaluation delay) at the beginning of a detection process. If no more presence is detected in the further course of the motion detection, the device will send the configured telegram to the bus after the set run-on time has elapsed.
If the measured brightness exceeds the set switch-off brightness during an active presence detection process, no further movements are evaluated and the configured

telegram is transmitted at the end of the detection process after the run-on time or a separately configurable switch-off delay has elapsed. The switch-off delay is used for the debouncing of brief light reflexes and prevents faulty switching of the lighting. The range between the brightness threshold and switch-off brightness characterises the brightness in the room to be set by the presence detector. No additional artificial light is activated if the ambient brightness is within this range and the device detects a new movement. If the brightness threshold is configured to "Brightness-independent", the artificial light is always activated without monitoring the ambient brightness when presence is detected.

If the presence detection controls a heating or cooling system, the brightness signal is not evaluated and no brightness threshold can be set.

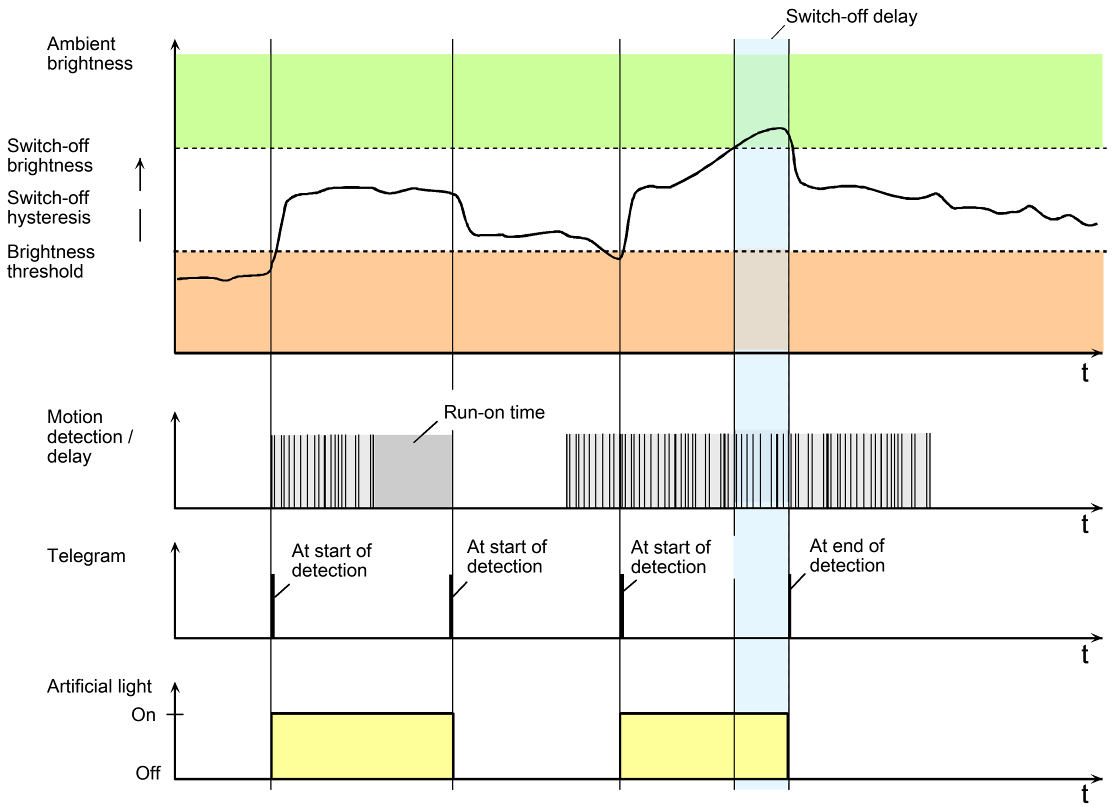


Figure 17: Brightness and motion evaluation with the presence detector

Presence detector - Monitoring application

The device always operates independently of the brightness in the Presence detector - Monitoring application. Signal telegrams indicate whether or not people are present in the monitored area. Here, the number of motion pulses can be specified within a monitoring time whereby it is possible to adapt the motion evaluation to meet the individual requirements. Motion is identified only when the device has determined the set number of motion pulses. This application is appropriate when the device is to be used as a detector for KNX signalling systems.

In the Presence detector - Monitoring application, the device reacts less sensitively to detected movements since a message telegram is only transmitted by means of the output object after repeatedly querying the motion signal. The configurable number of motion pulses that can occur within a selectable monitoring period is the criterion for triggering a message telegram. A message telegram can be output at the beginning or end of an identified movement.

The Presence detector - Monitoring application works only as a single device and if necessary transmits a telegram to a central point by means of the output object after detecting and evaluating the motion. The extension unit inputs or outputs are deactivated in the Presence detector - Monitoring.

The diagram illustrated below shows the behaviour of the function block in the Presence detector - Monitoring application. In the example, the number of motion pulses was set to "4".

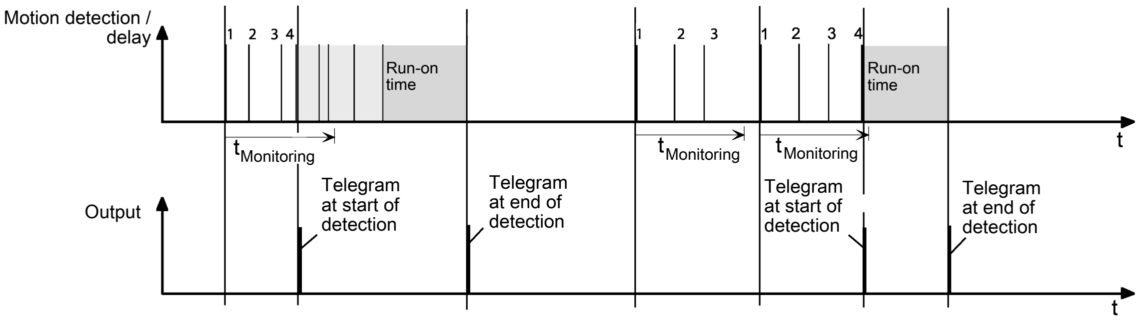


Figure 18: Motion evaluation with detector

After detecting the fourth motion pulse in the monitoring period ($t_{monitoring}$), the message telegram "At the beginning of the detection" is transmitted and the run-on time is started. The run-on time is retriggered by further motion pulses within the run-on time. In the absence of motion signals and after the run-on time has elapsed, the message telegram is transmitted "At the end of detection".
No message telegram is triggered if fewer than 4 motion pulses are detected within the monitoring period. After the monitoring period has elapsed, the next motion pulse is the first one of a new monitoring period. The monitoring period is stopped and reset when a detection process begins (start of run-on time). The monitoring is restarted again with the first motion pulse after the run-on time has elapsed.

The following functions have been specified for the Presence detector - Monitoring...

- Brightness threshold: brightness-independent
- Outputs: only output 1
- Teach-in function: disabled
- Evaluation delay at the beginning of detection: no
- Cyclical transmission during detection: possible
- Triggering of a telegram when retriggering: possible
- Run-on time at end of detection: possible
- Disabling function: possible (disabling behaviour specified)
- Extensions inputs and outputs: deactivated

Use as a single device or main or extension unit

The device can be used as a single device or as a main or extension unit in the "Motion detector - Lighting" or "Presence detector - Lighting, universal or heating / ventilation / air conditioning" applications. 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.
The type of use of a function block is configured in the ETS with the "Use as" parameter on the "FB x - General" parameter page. Just like the "Application" and "Control mode" parameter, this parameter should be configured to the necessary setting at the very start of the device configuration, since all other function block parameters and objects depend on the afore-mentioned parameters.

The different types of use are described in the following.

In the "Presence detector - Monitoring" application, the device can be operated only as a "Single device".

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.

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

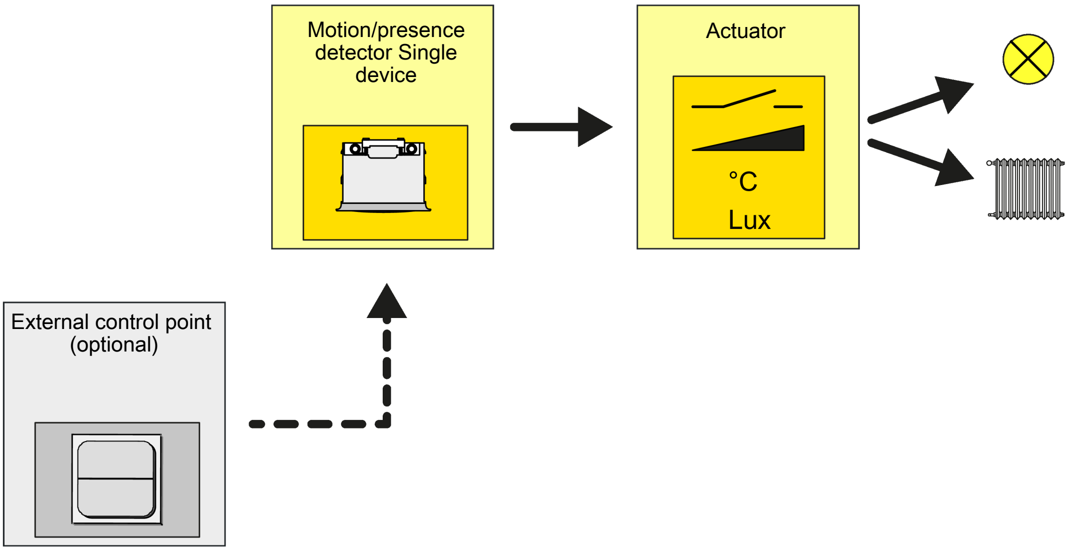


Figure 19: "Single device" application type

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 and extension units 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 "Motion status - External" 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.

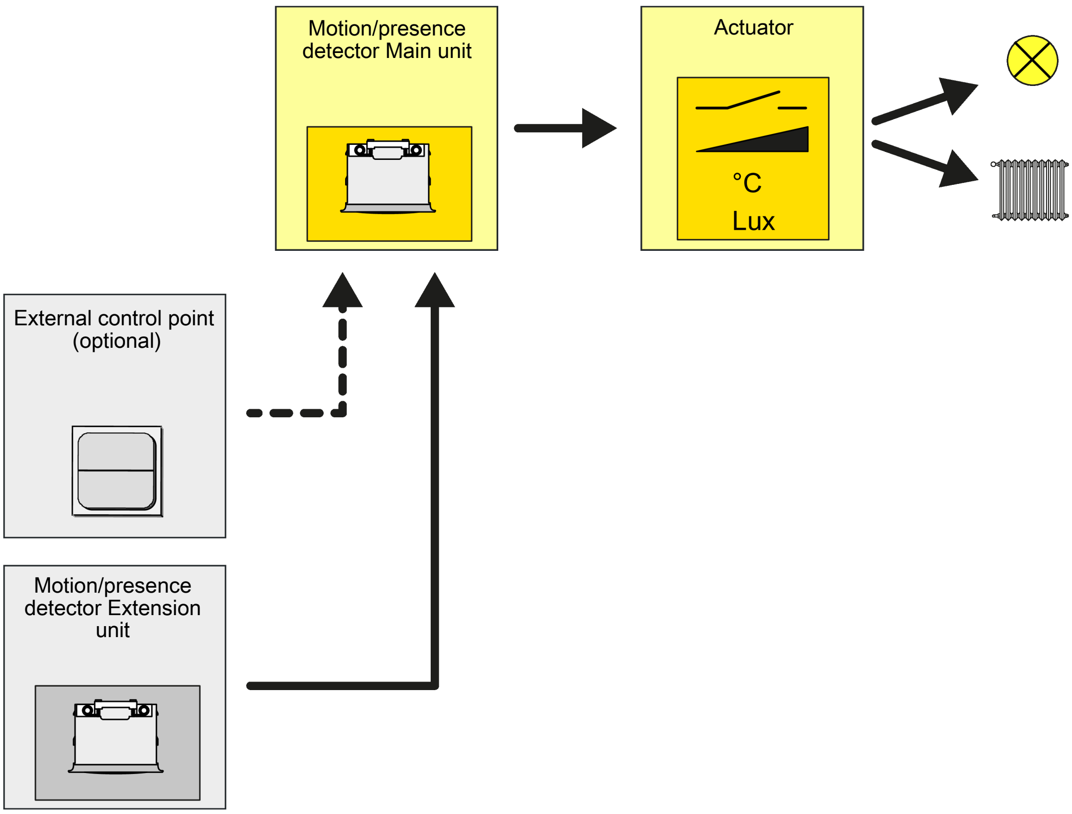


Figure 20: "Main unit" application type

Use as "Extension unit"

An extension unit is a device in a combination of several motion or presence detectors to detect motion/presence 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 at the presence detector is evaluated always centrally in the main unit.

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

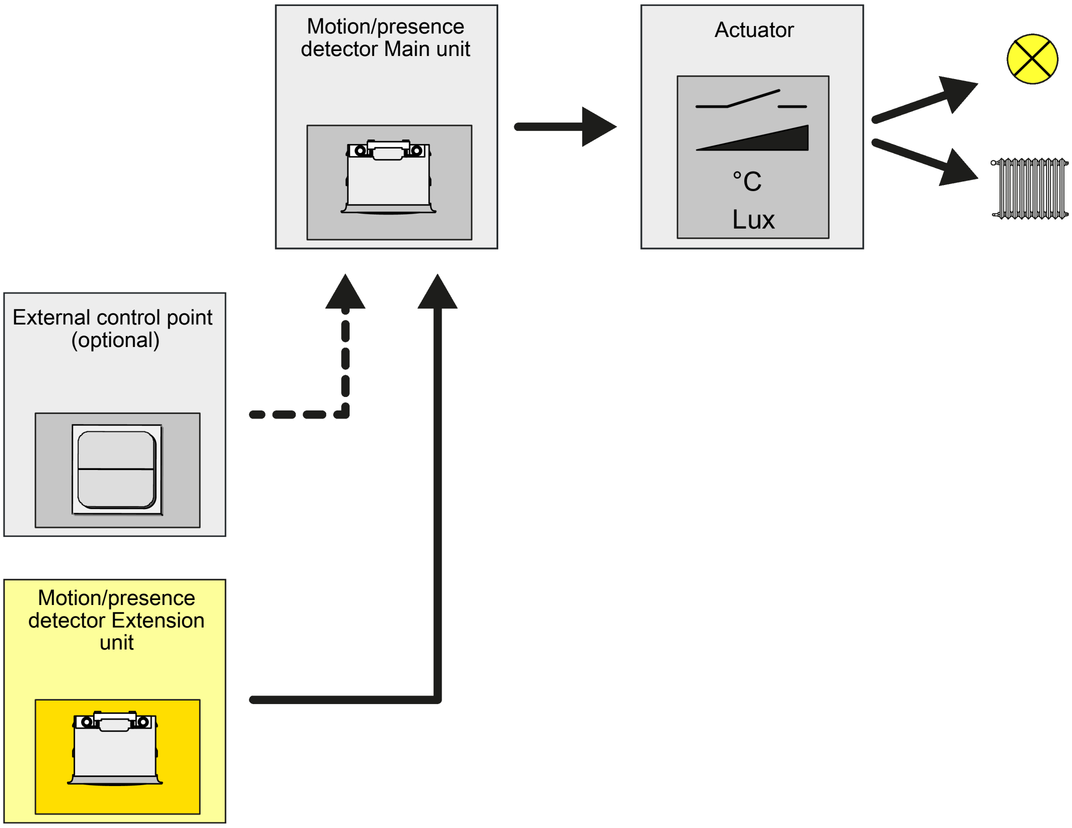


Figure 21: "Extension unit" application type

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.

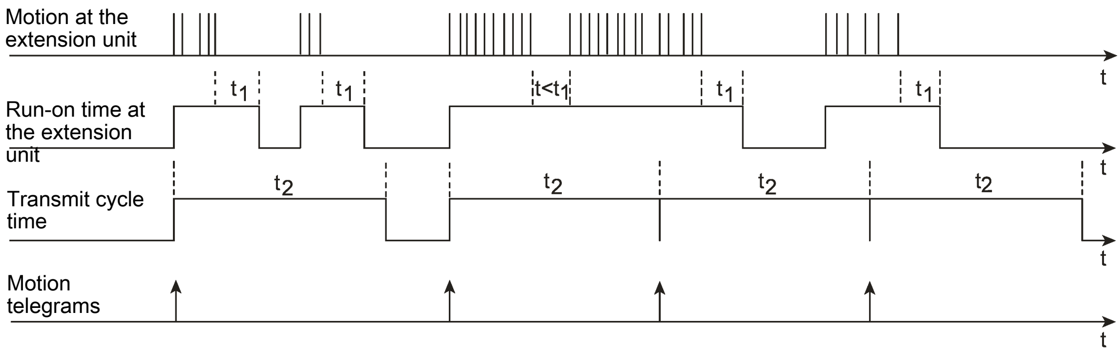


Figure 22: Motion signals of an extension unit

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 for function blocks with the application "Motion detector - Lighting", "Presence detector - Lighting" or "Presence detector - Universal". 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...

– "Manual operation - Simple":
  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.
– "Manual operation - Permanent":
  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 function - Activate/Deactivate":
  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 "Manual operation - Simple" 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 "Manual operation - Simple". Afterwards, a manual ON telegram is required again to evaluate a new movement.
This control mode cannot be set for the "Presence detector - Heating / Ventilation / Air conditioning or monitoring" application.

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 "Manual operation - Simple" object. The function block is then ready again for a new motion evaluation process.
This control mode cannot be set for the "Presence detector - Heating / Ventilation / Air conditioning or monitoring" application.

12.1.1 "General" parameters

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

Function blocks (FB) -> FB x - General

Designation	Free text Max. 40 characters long text
This parameter gives the "FB" a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Function properties

Application	Motion detector - Lighting **Presence detector - Lighting** Presence detector - Heating / Ventilation / Air conditioning Presence detector – Monitoring (monitoring / alarm / signalling mode) Presence detector - Universal
Definition of the function block application. Just like the "Use as" and "Control mode" parameters, this parameter should be configured to the necessary setting at the very start of the device configuration, since all other function block parameters and objects depend on the afore-mentioned parameters. "Motion detector - Lighting" Application e.g. in corridors or passageways. The lighting is switched on dependently or independently of the brightness when motion is detected and switched off again when it is absent, depending on the setting. "Presence detector - Lighting" Application e.g. above a workstation in offices. The lighting is switched on dependently or independently of the brightness when motion is detected and switched off again when it is absent or when the switch-off threshold is exceeded, depending on the setting. "Presence detector - Heating / Ventilation / Air conditioning" Application e.g. for the presence-dependent control of a heating system. Motion is detected always brightness independently. "Presence detector monitoring" Application e.g. to monitor the activity in a hospital room. The function block evaluates motion detection processes and reacts according to the configuration. The "Activity monitoring" function is available in this application. "Presence detector - Universal" The function block works in principle as in the Presence detector - Lighting setting, but additional parameters are also available.	

Use as	**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. The "Presence detector monitoring" application always works as a single device.	

Control mode	**Auto ON, auto off** Manual ON, auto off Auto ON, manual off
This parameter defines the control mode used by the FB and how it reacts to the configured "trigger". Auto ON, auto OFF: In this operating mode, the outputs of the function block are automatically actuated by the "trigger". Manual actuation of the device is not necessary. Manual ON, auto OFF: In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" or "Manual operation - Permanent" object before a trigger is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of triggering is detected automatically or initiated by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. Afterwards, a manual ON telegram is required again to evaluate a new triggering process. In this operating mode, an ON telegram must first be transmitted to the object "Lighting manual ON/OFF" before a movement (including ext. motion) can be 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 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. Auto ON, manual OFF: A triggering process is detected automatically in this control mode. No run-on time is started after detecting a triggering process and outputting the telegrams at the "Start of detection". This means that the end of triggering can be achieved only by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. The function block is then ready again for a new triggering process.	

(Control mode) At day	**Auto ON, auto off** Manual ON, auto off Auto ON, manual off
The "At day" parameter defines the control mode used by the FB at day and how it reacts to the configured "trigger". Auto ON, auto OFF: In this operating mode, the outputs of the function block are automatically actuated by the "trigger". Manual actuation of the device is not necessary. Manual ON, auto OFF: In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" or "Manual operation - Permanent" object before a trigger is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of triggering is detected automatically or initiated by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. Afterwards, a manual ON telegram is required again to evaluate a new triggering process. Auto ON, manual OFF: A triggering process is detected automatically in this control mode. No run-on time is started after detecting a triggering process and outputting the telegrams at the "Start of detection". This means that the end of triggering can be achieved only by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. The function block is then ready again for a new triggering process.	

(Control mode) At night	**Auto ON, auto off** Manual ON, auto off Auto ON, manual off
The "At night" parameter defines the control mode that the FB uses at night and how it reacts to the configured "trigger". "Auto ON, auto OFF" In this operating mode, the outputs of the function block are automatically activated by the "trigger". Manual actuation of the device is not necessary. "Manual ON, auto OFF" In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" or "Manual operation - Permanent" object before a trigger is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of the trigger is detected automatically. Afterwards, a manual ON telegram is required again to evaluate a new triggering process. "Auto ON, manual OFF" In this control mode, triggers are detected automatically. No run-on time is started after detecting a triggering process and outputting the telegrams at the "Start of detection". This means that the end of triggering can be achieved only by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. The function block is then ready again for a new triggering process.	

Functionality	**Brightness dependent** Brightness-independent
This parameter can be used to activate or deactivate the evaluation of brightness when a motion detection is received for the respective FB. "Brightness-independent": The brightness is not evaluated. The FB always evaluates movements for the initial detection. "Brightness-dependent": The brightness is evaluated. The FB evaluates movements for the initial detection only if the brightness falls below the set brightness threshold. This parameter is visible only if the "Application" parameter is set to Motion detector - Lighting or Presence detector - Lighting/Universal.	

Reset behaviour

Changeable parameters can be reset via object	Active **Inactive**
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. 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.	

After the bus voltage returns	No reaction Disabling function active State when starting a detection **State as before bus voltage failure**
When used as a "Single device" and "Main unit", different operating states can be assumed when the bus voltage returns. The behaviour of the function block is defined by this parameter. 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. "No reaction" The function block switches to the basic state (no motion, run-on time inactive, disabling function inactive). No telegram is output. "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, run-on time inactive, disabling function inactive) is set as previous state for the disabling function. "State when starting 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 then subject only to the configured brightness threshold evaluation. In brightness-independent detection mode, the configured telegrams are transmitted at the beginning of the detection and the run-on time is started. In brightness-dependent detection mode, the configured telegrams are transmitted at the beginning of the detection, the run-on time is started and brightness-independent motion detection is switched to only if the brightness values are below the brightness threshold. If no further motion is then detected, the device processes the end of the detection after the run-on time has elapsed. "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.	

After ETS programming operation	**No reaction** Disabling function active State when starting a detection
When used as a "Single device" and "Main unit", various states of operation (possibly with telegram output) can be assumed after ETS programming. The behaviour of the FB is defined by this parameter. "No reaction" The function block switches to the basic state (no motion, run-on time inactive, disabling function inactive). No telegram is output. "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, run-on time inactive, disabling function inactive) is set as previous state for the disabling function. "State when starting 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 then subject only to the configured brightness threshold evaluation. In brightness-independent detection mode, the configured telegrams are transmitted at the beginning of the detection and the run-on time is started. In brightness-dependent detection mode, the configured telegrams are transmitted at the beginning of the detection, the run-on time is started and brightness-independent motion detection is switched to only if the brightness values are below the brightness threshold. If no further motion is then detected, the device processes the end of the detection after the run-on time has elapsed.	

12.1.2 "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
This parameter enables the parameters and objects for output 2 for the FB. The "Output 2" parameter page and other objects appear. For this parameter to be visible, the "Application" parameter must not be set to Presence detector - Monitoring.	

Manual operation	**Inactive** Active
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. For this parameter to be visible, the "Application" parameter must not be set to Presence detector - Monitoring.	

Disabling function	**Inactive** Active
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.	

Scenes	**Inactive** Active
Scenes can be configured for the FB. This parameter enables the scenes. The "FB x - Scenes" parameter page and other objects appear.	

Activity monitoring function	**Inactive** Active
This parameter enables the activity monitoring function for the FB. The "Activity monitoring function" parameter page and the "Activity monitoring - Time since last motion" object appear. This parameter is visible only if the "Function" parameter on the FB x- General parameter page is set to brightness-independent or the "Application" parameter is set to Presence detector - Heating/Ventilation/Cooling or Presence detector - Monitoring.	

12.1.3 "General and enabled functions" objects

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.				

12.2 Motion evaluation

Assignment of the motion sensor

The device detects movements digitally by means of 3 PIR sectors with a total detection field of 360°, in which each PIR sector covers a subarea of 120°. The function blocks of the device can be assigned as required to the PIR sectors to coordinate the detection field. This is done with the "PIR sensor A", "PIR sensor B" and "PIR sensor C" parameters on the "FBx - Motion detection" parameter page.
The motion signals of all assigned PIR sectors of a function block are logical OR linked and combined to form one motion signal.

Sensitivity of motion detection

The sensitivity of the motion detection, which is a measure for the range of the PIR evaluation, can be configured uniformly for all PIR sensors or separately for PIR sectors A, B and C in the ETS. In the ETS, the setting for motion evaluation can be made uniformly for all function blocks on the "Sensors - Motion" parameter page or separately for each function block on the "Motion evaluation" parameter page of the respective function block.

In addition, the sensitivity for the initial detection and presence phases can be set individually to adapt it ideally to the location and purpose. If day/night switchover is active, a different sensitivity value can be configured for the initial detection phase for day and night. The sensitivity for the presence phase is the same at day and night.

12.2.1 "Motion evaluation" parameters

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

Sensor assignment

(Detection fields for motion) PIR sensor A, B, C	**Active** Inactive
The device detects motion digitally by means of 3 PIR sensors with a total detection field of 360°. Each sensor therefore covers a detection field of 120°. These three parameters are used to assign one or more PIR sensors to the function block. A PIR sensor is assigned to the function block if it is set to active. The position of the PIR sensors in the room must be taken into account for the assignment. The motion signals of all assigned PIR sectors of a function block are logical OR linked and combined to form one motion signal.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic for the sensor assignment.	

Sensitivity

Source of sensitivity setting	**Like general sensor setting** Individual setting
This parameter is used to specify whether the general sensor setting or an individual setting is to be used. "Like general sensor setting" The sensor setting on the "Sensors - Motion" parameter page is used. "Individual setting" An individual sensitivity setting can be made for the assigned PIR sensors for the function block. The settings on the "Sensors - Motion" parameter page have no effect. Additional parameters appear.	

Setting	**The same for all PIR sensors** For each PIR sensor individually
This parameter is used to define whether the sensitivity is the same for all PIR sensors or is separate for each PIR sensor. "The same for all PIR sensors" The same sensitivity setting is used for all PIR sensors. "For each PIR sensor individually" The sensitivity can be set individually for each PIR sensor. This may limit the influence of sources of interference such as heaters in individual sectors. Additional parameters appear.	

Differentiated according to initial detection phase and presence phase	**Inactive** Active
The parameter is used to specify whether the sensitivity for the initial detection of a movement and for retriggering can be set individually. "Active" The sensitivity can be set separately for the initial detection phase of a movement and re-triggering during the presence phase. "Inactive" It is the same for the initial detection of a movement and the retriggering during presence. Additional parameters appear.	

PIR sensor A – B - C	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor A – B – C) At day	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor A – B – C) At night	1 … 6 … 10
This parameter is used to set the sensitivity of the PIR sensors for nighttime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor A – B – C) Initial detection phase	1 … 8 … 10
This parameter is used to set the sensitivity of the PIR sensors for the initial detection phase (initial detection of a movement). The setting applies uniformly to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor (A - B - C) initial detection phase) At day	1 … 8 … 10
This parameter is used to set the sensitivity of the PIR sensors for the detection phase (initial detection of a movement) for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor A - B - C initial detection phase) At night	1 … 6 … 10
This parameter is used to set the sensitivity of the PIR sensors for the detection phase (initial detection of a movement) for night mode. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

PIR sensor… (A, B, C)	1 … 8 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C). This setting is made separately for each PIR sensor. The setting is made in increments of 1 (very low) to 10 (very high). These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor… (A, B, C)) Initial detection phase	1 … 8 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor... (A, B, C) initial detection phase) At day	1 … **8** … 10

These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase for daytime operation. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient.

These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.

(PIR sensor... (A, B, C) initial detection phase) At night	1 … **6** … 10

These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase for nighttime operation. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient.

These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page. The day/night switchover function must be set to active on the "General" parameter page.

(PIR sensor (A – B - C)) Presence phase	1 … **10**

These three parameters are used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high).
The sensitivity is set by default to level 10. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors.

This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.

(PIR sensor (A - B - C) presence phase) At day and night	1 … **10**
This parameter is used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting applies to day and night time operation. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to the same value for all sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor… (A, B, C)) Presence phase	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the presence phase. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor... (A, B, C) presence phase) At day and night	1 … **10**
This parameter is used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting applies to day and night time operation. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

Sensitivity can be set via object	Active **Inactive**
The sensitivity of the PIR sensors for the function block in the device is reset by sending a telegram to one of the 1-byte objects "PIR sensor - sensitivity" according to "non standard" DPT, which can be enabled by this parameter. The values are retained until a new specification is made by a telegram. An ETS programming operation sets the parameters automatically to the ETS pre-settings if this is provided for in the configuration.	

Overwrite values in device during ETS programming	Active **Inactive**
This parameter can be used to specify whether the sensitivity values of the function block are to be overwritten during an EST programming operation. The values are retained until a new specification is made by a telegram. To automatically set the values to the ETS specifications during an ETS programming operation, set this parameter to active. This parameter is visible only if the "Sensitivity can be set via object" parameter is set to active.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic used to differentiate the motion detection process according to the initial detection and presence phase.	

12.2.2 "Motion evaluation" objects

Function	Name	Type	DPT	Flags
Motion - Status	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
Motion status - External	FB x - Input	1-bit	1.010	C, -, W, -, U
1-bit object used to receive an external motion signal for single devices and main units ("1" = motion present, "0" irrelevant). 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). 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).				

Function	Name	Type	DPT	Flags
PIR sensors A - B - C - Sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42]).				

Function	Name	Type	DPT	Flags
PIR sensor A – B C sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object for standardised specification of the sensitivity of PIR sensors A - B -C by means of a telegram. This non-standardised data type is described here Table : Motion [▹ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C presence sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [▹ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C presence sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensors A - B - C during an ongoing detection process, by means of a telegram. This non-standardised data type is described here Table : Motion [▹ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C initial detection sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C for the initial detection to the bus. This non-standardised data type is described here Table : Motion [▹ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C initial detection sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A - B C for the initial detection by means of a telegram. This non-standardised data type is described here Table : Motion [▹ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus. This non-standardised data type is described here Table : Motion [▹ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Presence sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Presence sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A during an ongoing detection process by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A for initial detection to the bus. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A for the initial detection by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B to the bus. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B by means of a telegram. This non-standardised data type is described here Table : Motion [Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B during an ongoing detection process by means of a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B for initial detection to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B for initial detection by a telegram. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor C to the bus. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C by means of a telegram.				

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C during an ongoing detection process by means of a telegram. This non-standardised data type is described here Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity - Status	FB x - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor C for initial detection to the bus. This non-standardised data type is described here Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity	FB x - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C for initial detection by means of a telegram. This non-standardised data type is described here Table : Motion [▷ Page 42).				

12.3 Brightness evaluation

Assignment of the brightness sensors

To determine the workplace or ambient brightness, the device has a brightness sensor, which is guided laterally from the housing by a light guide below the lens up to the lens. 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.

If the "Motion detector - Lighting, Presence detector - Lighting, Universal" applications are to work brightness independently, set the "Functionality" parameter on the "FB x - General" parameter page to brightness-independent.

The "Presence detector - Heating / Ventilation / Air conditioning, monitoring" applications always work brightness independently.

Brightness threshold

The motion detection can be evaluated brightness-independently or brightness-dependently in the "Motion detector - Lighting" and "Presence detector - Lighting and universal" applications. 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. presence detection for 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.

Motion is detected always brightness independently in the "Presence detector - Heating / Ventilation / Air conditioning and monitoring" application.

With the "Presence detector - Lighting and universal" application, the brightness in brightness-dependent motion detection mode continues to be evaluated when the lighting is switched on even with active motion detection. If the measured brightness exceeds the defined switch-off brightness, which is derived from the effective brightness threshold, no further movements are evaluated and the lighting is switched off after a configurable run-on time has elapsed once the switch-off brightness has been reached even during active motion detection. With brightness-independent motion detection (brightness-independent operation activated), the switch-off brightness is therefore also not effective.

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 wort 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 during presence detector operation

The switch-off brightness in Presence detector operation - Lighting, universal (only with the single device and main unit application types) 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 presence detection, no further movements 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.

12.3.1 "Brightness evaluation" parameter

This parameter page is visible only if the "Application" parameter is set to "Motion detector - Lighting" or "Presence detector - Lighting/Universal".

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

Functionality

(With internal motion detection) Brightness-independent operation can be activated via object	**Active** Inactive
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 object "Brightness-independent operation - Activate/Deactivate", which can be used to switch the evaluation of movements to brightness-independent. "Active" The brightness is not evaluated. Each motion triggers a new detection process in the idle state. "Inactive" The brightness is evaluated. In the idle state, motion triggers a new detection process only if the brightness falls below the set brightness threshold.	

Brightness-dependent with motion detection via external object	Main unit only **In main unit and extension unit**
This parameter can be used to activate the evaluation of the brightness when a motion detection is received by means of the external object "Motion status - External" only for the main unit or for the main and extension unit. "Main unit only" The brightness is evaluated only by the main unit. The extension units send a telegram when motion is detected, brightness independently. The main unit evaluates this and sends a "Start of detection" telegram only if the brightness falls below the brightness threshold set on the main unit. "Main and extension unit" The brightness is evaluated by the main and extension unit. The extension unit sends a telegram when motion is detected only if the brightness falls below the brightness threshold set on the extension unit. The main unit evaluates them and sends a "Start of detection" telegram. This parameter is visible only if the "Use as" parameter is set to main unit.	

Brightness source

Brightness measurement by	**Internal sensor** External sensor (object) Internal and external sensor (average value)
The "Brightness measurement by" parameter specifies which sensor is used to determine the brightness. This parameter can be set only if the "Use as" parameter on the FB - General parameter page is set to single device or main unit. With "Use as" extension unit, the parameter is permanently set to "internal sensor". "Internal sensor": The sensor integrated in the device is activated. The brightness value is therefore determined only locally on the device. "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". "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.	

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%
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. This achieves a more homogeneous brightness measurement in rooms with large differences in brightness. This parameter is visible only with "Brightness measurement by = "Internal and external sensor"!	

Brightness value status object	Active **Inactive**
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. This parameter is visible only if the "Use as" parameter is set to single device or main unit on the FB - General parameter page.	

Brightness threshold

Trigger if motion is detected and brightness is lower than	10 … **500** … 2000 lux
This parameter is used to set the brightness threshold in lux, below which a new detection process is triggered if there is motion in the idle state. This parameter is visible only if the "Use as" parameter is set to single device or main unit on the FB - General parameter page and the "Day/night operation" function is set to inactive on the General parameter page.	

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

(Trigger if motion is detected and brightness is lower than) At night	10... **400** ...2,000 lux
This parameter is used to set the brightness threshold in lux for 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**
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**
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
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
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. 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 "Application" parameter is set to Presence detector - Lighting/Universal.	

Switch off when brightness threshold is exceeded by	10 … **500** … 2000 lux
This parameter is used to set the brightness threshold in lux 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. The delay time is set with the parameter "Run-on time after reaching switch-off brightness". 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 inactive on the General parameter page.	

(Switch off when brightness threshold is exceeded by) At day	10... **300** ...800 lux
This parameter is used to set the brightness threshold in lux for day 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. The delay time is set with the parameter "Run-on time after reaching switch-off brightness". 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.	

(Switch off when brightness threshold is exceeded by) At night	10... **300** ...800 lux
This parameter is used to set the brightness threshold in lux for 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. The delay time is set with the parameter "Run-on time after reaching switch-off brightness". 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.	

Can be set via object	Active **Inactive**
The switch-off brightness in the device is reset by sending a brightness value to the 2-byte object "Switch-off brightness", which is 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 the switch-off brightness value automatically to the ETS presettings if this is provided for in the configuration. This parameter is visible only if the "Evaluate switch-off brightness" parameter is set to active.	

Teach-in function	Active **Inactive**
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. The object can be configured if this parameter is set to "Active". This parameter is visible only if the "Evaluate switch-off brightness" parameter is set to active.	

Trigger (Function for teach-in)	**0 = no takeover / 1 = brightness takeover** 0 = brightness takeover / 1 = no takeover 0 = brightness takeover / 1 = brightness takeover
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! This parameter is visible only if the teach-in function is active.	

Run-on time after reaching switch-off brightness	**Like at end of detection** Individual specification
This parameter determines the run-on time to be used after the switch-off brightness is reached. "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. "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. This parameter is visible only if the "Evaluate switch-off brightness" parameter is set to active.	

Individual specification	0 … **5** … 59 min **0** … 59 s
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. Seconds (0 ... 59 s) and minutes (0 ... 59 min) can be set for this time.	

Behaviour during ETS programming

Brightness threshold	**Active** Inactive
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. 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.	

Switch-off brightness	**Active** Inactive
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. 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.	

12.3.2 "Brightness evaluation" objects

Function	Name	Type	DPT	Flags
Brightness-independent operation – Activate/Deactivate	FB x - Input	1-bit	1,003	C, -, W, -, U
1-bit object that can be used to switch the motion evaluation of the main unit to brightness-independent mode. "Active" The brightness is not evaluated. Each motion detection process results in the transmission of the "At start of detection" telegram. "Deactivated" 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.				

Function	Name	Type	DPT	Flags
Brightness-independent operation – Extension unit - Activate/Deactivate	FB x - Output	1-bit	1,003	C, R, -, T, A
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-independent mode; by means of a telegram or at the start of detection, the extension unit(s) must simultaneously also be switched to brightness-independent mode by means of this object for the main unit and extension unit(s) to function correctly.				

Function	Name	Type	DPT	Flags
Brightness independent operation - Status	FB x - Output	1-bit	1,003	C, R, -, T, A
1-bit object used to feed back whether brightness-independent operation is activated or deactivated. 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). 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.				

Function	Name	Type	DPT	Flags
Brightness value - External	FB x - Input	2-byte	9,004	C, -, W, -, U
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 This object is visible only if the "Brightness evaluation by" parameter is configured to "External sensor (object)" or "Internal and external sensor (average value)".				

Function	Name	Type	DPT	Flags
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	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-in	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	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-in	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.				

12.4 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 PIR 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 operation in relation to the brightness threshold. Thus, regardless of the ambient brightness and provided that the switch-off brightness (only in presence detector operation) was not exceeded, the run-on time is retriggered 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 and the monitoring time window are available for this purpose. The evaluation delay and the monitoring time window always affect 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.
The evaluation delay cannot be used in the "Presence detector - Monitoring" application and in the "Manual ON, auto OFF" control mode.

"Monitoring time window"
The "At start of detection" telegram is not sent until a defined number of detection processes has been reached within a defined time window. If no more motion is detected within the monitoring time, no telegram is sent and the run-on time does not start.
Several monitoring time windows can be combined with each other.
The monitoring time window can be used only in the "Presence detector - Heating/ventilation/cooling, monitoring and universal" applications.
The monitoring time window cannot be used in "Manual ON, Auto OFF" control mode.

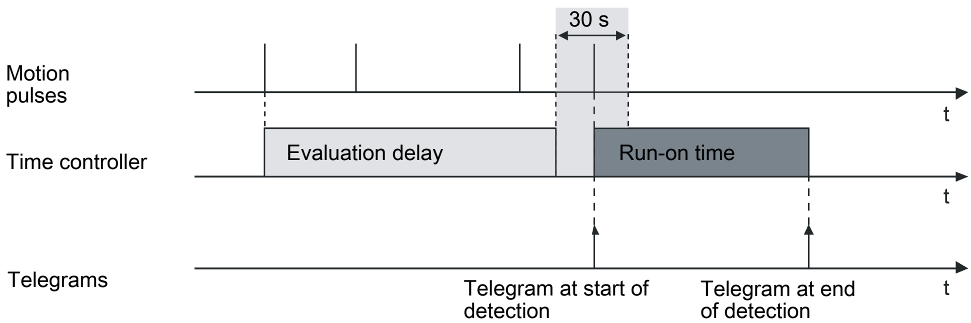


Figure 23: Evaluation delay

Motion evaluation with active monitoring time window

If the monitoring time window is active, the number of motion pulses can be specified within a monitoring time whereby it is possible to adapt the motion evaluation to meet individual requirements. The function block reacts less sensitively to detected movements, because the "At start of detection" telegram is sent only after the motion signal has been queried several times. The criterion for sending the "At start of detection" telegram is the configurable number of motion pulses that occur within the selectable duration of the monitoring time window.

The following diagram illustrates the behaviour of the function block with monitoring time window. In the example, the number of motion pulses was set to "4".

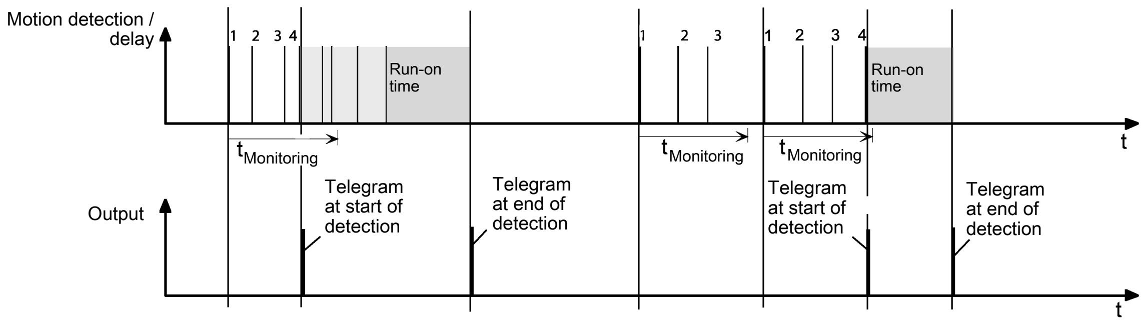


Figure 24: Motion evaluation with detector

After detecting the fourth motion pulse in the monitoring period ($_{tmonitoring}$), the "At start of detection" telegram is sent and the run-on time is started. The run-on time is retriggered by further motion pulses within the run-on time. If there are no motion signals and the run-on time has elapsed, the "At end of detection" telegram is sent.
If less than 4 motion pulses are detected within the monitoring period, no telegram is sent. After the monitoring period has elapsed, the next motion pulse is the first one of a new monitoring period. The monitoring period is stopped and reset when a detection process begins (start of run-on time). The monitoring is restarted again with the first motion pulse after the run-on time 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 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 (only in presence detector mode - lighting, universal).

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 is 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 practically 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.

12.4.1 "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 Monitoring time window
This parameter is used to specify when a telegram is sent to the bus after a detection process. The evaluation delay and the monitoring time window at the beginning of a motion detection process ensure that there is no reaction to just a briefly detected movement (e.g. when quickly striding through a room). 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 "Send directly" After a detection, the telegram at the start of the detection is sent directly to the bus. "Evaluation delay" 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. "Monitoring time window" The telegram is sent to the bus at the start of the detection only once a defined number of motion detections has been reached within a defined time window. Additional parameters appear.	

Delay time	0 … 59 min 0 … **30** …-59 s
This parameter is used to set the duration of the evaluation delay. Minutes and seconds can be set.	

(Monitoring time window) Number	**1** … 10
The parameter is used to define how many monitoring time windows are available. If only one continuous movement over a longer period of time is to trigger the "Start of detection", it is recommended to use several monitoring time windows.	

(Monitoring time window) Duration per time window	0 … 59 min 0 … **10** … 59 s
This parameter is used to set the length of a monitoring time window in seconds and minutes.	

(Monitoring time window) Trigger message from	1 … **20** … 255 motion pulses per time window
This parameter defines how many motion pulses must be detected in a time window before a telegram is sent to the bus.	

Show info graphic	**Inactive** *Active*
This parameter can be used to display the infographic for the monitoring time windows.	

Show info graphic	**Inactive** *Active*
This parameter can be used to display the infographic for the monitoring time windows.	

End of detection

Run-on time	**Fixed time** Self-learning
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. "Fixed run-on time" At the end of detection, a fixed run-on time starts to expire. The setting is made in hours, minutes and seconds. "Self-learning" 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. 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. Additional parameters appear.	

(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**
This parameter enables the evaluation of a short presence. This parameter is not available for the presence detector - monitoring application. 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. This parameter is visible only if the "Run-on time" parameter is set to self-learning.	

Time window for detection	1 … **10** … 59 s
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. This parameter is visible only if the "Evaluate short presence" parameter is set to active.	

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, 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. 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. 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.	

(Switch-off warning) Duration	0 … **30** … 59 s 0 … 59 min
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. 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.	

(Switch-off warning duration) At day	0 … **30** … 59 s 0 … 59 min
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. 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.	

(Switch-off warning duration) At night	0 … **30** … 59 s 0 … 59 min
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. 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.	

(Switch-off warning) Can be set via object	Active **Inactive**
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. This parameter is visible only if the "Switch-off pre-warning" parameter is set to active.	

Behaviour during ETS programming

(Overwrite values during ETS programming) Run-on time	**Active** Inactive
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. These parameters are visible only if the "Can be set via object" parameter is set to active.	

(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.	

12.4.2 "Start and end of detection" objects

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
Switch-off warning - Duration	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
Switch-off warning - Duration - 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.				

12.5 Output functions

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.

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".

Output 2 cannot be configured in the application "Presence detector - Monitoring". The function for output 1 is permanently set to report.

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.

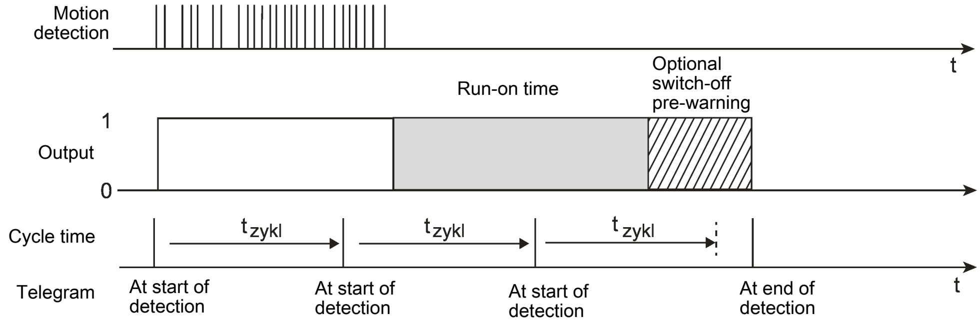


Figure 25: Cyclical transmission during a motion detection

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.

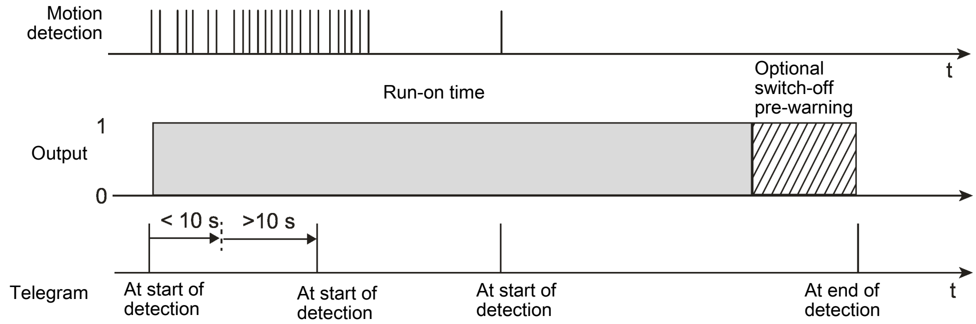


Figure 26: Send if motion is detected during the run-on time.

A cyclical telegram repetition or the triggering of a telegram when retriggering during an active motion detection is also possible in alert operation.

12.5.1 "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

<table>
<tr><td>Function</td><td>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</td></tr>
<tr><td colspan="2">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.</td></tr>
</table>

<table>
<tr><td>Function</td><td>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</td></tr>
<tr><td colspan="2">**Scene extension unit:** 1-byte telegrams to call scenes can be output in accordance with DPT 18.001 (1 ... 64). 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". 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.</td></tr>
</table>

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)
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.	

Commands at the start of detection

Start 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 start of detection. This parameter defines whether a telegram is transmitted. "No reaction" No telegram is sent at the start of detection. "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.	

Switching	OFF **ON**
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. 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.	

(Switching) At day	OFF ON
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. 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.	

(Switching) At night	OFF ON
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. 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.	

Staircase function	ON
This parameter defines the telegram at the beginning of detection for the "Staircase function" output function. The parameter is set permanently to "ON". 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.	

(Staircase function) At night	ON
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". 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.	

(Staircase function) At night	ON
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". 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.	

Forced position	Forcing active, ON Forcing active OFF Forcing active
This parameter defines the telegram at the beginning of the detection for the "Switching with forced position" output functions. 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	

(Forced position) At day	Forcing active, ON Forcing active OFF Forcing active
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. 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	

(Forced position) At night	Forcing active, ON Forcing active OFF Forcing active
This parameter is used to define the telegram at the start of detection for the "Switching with forced position" output functions for night mode. 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	

Dimming value	0 … 100%
This parameter is used to define the dimming value at the start of detection for the "Dimming value transmitter" output functions. The entry is made. 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	

(Dimming value) At day	0 … 100%
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. 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	

(Dimming value) At night	0 … **100%**
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. 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	

Scene number	**1** … 64
This parameter is used to define the scene number at the start of detection for the "Scene extension unit" output functions. 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.	

(Scene number) At day	**1** … 64
This parameter is used to define the scene number at the start of detection for the "Scene extension unit" output functions for night mode. 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	

(Scene number) At night	**1** … 64
This parameter is used to define the scene number at the start of detection for the "Scene extension unit" output functions for day mode. 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	

Temperature value	0 … **23** … 40 °C in 1 °C increments
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. 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	

(Temperature value) At day	0 … **23** … 40 °C in 1 °C increments
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. 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	

(Temperature value) At night	0 … **23** … 40 °C in 1 °C increments
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. 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	

Brightness value	0 … **1000** … 2000 lux in 50-lux increments
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. 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	

(Brightness value) At day	0 … **1000** … 2000 lux
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. 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	

(Brightness value) At night	0 … **1000** … 2000 lux
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. 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	Auto **Comfort** Standby Night Frost/heat protection
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
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
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: 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.	

"Additional value transmitters" function

Value	Depending on the data point type
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. 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	

(Value) At day	Depending on the data point type
This parameter is used to define the telegram at the beginning of detection for the "Other value transmitters" output function for day operation. 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	

(Value) At night	Depending on the data point type
This parameter is used to define the telegram at the beginning of detection for the "Other value transmitters" output function for day operation. 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	

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
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. 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.	

(Brightness value switch-off pre-warning) At day	0 … **750** … 2000 lux in 50-lux increments
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. 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) At night	0 … **750** … 2000 lux in 50-lux increments
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. 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.	

Switching	**OFF** ON
This parameter defines the telegram at the end of detection for the "Switching" 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.	

(Switching) At day	**OFF** ON
This parameter is used to define the telegram at the end of detection for the "Switching" 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.	

(Switching) At night	**OFF** ON
This parameter is used to define the telegram at the end of detection for the "Switching" 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.	

Staircase function	**OFF**
This parameter defines the telegram at the end of detection for the "Staircase function" output function. The parameter is set permanently to "OFF". 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.	

(Staircase function) At night	**OFF**
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". 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.	

(Staircase function) At night	**OFF**
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". 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.	

Forced position	Forcing active, ON **Forcing active OFF** Forcing active
This parameter defines the telegram at the end of detection for the "Switching with forced position" 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	

(Forced position) At day	Forcing active, ON **Forcing active OFF** Forcing active
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. 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.	

(Forced position) At night	Forcing active, ON **Forcing active OFF** Forcing active
This parameter is used to define the telegram at the end of detection for the "Switching with forced position" 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	

Dimming value	**0** … 100%
This parameter defines the telegram at the end of detection for the "Dimming 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.	

(Dimming value) At day	**0** … 100%
This parameter is used to define the telegram at the end of detection for the "Dimming 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.	

(Dimming value) At night	**0** … 100%
This parameter is used to define the telegram at the end of detection for the "Dimming 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.	

Scene number	**1** … 64

This parameter is used to define the telegram at the end of the detection process for the "Scene extension unit" 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.

(Scene number) At day	**1** … 64

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.

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.

(Scene number) At night	**1** … 64

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.

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.

Temperature value	0 … **21** … 40 °C

This parameter defines the telegram at the beginning of detection for the "Temperature value transmitter" output function.

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.

(Temperature value) At day	0 … **21** … 40 °C

This parameter is used to define the telegram at the start of detection for the "Temperature value transmitter" output functions for night mode.

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

(Temperature value) At night	0 … **21** … 40 °C

This parameter is used to define the telegram at the start of detection for the "Temperature value transmitter" output functions for day mode.

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.

Brightness value	**0** … 2000 lux in 50-lux increments
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
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
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
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
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. 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) At night	Auto Comfort **Standby** Night Frost/heat protection
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. 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.	

"Additional value transmitters" function

Value	Depending on the data point type
Different data point types and value ranges are available for the "other value trans-mitters" 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. 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.	

(Value) At day	Depending on the data point type
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. 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.	

(Value) At night	Depending on the data point type
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. 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.	

Output values can be set via object	Active Inactive
This parameter enables the objects that can be used to set the behaviour at the start and end of the detection process. This parameter is not provided for the staircase function and other value transmitters RGB/HSV and RGBW/HSVW.	

Transmission behaviour

Cyclical transmission during detection	Active Inactive
"Active" 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. "Inactive" A telegram is sent only once at the start of the detection process. When used as an extension unit, this parameter is permanently set to active. 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.	

Cycle time	0 … 23 h 0 … 59 min 0 … 25 …59 s
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. The parameter is visible only if the "Cyclical transmission during detection" parameter is set to active.	

Re-send upon movement during run-on time	Active Inactive
"Active" 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. To limit the number of telegrams, no telegram is sent within 10 seconds if motion is detected again. No telegram is sent while a switch-off warning is in progress. "Inactive" A telegram is sent only once at the start of the detection process. This parameter is not present when used as an extension unit. The parameter is visible only if the "Cyclical transmission during detection" parameter is set to inactive.	

Behaviour during ETS programming

(Overwrite values in device during ETS programming) Output values	Inactive Active
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. This parameter is visible only if the "Output values can be set via object" parameter is set to active.	

12.5.2 "Output 1/2" objects

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 - Switching value - At start of detection	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 visible only if the output function is configured to "Switching" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1 / 2 - Switching value - At start of detection - 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 visible only if the output function is configured to "Switching" This object is visible only if the output function is configured to "Switching" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Switching value - At end of detection	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 visible only if the output function is configured to "Switching" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Switching value - At end of detection - 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 visible only if the output function is configured to "Switching" This object is visible only if the output function is configured to "Switching" and the parameter "Output values can be set via objects" is set to "Active".				

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 visible only if the output function is configured to "Switching" and day/night switchover is deactivated, or if the parameter "Combine day/night output objects per FB" is activated when day/night switchover is activated.				

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 visible only if the output function is configured to "Switching" and day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.				

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 visible only if the output function is configured to "Switching" and day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

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 visible only if the output function is configured to "Staircase" and the day/night switchover is deactivated, or if the "Combine day/night output objects per FB" parameter is activated when day/night switchover is activated.				

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 visible only if the output function is configured to "Staircase" and the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.				

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 visible only if the output function is configured to "Staircase" and the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.				

Switching with forced position

Function	Name	Type	DPT	Flags
Output 1/2 - Forced position value - At start of detection	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 visible only if the function of the output is configured to "Switching with forced position" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Forced position value - At start of detection - 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 visible only if the output function is set to "Switching with forced position" and the "Output values can be set via objects" parameter is set to "Active"				

Function	Name	Type	DPT	Flags
Output 1/2 - Forced position value - At end of detection	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 visible only if the function of the output is configured to "Switching with forced position" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Forced position value - At end of detection - 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 visible only if the function of the output is configured to "Switching with forced position" and the parameter "Output values can be set via objects" is set to "Active".				

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 visible only if the output function is configured to "Switching with forced position" and day/night switchover is deactivated, or if the parameter "Combine day/night output objects per FB" is activated when day/night switchover is activated.

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 visible only if the output function is configured to "Switching with forced position" and day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.

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 visible only if the output function is configured to "Switching with forced position" and day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.

Dimming value transmitter

Function	Name	Type	DPT	Flags
Output 1/2 - Dimming value - At start of detection	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 visible only if the output function is configured to "Dimming value" and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Dimming value - At start of detection - 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 visible only if the output function is configured to "Dimming value" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Dimming value - At end of detection	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 visible only if the output function is configured to "Dimming value" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Dimming value - At end of detection - 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 visible only if the output function is configured to "Dimming value" and the parameter "Output values can be set via objects" is set to "Active".				

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 visible only if the output function is configured to "Dimming value" and day/night switchover is deactivated, or if the parameter "Combine day/night output objects per FB" is activated when day/night switchover is activated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Day - 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)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 "Dimming value", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - 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) in night 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 "Dimming value", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.

Scene extension unit

Function	Name	Type	DPT	Flags
Output 1/2 - Scene extension unit - Scene number - At start of detection	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 "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".

This object is visible only if the output function is configured to "Scene extension unit" and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Scene extension unit - Scene number - At start of detection - 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 "start of detection" to the bus. The output is a decimal value. The value range is 0 ... 64.

This object is visible only if the output function is configured to "Scene extension unit" and the parameter "Output values can be set via objects" is set to "Active".

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - Scene extension unit - Scene number - At end of detection</td><td>FB x - Input</td><td>1-byte</td><td>17.001</td><td>C, -, W, -, U</td></tr>
<tr><td colspan="5">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 per cent. 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 visible only if the output function is configured to "Scene extension unit" and the parameter "Output values can be set via objects" is set to "Active".</td></tr>
</table>

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - At end of detection - Scene extension unit - Status</td><td>FB x - Output</td><td>1-byte</td><td>17.001</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">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 visible only if the output function is configured to "Scene number" and the parameter "Output values can be set via objects" is set to "Active".</td></tr>
</table>

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - Scene extension unit</td><td>FB x - Output</td><td>1-byte</td><td>17.001</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">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 visible only if the output function is configured to "Scene extension unit" and day/night switchover is deactivated, or if the parameter "Combine day/night output objects per FB" is activated when day/night switchover is activated.</td></tr>
</table>

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - Day - Scene extension unit</td><td>FB x - Output</td><td>1-byte</td><td>17.001</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">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 visible only if the output function is configured to "Scene extension unit" and day/night switchover is activated, or if the parameter "Combine day/night output objects per FB" is deactivated with activated day/night switchover.</td></tr>
</table>

Function	Name	Type	DPT	Flags
Output 1/2 - Night - 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 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. This object is visible only if the output function is configured to "Scene extension unit", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.				

Temperature value transmitter

Function	Name	Type	DPT	Flags
Output 1/2 - Temperature value - At start of detection	FB x - Input	2-byte	9.001	C, -, W, -, U
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". This object is visible only if the output function is configured to "Temperature value transmitter" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Temperature value - At start of detection - Status	FB x - Output	2-byte	9.001	C, R, -, T, A
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. This object is visible only if the output function is configured to "Temperature value transmitter" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Temperature value - At end of detection	FB x - Input	2-byte	9.001	C, -, W, -, U

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".

This object is visible only if the output function is configured to "Temperature value transmitter" and the parameter "Output values can be set via objects" is set to "Active"

Function	Name	Type	DPT	Flags
Output 1/2 - Temperature value - At end of detection - Status	FB x - Output	2-byte	9.001	C, R, -, T, A

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.

This object is visible only if the output function is configured to "Temperature value transmitter" and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Temperature value	FB x - Output	2-byte	9.001	C, R, -, T, A

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.

This object is visible only if the output function is configured to "Temperature value transmitter" and day/night switchover is deactivated, or if the parameter "Combine day/night output objects per FB" is activated when day/night switchover is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Temperature value	FB x - Output	v	9.001	C, R, -, T, A

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.

This object is visible only if the output function is configured to "Temperature value transmitter", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - Night - Temperature value</td><td>FB x - Output</td><td>v</td><td>9.001</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">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.
This object is visible only if the output function is configured to "Temperature value transmitter", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.</td></tr>
</table>

Brightness value transmitter

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - Brightness value - At start of detection</td><td>FB x - Input</td><td>2-byte</td><td>9.004</td><td>C, -, W, -, U</td></tr>
<tr><td colspan="5">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 visible only if the output function is configured to "Brightness value transmitter" and the parameter "Output values can be set via objects" is set to "Active"</td></tr>
</table>

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flags</th></tr>
<tr><td>Output 1/2 - Brightness value - At start of detection - Status</td><td>FB x - Output</td><td>v</td><td>9.004</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">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 visible only if the output function is configured to "Brightness value transmitter" and the parameter "Output values can be set via objects" is set to "Active"</td></tr>
</table>

Function	Name	Type	DPT	Flags
Output 1/2 - Brightness value - At end of detection	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 visible only if the output function is configured to "Brightness value transmitter" and the parameter "Output values can be set via objects" is set to "Active"				

Function	Name	Type	DPT	Flags
Output 1/2 - Brightness value - At end of detection - 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 visible only if the output function is configured to "Brightness value transmitter" and the parameter "Output values can be set via objects" is set to "Active"				

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 visible only if the output function is configured to "Brightness value transmitter" and the day/night switchover is deactivated, the parameter "Combine day/night output objects per FB" is deactivated with day/night switchover activated, or the "Combine day/night output objects per FB" parameter is activated with day/night switchover activated.				

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 visible only if the output function is configured to "Brightness value transmitter", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.				

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 visible only if the output function is configured to "Brightness value transmitter", the day/night switchover is activated, and the parameter "Combine day/ night output objects per FB" is deactivated.				

Temperature operating mode

Function	Name	Type	DPT	Flags
Output 1/2 - Operating mode - At start of detection	FB x - Input	1-byte	20.102	C, -, W, -, U
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: 0 = auto 1 = Comfort 2 = standby 3 = Night 4 = Frost/heat protection 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 "Temperature operating mode" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Brightness value - At end of detection - Status	FB x - Output	1-byte	20.102	C, R, -, T, A
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. This object is visible only if the output function is configured to "Temperature operating mode" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Operating mode - At end of detection	FB x - Input	1-byte	20.102	C, -, W, -, U
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: 0 = auto 1 = Comfort 2 = standby 3 = Night 4 = Frost/heat protection 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 "Temperature operating mode" and the parameter "Output values can be set via objects" is set to "Active"				

Function	Name	Type	DPT	Flags
Output 1/2 - Operating mode - At end of detection - Status	FB x - Output	1-byte	20.102	C, R, -, T, A
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. This object is visible only if the output function is configured to "Temperature operating mode" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Operating mode	FB x - Output	1-byte	20.102	C, R, -, T, A
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. This object is visible only if the output function is configured to "Temperature operating mode" and day/night switchover is deactivated, or if the parameter "Combine day/night output objects per FB" is activated when day/night switchover is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Day - Operating mode	FB x - Output	1-byte	20.102	C, R, -, T, A

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.

This object is visible only if the output function is configured to "Temperature operating mode", day/night switch-over is activated, and the parameter "Combine day/night output objects per FB" is deactivated or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Night - Operating mode	FB x - Output	1-byte	20.102	C, R, -, T, A

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.

This object is visible only if the output function is configured to "Temperature operating mode", the day/night switchover is activated, and the parameter "Combine day/night output objects per FB" is deactivated.

Additional value transmitters

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0 … 255 – At start of detection –	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 5.010, and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0 … 255 - At start of detection - 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 5.010, and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0 … 255 – At end of detection	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 5.010, and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0 ... 255 - At end of detection - 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 5.010, and the parameter "Output values can be set via objects" is set to "Active".				

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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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 and the parameter "Combine day/night output objects per FB" 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 and the parameter "Combine day/night output objects per FB" is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0 … 360°– At start of detection	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 5.003 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 – Value 0…360°– At start of detection - 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 5.003 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0…360°- At end of detection	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 5.003 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...360°- At end of detection - 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 5.003 and the parameter "Output values can be set via objects" is set to "Active".				

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 5.003 and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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 5.003 and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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 5.003 and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0…255% - At start of detection	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 5.004 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 – Value 0…255° – At start of detection - 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 5.004 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0…255% - At end of detection	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 5.004 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...255% - At end of detection - 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 5.004 and the parameter "Output values can be set via objects" is set to "Active".				

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 5.004 and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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 5.004 and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Night - 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 night 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 5.004 and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Value -128...127- At start of detection	FB x - Input	1-byte	6.010	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 -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".

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 the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value -128...127 - At start of detection - 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 "start 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 and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value -128 … 127 - At end of detection	FB x - Input	1-byte	6.010	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 -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". 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 the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -128 ... 127 - At end of detection - 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 and the parameter "Output values can be set via objects" is set to "Active".				

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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...65535 - At start of detection	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 and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...65535 - At start of detection - 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 and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0…65535 - At end of detection	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 and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value 0...65535 - At end of detection - 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 and the parameter "Output values can be set via objects" is set to "active".

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 and the parameter "Combine day/night output objects per FB" is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover 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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -100 … 10000K - At start of detection	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 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -100 … 10000 K - At start of detection - 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 ... 10000 K. 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 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -100 … 10000 K - At end of detection	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 ... 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" 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 and the parameter "Output values can be set via objects" is set to "Active".

Function	Name	Type	DPT	Flags
Output 1/2 - Value -100 … 10000 K - At end of detection - 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 ... 10000 K.

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 the parameter "Output values can be set via objects" is set to "Active".

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 ... 10000 K.

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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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 ... 10000 K. 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 and the parameter "Combine day/night output objects per FB" is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -32768 … 32767 - At start of detection	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 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -32768 ... 32767 - At start of detection - 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 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -32768 … 32767 - At end of detection	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 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Value -32768 ... 32767 - At end of detection - 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 and the parameter "Output values can be set via objects" is set to "Active".				

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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

Function	Name	Type	DPT	Flags
Output 1/2 - Colour temperature and brightness value - At start of detection	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. 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 the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Colour temperature and brightness value - At start of detection - Status	FB x - Output	6-byte	249.600	C, R, -, T, A
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. 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 249.600 and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Colour temperature and brightness value - At end of detection	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. 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, the parameter "Output values can be set via objects" is set to "Active" and the parameter "Output values can be set via objects" is set to "Active".				

Function	Name	Type	DPT	Flags
Output 1/2 - Colour temperature and brightness value - At end of detection - Status	FB x - Output	6-byte	249.600	C, R, -, T, A
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. 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 the parameter "Output values can be set via objects" is set to "Active".				

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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

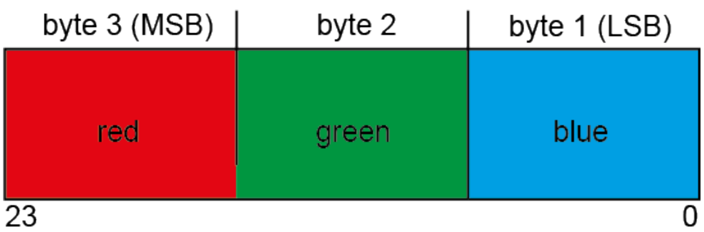
Function	Name	Type	DPT	Flags
Output 1/2 - Night - Colour temperature and brightness value	FB x - Output	6-byte	249.600	C, R, -, T, A

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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

Function	Name	Type	DPT	Flag
Output 1/2 value - RGB/HSV RGB	FB x - Output	3-byte	232.600	C, R, -, T, A

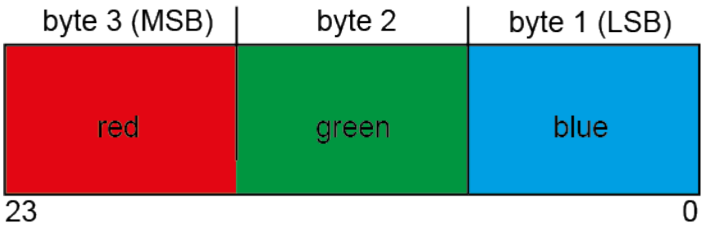
3-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator).



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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

Function	Name	Type	DPT	Flag
Output 1/2 - Day - RGB/ HSV value RGB	FB x - Output	3-byte	232.600	C, R, -, T, A

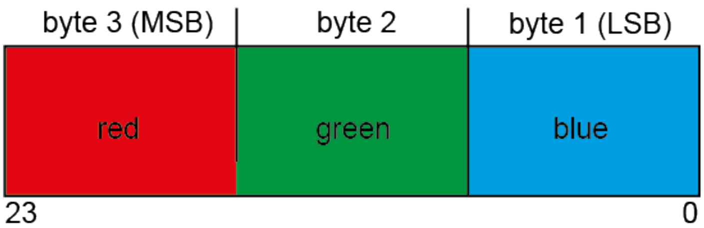
3-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator) in day mode.



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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

Function	Name	Type	DPT	Flag
Output 1/2 - Night - 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 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 deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

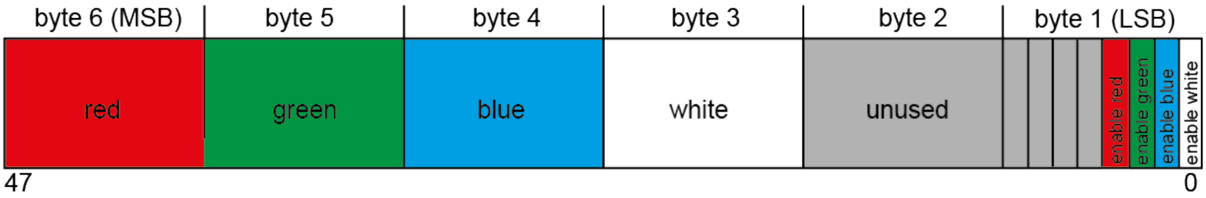
Function	Name	Type	DPT	Flags
Output 1/2 - Night - RGB/HSV value HSV V	FB x - Output	1-byte	5.001	C, R, -, T, A

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.

Function	Name	Type	DPT	Flag
Output 1/2 - RGBW/ HSVW value RGBW	FB x - Output	6-byte	251.600	C, R, -, T, A

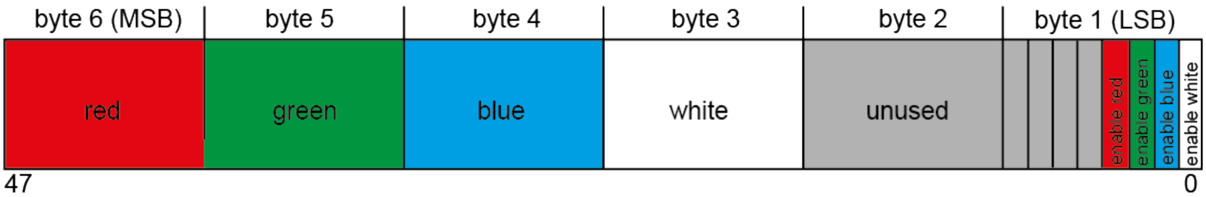
6-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator).



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 the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

Function	Name	Type	DPT	Flag
Output 1/2 - Day - RGBW/HSVW value RGBW	FB x - Output	6-byte	251.600	C, R, -, T, A

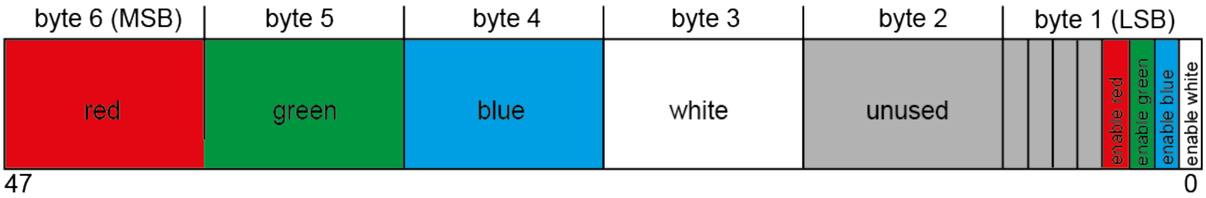
6-byte object used by the output of a function block to output the colour value to the KNX actuators (e.g. DALI actuator) in day mode.



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 and the parameter "Combine day/night output objects per FB" is deactivated.

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.



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 and the parameter "Combine day/night output objects per FB" is deactivated.

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.

Function	Name	Type	DPT	Flags
Output 1/2 - Value RGBW/WHSVW 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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

Function	Name	Type	DPT	Flags
Output 1/2 - 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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001) and the day/night switchover is deactivated, or the parameter "Combine day/night output objects per FB" is activated with day/night switchover activated.				

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT232.600, HSV: DPT 5.003, DPT 5.001, DPT 5.001) and day/night switchover is deactivated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" 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 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: DPT251.600, HSVW: DPT 5.003, DPT 5.001, DPT 5.001, DPT 5.001), day/night switchover is activated and the parameter "Combine day/night output objects per FB" is deactivated.				

12.6 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.
This manual operation is activated by means of the "Manual operation - Simple" 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.
This manual operation is activated by means of the object "Manual operation - Permanent".
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 relapse 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. Otherwise, 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

The lighting is switched off directly by switching off the lighting in simple or permanent manual operation mode. 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.

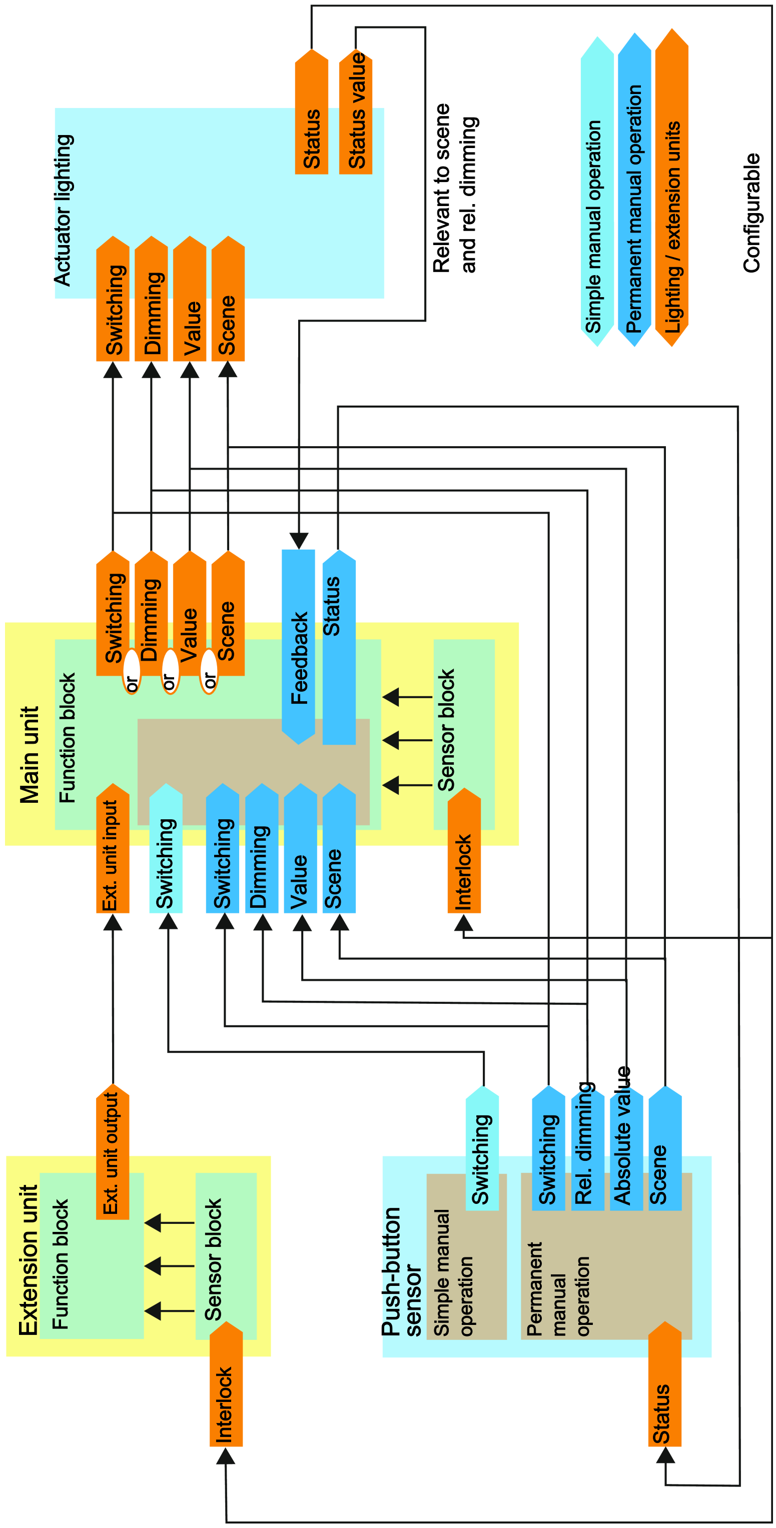


Figure 27: Manual operation

12.6.1 "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 OFF **ON and OFF** ON/OFF as TOGGLE
The "Reacts to" parameter specifies how and to which telegram the function block reacts. ON: The function block reacts only to ON telegrams to the object "Manual operation - Simple". 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. OFF: The function block reacts only to OFF telegrams to the object "Manual operation - Simple". 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". ON and OFF: The function block reacts to an ON and OFF telegram to the object "Manual operation - Simple". 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. ON/OFF as TOGGLE: The function block reacts to each telegram input to the object "Manual operation - Simple". 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. This parameter is visible only if the "Use simple manual operation" parameter is set to active.	

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 OFF **ON and OFF** ON/OFF as TOGGLE
The "Reacts to" parameter specifies how and to which telegram the function block reacts during permanent manual operation. ON: The function block reacts only to ON telegrams to the object "Manual operation - Permanent". 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 "Manual operation - Permanent". Automatic mode is active again. The configured behaviour at the "Start of detection" is executed. OFF: The function block reacts only to OFF telegrams to the object "Manual operation - Permanent". 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 "Manual operation - Permanent". Automatic mode is active again. The configured behaviour at the "End of detection" is executed. ON and OFF: The function block reacts to an ON and OFF telegram to the object "Manual operation - Permanent". 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 "Manual operation - Permanent". The behaviour is executed at the "Start of detection" or "End of detection", depending on the telegram. ON/OFF as TOGGLE: The function block reacts to each telegram input to the object "Manual operation - Permanent". 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 "Manual operation - Permanent" again. This parameter is visible only if the "Use permanent manual operation" parameter is set to active.	

End automatically	**Deactivated** After run-on time At end of presence and relapse time

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.

Deactivated: Permanent manual operation is not ended automatically. To end it, a telegram must be sent again to the object "Manual operation - Permanent". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.

After run-on time: Permanent manual operation is automatically ended after the time set with the "Run-on time" parameter has elapsed.
Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.

At end of presence and relapse 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 "Relapse time" parameter is used to set the relapse time.
Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.

This parameter is visible only if "Permanent manual operation" parameter is activated.

Run-on time	**0** … 23 h 0 … **30** …59 min **0** … 59 s

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.
After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.

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.

(Run-on time) At day	**0** … 23 h 0 … **30** …59 min **0** … 59 s

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.
After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.

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.

(Run-on time) At night	**0** … 23 h 0 … **30** …59 min **0** … 59 s

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.
After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.

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.

Relapse time	**0** … 23 h 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. 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 relapse time" or "At end of external presence and relapse time".

(Relapse time) At day	**0** … 23 h 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 relapse time" or "At end of external presence and relapse time" with day/night switchover activated.	

(Relapse time) At night	**0** … 23 h 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 relapse time" or "At end of external presence and relapse time" with day/night switchover activated.	

Objects for parallel operation via additional control points	**Inactive** Active
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: "Manual operation - Permanent - Parallel operation - Dimming step" Setting the brightness of the function block by sending relative dimming telegrams. "Manual operation - Permanent - Parallel operation - Dimming value" Specification of an absolute dimming value for the function block in per cent. "Manual operation - Permanent - Parallel operation - Scene extension unit" Call-up of a scene of the function block. "Manual operation - Permanent - Parallel operation - Actuator status" Feedback of the switching state of the actuated actuator ("1" = active / "0" = inactive) to the bus. "Manual operation - Permanent - Parallel operation - Dimming step - HVAC operating mode" Setting of the HVAC mode: automatic, comfort, standby, night; frost/heat protection 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. This parameter is visible only if the "Permanent manual operation" parameter is set to active.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic for manual operation.	

Ignore motion if OFF	**0** … 59 min 0 … **5** …59 s
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. This parameter is visible only if at least one type of manual operation has been activated.	

Orientation light OFF when ON via manual operation	Active Inactive
This parameter can be used to define the behaviour of the orientation light if the lighting in the room is switched on by manual operation of a function block 1 ... 5. Active: The orientation light is switched off if the light is switched on by manual operation of a function block 1 ... 5. Inactive: The orientation light does not react if the light is switched on by manual operation of a function block 1 ... 5. This parameter is visible only if at least one type of manual operation has been activated.	

12.6.2 "Manual operation" objects

Function	Name	Type	DPT	Flags
Manual operation - Simple	FB x - Input	1-bit	1.001	C, -, W, -, U
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 "Manual operation - Simple object", the automatic function is still active ("1" = ON / reaction as at start of detection, "0" = OFF / reaction as at end of detection) This object is visible only if simple manual operation is enabled.				

Function	Name	Type	DPT	Flags
Manual operation - Permanent	FB x - Input	1-bit	1.001	C, -, W, -, U
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 the end of detection) by means of the object Manual operation - Permanent. This object is visible only if permanent manual operation is enabled.				

Function	Name	Type	DPT	Flags
Manual operation - Permanent - ON - Status	FB x - Output	1-bit	1.011	C, R, -, T, A
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. This object is visible only if permanent manual operation is enabled.				

Function	Name	Type	DPT	Flags
Manual operation - Permanent - OFF - Status	FB x - Output	1-bit	1.011	C, R, -, T, A
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. This object is visible only if permanent manual operation is enabled.				

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
Manual operation - Permanent - Parallel operation - Dimming step	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
Manual operation - Permanent - 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
Manual operation - Permanent - 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
Manual operation - Permanent - 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
Manual operation - Permanent - 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.				

12.7 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.

i 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.

i 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.

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.

12.7.1 "Disabling function" parameter

Function blocks (FB) -> FB x - General -> Disabling function

Behaviour of the outputs at the beginning of disabling

Output 1 Output 2	**No reaction** "Output function" e.g.: switching

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.

"No reaction"
No telegram is sent at the start of a disabling process.

"Output function" e.g. switching
A telegram with the configured state or configured values is sent at the beginning of the disabling, depending on the output function.
Further parameters appear, which are described in the following.

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.

Switching	**OFF** ON

This parameter defines the telegram at the beginning of the disabling function for the output function "Switching" and "Staircase function".

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.

(Switching) At day	**OFF** ON

This parameter defines the telegram at the beginning of the disabling function for the output function "Switching" and "Staircase function" for day operation.

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.

(Switching) At night	**OFF** ON
This parameter defines the telegram at the beginning of the disabling function for the output function "Switching" and "Staircase function" for night operation. 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.	

Priority control	**Forcing active, OFF** Forcing active ON Forcing inactive
This parameter defines the telegram at the beginning of the disabling function for the output function "Switching with forced position". 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.	

(Forced position) At day	**Forcing active, OFF** Forcing active ON Forcing inactive
This parameter defines the telegram at the beginning of the disabling function for the output function "Switching with forced position" for day operation. 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.	

(Forced position) At night	**Forcing active, OFF** Forcing active ON Forcing inactive
This parameter defines the telegram at the beginning of the disabling function for the output function "Switching with forced position" for hight operation. 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.	

Dimming value	**0** … 100%
This parameter defines the telegram at the beginning of the disabling function for the output function "Dimming value transmitter". 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.	

(Dimming value) At day	**0** … 100%
This parameter defines the telegram at the beginning of disabling for the "Dimming value transmitter" output function for day operation. 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.	

(Dimming value) At night	**0** … 100%
This parameter defines the telegram at the beginning of disabling for the "Dimming value transmitter" output function for night operation. 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.	

Scene number	**1** … 64
This parameter defines the telegram at the beginning of the disabling function for the "Scene extension unit" output function. 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.	

(Scene number) At day	**1** … 64
This parameter is used to define the telegram at the beginning of the disabling function for the "Scene extension unit" output function. 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.	

(Scene number) At night	**1** … 64
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. 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.	

Temperature value	0 … **21** … 40 °C
This parameter defines the telegram at the beginning of the disabling function for the output function "Temperature value transmitter". 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.	

(Temperature value) At day	0 … **21** … 40 °C
This parameter defines the telegram at the beginning of disabling for the "Temperature value transmitter" output function for day operation. 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.	

(Temperature value) At night	0 … **21** … 40 °C
This parameter defines the telegram at the beginning of disabling for the "Temperature value transmitter" output function for night operation. 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.	

Brightness value	0 … **750** … 2000 lux
This parameter defines the telegram at the beginning of the disabling function for the output function "Brightness value transmitter". 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.	

(Brightness value) At day	0 … **750** … 2000 lux
This parameter defines the telegram at the beginning of the disabling function for the output function "Brightness value transmitter" for day operation. 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.	

(Brightness value) At night	0 … **750** … 2000 lux
This parameter defines the telegram at the beginning of the disabling function for the output function "Brightness value transmitter" for night operation. 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.	

Operating mode	Auto Comfort **Standby** Night Frost/heat protection
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
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
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
The following data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration: DPT 5.010 | 0 … 255 DPT 5.003 | 0 … 360° DPT 5.004 | 0 … 255% DPT 6.010 | -128 … 127 DPT 7.001 | 0 … 65535 DPT 7.600 | 1000 … 10000 K DPT 8.001 | -32768 … 32767 DPT | 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). This parameter is used to define which value the telegram sends at the start of disabling for the "Other value transmitters" output function. 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.	

(Value) At day	Depending on the data point type
The following data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration: DPT 5.010 | 0 … 255 DPT 5.003 | 0 … 360° DPT 5.004 | 0 … 255% DPT 6.010 | -128 … 127 DPT 7.001 | 0 … 65535 DPT 7.600 | 1000 … 10000 K DPT 8.001 | -32768 … 32767 DPT | 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). This parameter is used to define which value the telegram sends at the start of disabling for the "Other value transmitters" output function. 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.	

(Value) At night	Depending on the data point type
The following data point types and value ranges are available for the "Other value transmitters" function, depending on the configuration: DPT 5.010 | 0 … 255 DPT 5.003 | 0 … 360° DPT 5.004 | 0 … 255% DPT 6.010 | -128 … 127 DPT 7.001 | 0 … 65535 DPT 7.600 | 1000 … 10000 K DPT 8.001 | -32768 … 32767 DPT | 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). This parameter is used to define which value the telegram sends at the start of disabling for the "Other value transmitters" output function. 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.	

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

This parameter is used to define the behaviour of the function block at the end of disabling.

"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.

"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.

"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.

"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.

(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
This parameter is used to define the behaviour of the function block at the end of disabling. "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. "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. "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. "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.	

<table>
<tr><td>(At end of disabling)
At night</td><td>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</td></tr>
<tr><td colspan="2">This parameter is used to define the behaviour of the function block at the end of disabling.

"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.

"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.

"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.

"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.</td></tr>
</table>

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

This parameter specifies whether a disabling process must be ended manually or is ended automatically.

"Deactivated"
An active disabling function must be ended manually by sending a telegram to the object "Disabling function - Activate/Deactivate".

"After configured locking period: An active locking function is automatically deactivated after the locking period has expired. Additional parameters appear.

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.

Furthermore, it is still possible to unlock with an object, regardless of the selected setting.

Disabling time	**0** … 23 h 0 … **15** …59 min **0** … 59 s

This parameter is used to set the length of the disabling period in hours, minutes and seconds.

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.

(Disabling time) At day	**0** … 23 h 0 … **15** …59 min **0** … 59 s

This parameter is used to set the length of the disabling period in hours, minutes and seconds.

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.

(Disabling time) At night	0 … 23 h 0 … **15** …59 min 0 … 59 s

This parameter is used to set the length of the disabling period in hours, minutes and seconds.

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.

Disabling time can be set via object	**Inactive** Active
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. This parameter is visible only if the "Unlock automatically" parameter is set to "At end of disabling period".	

Individual run-on time	**0** … 23 h **0** … 59 min 0 … **30** …59 s
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. 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.	

(Individual run-on time) At day	**0** … 23 h **0** … 59 min 0 … **30** …59 s
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. 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.	

(Individual run-on time) At night	**0** … 23 h **0** … 59 min 0 … **30** …59 s
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. 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.	

Individual run-on time can be set via object	**Inactive** Active
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. This parameter is visible only if the "Unlock automatically" parameter is set to "At end of presence and individual run-on time".	

Unlocking delay after manual unlocking	**Inactive** Active
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. Inactive The disabling is revoked immediately. Active The disabling is revoked only after the set unlocking delay has elapsed. Additional parameters appear.	

Duration of unblocking delay	**0** … 59 min 0 … **15** … 59 s
This parameter is used to set the length of the unlocking delay in minutes and seconds. 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.	

(Duration of unblocking delay) At day	**0** … 59 min 0 … **15** … 59 s
This parameter is used to set the length of the unlocking delay in minutes and seconds. 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.	

(Duration of unblocking delay) At night	**0** … 59 min 0 … **15** … 59 s
This parameter is used to set the length of the unlocking delay in minutes and seconds. 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.	

Overwrite values in device after ETS programming	Inactive **Active**
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. 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.	

Object polarity	**0 = enable / 1 = disable** 0 = disable / 1 = enable
This parameter defines the telegram polarity of the disabling object. The parameter is visible only if the disabling function is enabled.	

Status object	**Inactive** Active
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: Default setting 0 = normal operation, 1 = disabling function active The parameter is visible only if the disabling function is enabled.	

Acknowledgement	**Inactive** Active
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. 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. Parameter deactivated: No additional acknowledgement object is available. The disabling function can be deactivated via the disabling object by means of an "OFF" telegram. The parameter is visible only if the disabling function is enabled.	

12.7.2 "Disabling function" objects

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.				

12.8 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.

12.8.1 "Activity monitoring function" parameter

Function blocks (FB) -> FB x - General -> Activity monitoring

Transmit meter reading cyclically	**Active** Inactive
This parameter is used to define whether the meter reading is sent cyclically to the bus. Active The meter reading is sent automatically. The interval is defined with the "Cycle time" parameter. Inactive The parameter must be queried by means of a telegram to the object "Activity monitoring - Time since last motion".	

Cycle time	**0** … 23 h 0 … **10** …59 min
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. This parameter is visible only if the "Transmit meter reading cyclically" parameter is set to active	

12.8.2 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
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. This object is visible only if the activity monitoring function is activated in the ETS.				

12.9 Scenes

Up to 64 scenes can be called up in the function block 1 … 5, 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 by force by means of the object "Disabling function - Activate/Deactivate", after the bus voltage returns or after an ETS programming operation.

- 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.

12.9.1 "Scenes" parameter

Function blocks (FB) -> FB x - General -> Scenes

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
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. 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. 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. This parameter is visible only if the extended scene call-up is used.	

Scene configuration	**Variable (1...64 scenes)** Fixed (64 scenes)

The scene configuration selected here decides whether the number of scenes is variable (1 ... 64) or alternatively fixed to the maximum (64).

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.

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".

Number of scenes	1...**10**...64

This parameter defines how many scenes are visible for the function block in the ETS and can therefore be used.
This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes)

Scene number	0...**1***...64 *: The predefined scene number depends on the scene (1...64).

It is possible to set which scene number (1 ... 64) actuates each scene.
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.
This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes).

Function	**Activate disabling** Deactivate disabling Simple manual operation - As with ON Simple manual operation - As with OFF Permanent manual operation - As with ON Permanent manual operation - As with OFF Permanent manual operation - Deactivate

This parameter is used to defines the function that is executed when the scene is called up.

Select the following settings only if the "Disabling function" has been enabled and configured:

Activate disabling: When the scene is called up, a telegram is sent to the object "Disabling function - Activate/Deactivate", 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.
Deactivate disabling: When the scene is called up, a telegram is sent to the object "Disabling function - Activate/Deactivate", which deactivates the disabling function. If configured, the function block sends the "End of disabling" telegram. Automatic mode is active again.

Select the following settings only if "Manual operation" has been enabled and "Simple manual operation" has been configured:

Simple manual operation - As with ON: When this scene is called up, an ON telegram is sent to the object "Manual operation - Simple". The function block behaves in the same way as with operation via an extension unit. This function is not available for use as a "Presence detector - Monitoring".
Simple manual operation - As with OFF: When the scene is called up, an OFF telegram is sent to the object "Manual operation - Simple". The function block behaves in the same way as with operation via an extension unit. This function is not available for use as a "Presence detector - Monitoring".

Select the following settings only if "Manual operation" has been activated and "Permanent manual operation" has been configured:

Permanent manual operation - As with ON: When the scene is called up, an ON telegram is sent to the object "Manual operation - Permanent". 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. This function is not available for use as a "Presence detector - Monitoring".
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. This function is not available for use as a "Presence detector - Monitoring".
Permanent manual operation - Deactivate: Permanent manual operation is deactivated when the scene is called up. The disabling is revoked and automatic mode is reactivated. This function is not available for use as a "Presence detector - Monitoring".

12.9.2 "Scenes" objects

Function	Name	Type	DPT	Flag
Scenes - Scene extension unit	FB x - Input	1-byte	17,001	C, -, W, -, U
1-byte object used to call up, switch or save one of a maximum of 64 scenes from a scene extension unit. This object is visible only if the scene function for the function block is activated in the ETS.				

Function	Name	Type	DPT	Flag
Scenes - Extended scene recall	FB x - Input	1-bit	1,001	C, -, W, -, U
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). This object is visible only if the scene function and the extended scene call-up are activated for the function block in the ETS.				

12.10 Application examples

Single device for lighting control with manual operation

Application example:
Push-button sensor on the entrance door of a storage room outside the detection field of the device. When entering the room, the lighting should be switched on user-guided even before the PIR detection field is entered.

Alternative application:
Central switch-on of the lighting devices in an office building in the case of service or cleaning. Automatic switch-off if there are no more motion detections.

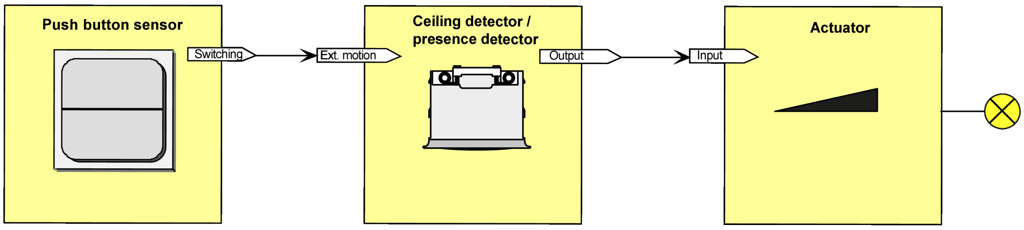


Figure 28: Application example of single device with external motion detection

The switching object of the push-button sensor goes to the object "Simple manual operation" of the presence detector and forces the lighting to be switched on with an ON telegram. After manual activation, the device works in a presence- and brightness-dependent manner. The automatic function is active and will automatically switch off the switched-on lighting again at the end of motion detection (if configured accordingly). Sending an OFF telegram to the "Simple manual operation" object causes the lighting to be switched off directly.

Main and extension unit arrangement for lighting control without brightness evaluation

Application example:
Lighting is to be activated in a room without daylight.

Configuration of main unit and extension unit:
Functionality = brightness-independent

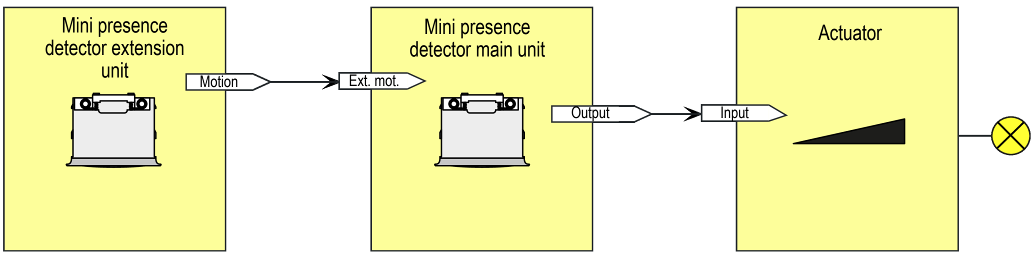


Figure 29: Main and extension unit application example

The system is configured so that no brightness evaluation takes place. Consequently, each motion detection of the main unit and extension unit always results in a telegram output or retriggering of the run-on time in the main unit.

Main and extension unit arrangement for brightness-dependent lighting control at the main unit

Application example:
Presence detector main unit with one or more presence detector extension units in a passageway area with daylight. The main unit is mounted optimally so that the daylight can be detected reliably by the brightness sensor of the device. A brightness evaluation on the extensions is not necessary.

Main unit configuration:
Functionality = brightness-dependent

Extension unit configuration:
Functionality = brightness-independent

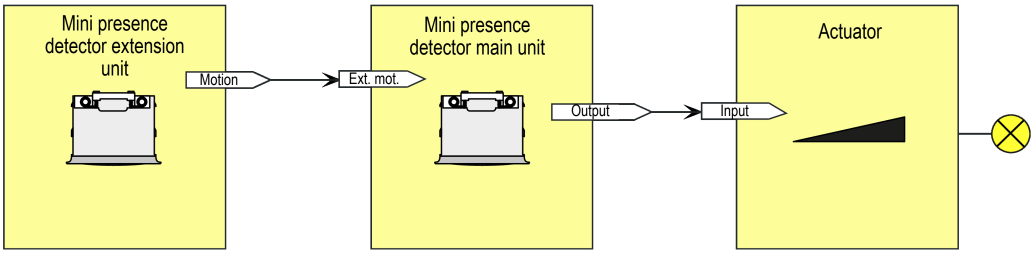


Figure 30: Main and extension unit application example with brightness evaluation in the main unit

The system is configured so that the brightness in the room is only detected at the location of the main unit and compared with the brightness threshold set there. The brightness conditions on the extensions are irrelevant for the control of the lighting conditions. The external motion signal is subject to the brightness evaluation of the main unit. If it is bright enough on the main unit, motion telegrams of the extensions are discarded.

Main and extension unit arrangement for lighting control with brightness evaluation in the main unit and all extension units

Application example:
Presence detector main unit with one or more presence detector extension units in a staircase or large storage room with various daylight conditions. The devices are mounted on different floors or in different room areas and detect the daylight condition independently of each another.

Main unit configuration:
Functionality = brightness-dependent

Extension unit configuration:
Functionality = brightness-dependent

The system is configured so that motion as well as brightness are detected and evaluated at every location (main unit and extensions). The distributed brightness measurement and brightness evaluation is used for controlling the lighting conditions. The motion detectors of the extension units are not explicitly subjected only to the brightness evaluation of the main unit. Thus, each motion telegram results in the triggering

of a telegram at the beginning of the detection or in the retriggering of the run-on time.
In this application example, the brightness evaluation must be controlled between the main unit and extensions. When a movement is detected (regardless of the location), the lighting is switched on brightness dependently. Until the run-on time has elapsed, the brightness evaluation in the main unit and at **all** extension units must be brightness-independent. This ensures that longer-lasting motion processes can still be detected further on by all extensions whereby the retriggering of the run-on time can take place in the main unit. To do this, the main unit must set the mode of operation in the extension units to "Brightness-independent" at the start of a detection process and reset it to "Brightness-dependent" after the run-on time has elapsed.
The control of the functionality in the extension units must take place differently depending on the configured output function. This is shown by the following application examples...

Example of Output Function "Switching" (KNX Master Slave Solution 1)

In this example, the brightness evaluation of the extension units is deactivated and activated by the switching output telegram of the main unit. The "Brightness-independent operation - Activate/Deactivate" objects of the extension units can be linked to the same group address as the "Output x - Switching" object of the main unit.

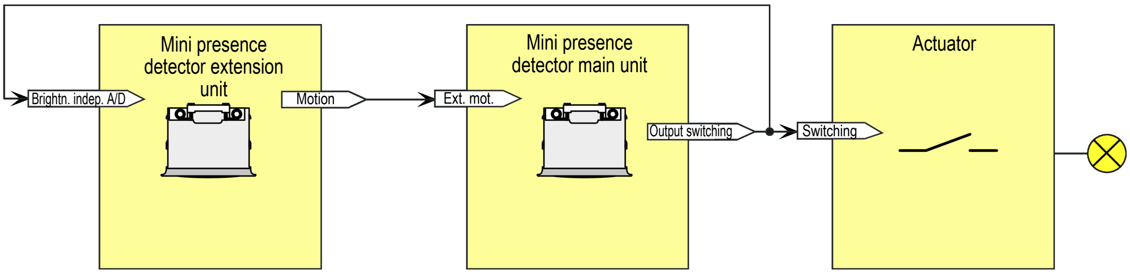


Figure 31: Application example with brightness evaluation in the main unit and extensions for the data format "Switching"

Case A - Motion is detected by the main unit:
Beginning of the detection: After a motion is detected by the main unit, it transmits an ON telegram to the switch actuator if the brightness threshold is fallen below so that the lighting is switched on. All extensions receive this ON telegram on their input "Brightness-independent operation - Activate/Deactivate" whereby the extensions switch over to the brightness-independent motion detection and are thus able to detect artificial light if it is now switched on in their own detection field.
End of the detection: After the run-on time has elapsed in the main unit, it transmits an OFF telegram to the switch actuator so that the lighting is switched off. This OFF telegram is received by all extension units at the "Brightness-dependent operation - Activate/Deactivate" input, resulting in them switching back to brightness-dependent motion detection.

Case B - Motion is detected by an extension unit:
Beginning of detection: After a motion is detected by an extension unit, it transmits motion telegrams cyclically to the main unit via the object "Motion" if the brightness threshold is fallen below. The main unit evaluates the external motion and transmits

an ON telegram to the switch actuator so that the lighting is switched on. All extension units receive this ON telegram on their input "Brightness-independent operation - Activate/Deactivate" whereby all extension units switch over to the brightness-independent motion detection and are thus able to detect artificial light if it is now switched on in their own detection field.
End of the detection: If no motion is detected anymore by an extension unit within its own detection field, the device concerned no longer transmits any motion telegrams to the main unit. As soon as motion is no longer detected by any extension unit, there are no longer any motion telegrams. The main unit identifies the absence of external motion telegrams and starts the run-on time if the main unit no longer detects any movement. After the run-on time has elapsed, the main unit transmits an OFF telegram to the switch actuator so that the lighting is switched off. This OFF telegram is received by all extension units at your "Brightness-dependent operation - Activate/ Deactivate" input, resulting in them switching back to brightness-dependent motion detection.

Example of output functions "Switching", "Switching with forced position", "Dimming value transmitter", "Scene extension unit" and "Brightness value transmitter" (general solution for the lighting control)

In this example, the brightness evaluation of the extension units is deactivated and activated by the main unit by means of the "Brightness-independent operation - Activate/Deactivate" output object. This data format-independent universal solution is not only restricted to the output function Switching. A separate group address must be used for the brightness evaluation control.

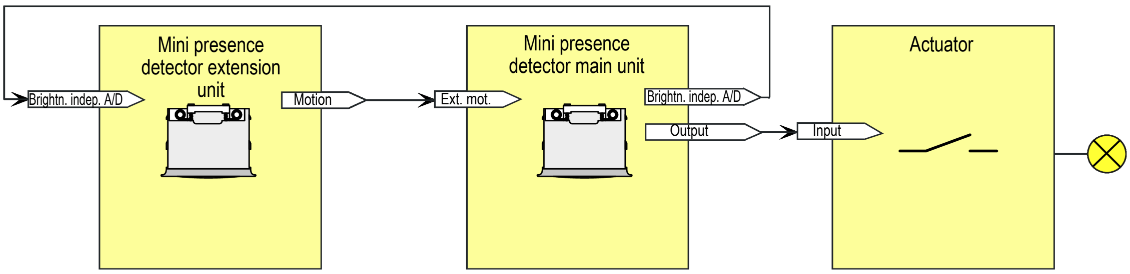


Figure 32: Application example with brightness control in the main unit and extensions Universal solution for all data formats

Case A - Motion is detected by the main unit:
Start of detection: After motion is detected by the main unit, it transmits an ON telegram by means of the output object to the switch actuator if the brightness threshold is fallen below so that the lighting is switched on. Furthermore, the main unit transmits an ON telegram via the object "Brightness-independent operation - Activate/Deactivate" to all extension units, whereby they switch over to the brightness-independent motion detection and are thus able to detect artificial light if it is now switched on in their own detection field.
End of the detection: After the run-on time has elapsed in the main unit, it transmits an OFF telegram via the output object to the switch actuator so that the lighting is

switched off. It also sends an OFF telegram by means of the "Brightness-independent operation - Activate/Deactivate" object to all extension units, resulting in them switching back to brightness-dependent motion detection.

Case B - Motion is detected by an extension unit:
Beginning of detection: After a motion is detected by an extension unit, it transmits motion telegrams cyclically to the main unit via the object "Motion" if the brightness threshold is fallen below. The main unit evaluates the external motion and transmits an ON telegram to the switch actuator via the output object so that the lighting is switched on. Furthermore, the main unit transmits an ON telegram via the object "Brightness-independent operation - Activate/Deactivate" to all extension units, whereby they switch over to the brightness-independent motion detection and are thus able to detect artificial light if it is now switched on in their own detection field.
End of the detection: If no motion is detected anymore by an extension unit within its own detection field, the device concerned no longer transmits any motion telegrams to the main unit. As soon as motion is no longer detected by any extension unit, there are no longer any motion telegrams. The main unit detects the absence of external motion telegrams and starts the run-on time if the main unit does not detect any motion either. After the run-on time has elapsed, the main unit transmits an OFF telegram to the switch actuator via the output object so that the lighting is switched off. The main unit also sends an OFF telegram by means of the "Brightness-independent operation - Activate/Deactivate" object to all extension units, resulting in them switching back to brightness-dependent motion detection.

Example of Output Function "Staircase function" (KNX Master Slave Solution 2)

In the staircase function, the staircase time of the lighting is configured in the KNX actuator. In this case, the main unit transmits ON telegrams cyclically to the actuator to switch on the lighting for the duration of the motion and the configured run-on time. If no motion is detected anymore, the main unit transmits no more telegrams to the actuator. In the absence of the ON telegrams, the staircase time in the actuator is no longer retriggered. After the staircase time has elapsed, the actuator switches off the lighting again.
Even with the output function "Staircase function", the brightness threshold must be controlled between main and extension unit(s). The brightness evaluation is deactivated and activated by means of the "Brightness-independent operation - Activate/Deactivate" object. This object is present at the main unit as an input and as an output. The status of the actuator informs the main unit by means of the input object about when the lighting is switched on or off. This information is then transmitted to all extension units by means of the output object so that all presence detectors work brightness-independently when the lighting is switched on and brightness-dependently when the lighting is switched off.

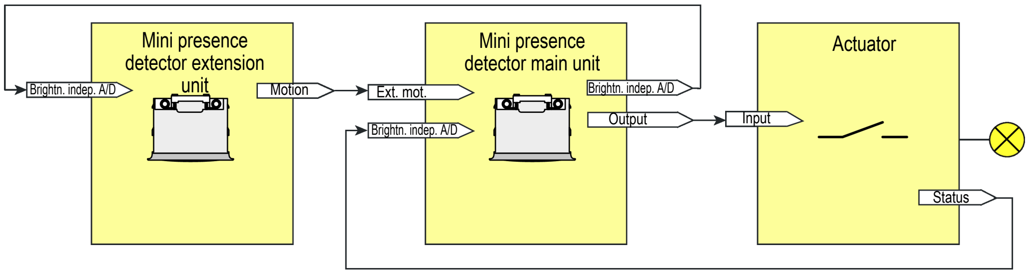


Figure 33: Application example with brightness evaluation in the main unit and extensions for output function "Staircase function"

Motion is detected by the main unit or the extension unit:
Beginning of detection: After a motion is detected by the main unit or extension unit, the main unit transmits ON telegrams cyclically (cycle time = parameter "Time for cyclical transmission") to the switch actuator via the output object if the brightness threshold is fallen below so that the lighting is switched on. The actuator sends its status to the main unit, which switches to brightness-independent motion detection and forwards this information to all extension units by means of the "Brightness-independent operation - Activate/Deactivate" object.
End of detection: At the end of the run-on time after the last detected movement, the main unit no longer sends any ON telegram to the switch actuator, so that the lighting is switched off after the staircase time has elapsed. The main unit switches back to brightness-dependent operation due to the changed status of the actuator and also forwards this information to all extension units.

Main and extension unit arrangement for controlling lighting-independent systems without brightness evaluation

Application example:
In the lighting-independent output functions, the motion detection in the main units and extensions is normally brightness-independent. Presence detector main unit with one or more presence detector extensions in an office with various daylight conditions

Configuration of main unit and extension unit:
Functionality = brightness-independent

The system is configured so that motion is detected and evaluated at every location (main unit and extensions). The distributed motion evaluation is used for controlling lighting-independent systems (e.g. room temperature control -> operating mode switchover, setpoint presetting, presence signal). The motion detectors of the extension units are subjected explicitly to the evaluation of the main unit. Thus, each motion telegram results in the triggering of a telegram at the beginning of the detection or in the retriggering of the run-on time.

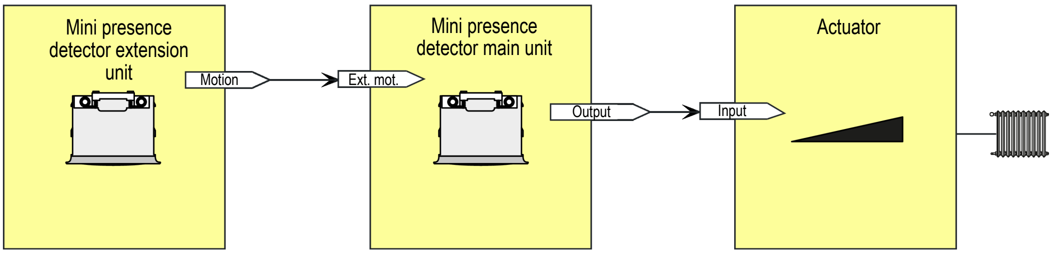


Figure 34: Application example without brightness evaluation in the main unit and extensions

Case A - Motion is detected by the main unit:
Beginning of the detection: After the main unit detects a motion, it transmits the telegram to the controller or actuator at the beginning of the detection and triggers actions accordingly (e.g. comfort mode, raised setpoint).
End of detection: After the run-on time has elapsed in the main unit, it transmits the telegram to the controller or actuator at the end of the detection and retriggers actions (e.g. standby mode, lowered setpoint).

Case B - Motion is detected by an extension unit:
Beginning of the detection: After a motion is detected by an extension unit, it transmits motion telegrams cyclically to the main unit via the object "Motion". It detects the external motion and transmits the corresponding telegram to the controller or actuator and triggers actions accordingly (e.g. comfort mode, raised setpoint).
End of the detection: If no motion is detected anymore by an extension within its own detection field, the extension unit no longer transmits any motion telegrams to the main unit. As soon as each of the extensions no longer detect motion, motion telegrams are completely absent. The main unit identifies the absence of external motion telegrams and starts the run-on time. After the run-on time has elapsed, the main unit sends the corresponding telegram to the controller or actuator by means of the output object and triggers actions (e.g. standby mode, lowered setpoint).

13 Light control function block

13.1 General light control

A complete and multi-functional light control is implemented in the device. The light control allows the brightness level of an assigned lighting device to be kept constantly at a specified brightness setpoint even under changing external light influences (daylight and/or artificial light). The light control is normally activated and deactivated by presence information, but can also be operated manually. The presence information can be transmitted to the lighting control by its own motion evaluation system or by another bus device (e.g. another presence detector or guard).

The light control function block can work as a signal device or in combination with other presence detectors to implement light control over a large area. In this case, the light control is implemented only via the main unit, and the extension units forward only presence information to the main unit.

The light control makes it possible to control up to three separate dimming channels and allows extensive adjustment of the brightness setpoint even during ongoing operation of the device (setpoint shift, external presetting, teach-in function). The start-up, main and step-down control phase can be adjusted individually to meet the control requirement.

The lighting control assumes that a dimmable lighting system is activated (KNX actuator comprising e.g. dimmer actuators, DALI-Gateways, DALI actuators, 1-10 V control units).

Control operation

The entire control operation of the light control is always divided into four states/ phases executed in succession, ...

– Phase 1: state OFF (basic state)
  In the OFF state, no presence signal is present (presence = 0, no motion detected) and the controlled artificial light is switched off.
– Phase 2: start-up control phase
  As soon as a presence signal (presence = 1, motion detected) is received in the OFF state, the controller changes to the start-up control state. The presence information can come from the in-house motion evaluation system or from an external KNX component via the bus. This is done either by means of another presence detector or monitor by means of the "Motion status - External" input object or with a push-button sensor that simulates motion detection by means of the "Manual operation - Simple" input object.
  In the start-up control state, the currently measured brightness is first compared with the preset brightness setpoint, and depending on this, the following steps are then taken:
  Brightness value < brightness setpoint: The configured behaviour for switching on the lighting is executed. The system then switches to the main control

phase after a configured waiting time.
Brightness value >= Brightness setpoint: The system immediately switches to the main control phase without switching on the lighting.

– Phase 3: main control phase
In the main control phase, the controller tries to compensate light fluctuations (due to daylight and/or extraneous light) by dimming the connected lighting up and down so that the measured brightness value is within the hysteresis range of the brightness setpoint as constantly as possible. In the course of this, it is also possible to switch off the lighting completely within the control phase if there is sufficient basic brightness. The lighting can be dimmed up and down with relative (4-bit) or absolute (1-byte) dimming commands (dimming values) depending on configuration. Once a presence signal is no longer present (presence = 0), the controller changes to the step-down control state.
– Phase 4: step-down control phase
In the step-down control phase, the controller can optionally switch off the lighting directly or first dim it down to minimum brightness and then switch if off after a configurable additional waiting time. Once the lighting has been switched off or the waiting time has elapsed, the controller changes to the OFF state.

The process of a possible control operation is shown in the figure below.

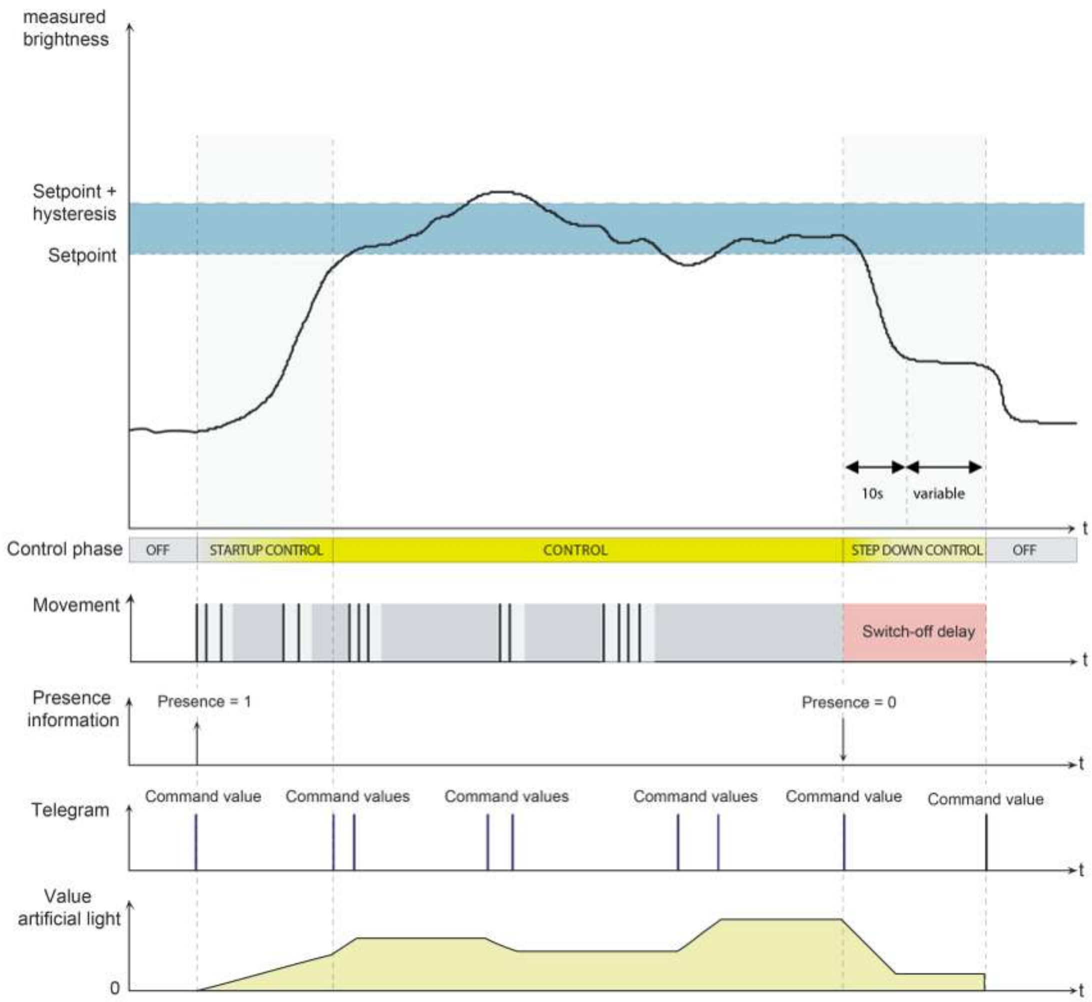


Figure 35: Example of a control process with all control phases

The exact behaviour of the individual control phases can be adapted by means of appropriate configuration (brightness evaluation and control behaviour).

Control mode

The control mode determines how motion detection works and defines whether the start of motion detection automatically results in the lighting being switched on or whether the lighting needs to be switched on manually beforehand. The control mode can be configured to "Auto ON, auto OFF" or "Manual ON, auto OFF". This makes it possible to adjust the motion detection to many applications in private and public areas (e.g. service lighting, control of ventilation systems).
With active day/night switchover, "At day" and "At night" control mode can be selected separately.

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...

- "Manual operation - Simple":
  This object can be used to activate the light control brightness and motion independently with an external push-button sensor. 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 "real" PIR motion signals and the processing of the delay times then takes place according to the normal pattern and the corresponding telegrams are sent.
- "Manual operation - Simple":
  This object can be used to activate the lighting independently of brightness and motion with an external push-button sensor. ON or OFF telegrams can be used for this purpose, depending on the setting. Automatic mode and light control are stopped until permanent operation is deactivated again by another telegram by means of this object.
- "Disabling function - Activate/Deactivate":
  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 "Manual operation - Simple" 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 "Manual operation - Simple". Afterwards, a manual ON telegram is required again to evaluate a new movement.

13.1.1 Light control parameter - General

Function blocks (FB) -> Light control FB - General

Designation	Free text
This parameter gives the "FB" a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Function properties

Application	Light control
The light control application is specified permanently here.	

Motion detection	**Internal** External via object
At this point it is defined whether the internal sensors activate the light control or whether it is done by another sensor via the bus "externally via object" or via the bus.	

Use as	**Single device** Main unit
The configuration as a main unit allows the detection field of the presence detector to be extended. Several devices can be configured as extension units in one room, which inform the main unit of a movement by means of the 1-bit input object "Motion status - External". The "Motion" output object sends a 1-bit telegram to the bus when the internal sensor detects motion. A single device always works autonomously. The "Motion" and "Motion status - External" objects are hidden.	

Control mode	**Auto ON, auto OFF** Manual ON, auto OFF
This parameter is used to define the control mode used by the FB light control and how it reacts to motion detection. Auto ON, auto OFF: In this control mode, the outputs of the function block are automatically actuated by means of motion detection. Manual actuation of the device is not necessary. Manual ON, auto OFF: In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" object before motion is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of the motion is recognised automatically or by an OFF telegram to the "Manual operation - Simple" object. Afterwards, a manual ON telegram is required again to evaluate a new movement.	

(Control mode) At day	**Auto ON, auto OFF** Manual ON, auto OFF
This parameter is used to define the control mode used by the FB light control and how it reacts to motion detection. Auto ON, auto OFF: In this control mode, the outputs of the function block are automatically actuated by means of motion detection. Manual actuation of the device is not necessary. Manual ON, auto OFF: In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" object before motion is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of the motion is recognised automatically or by an OFF telegram to the "Manual operation - Simple" object. Afterwards, a manual ON telegram is required again to evaluate a new movement. This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

(Control mode) At night	**Auto ON, auto OFF** Manual ON, auto OFF
This parameter is used to define the control mode used by the FB light control and how it reacts to motion detection. Auto ON, auto OFF: In this control mode, the outputs of the function block are automatically actuated by means of motion detection. Manual actuation of the device is not necessary. Manual ON, auto OFF: In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" object before motion is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of the motion is recognised automatically or by an OFF telegram to the "Manual operation - Simple" object. Afterwards, a manual ON telegram is required again to evaluate a new movement. This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

Reset behaviour

Changeable parameters can be reset via object	**Inactive** Active
The changeable parameters of the FB light control 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. 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.	

After bus voltage return	No reaction Disabling function active State when starting a detection **State as before bus voltage failure**

The behaviour of the light control after the bus voltage returns can be defined here.

No reaction: In this setting, the light control is in normal state after the bus voltage returns. It can be activated and operated regularly.

Disabling function active; In this setting, the light control is set to the disabling state after the bus voltage returns. The configured behaviour is executed at the beginning of the disabling function.

State when beginning a detection: In this setting, the state of active motion detection is switched to after the bus voltage returns. The processing of the motion detection is then subject only to the configured brightness threshold evaluation. In brightness-independent detection mode, the configured telegrams are transmitted at the beginning of the detection and the run-on time is started. In brightness-dependent detection mode, the configured telegrams are transmitted at the beginning of the detection, the run-on time is started and brightness-independent motion detection is switched to only if the brightness values are below the brightness threshold. If no further motion is then detected, the device processes the end of the detection after the run-on time has elapsed.

State as before bus voltage failure: In this setting, the light control state is as before the bus voltage failure. If the disabling function should be activated, the configured behaviour is executed at the beginning of the disabling function.

After ETS programming operation	**no function** Disabling function active State when starting a detection

The behaviour of the light control after ETS programming is definable here.

No reaction: In this setting, the light control is in normal state after ETS programming. It can be activated and operated regularly.

Disabling function active: In this setting, the light control is set to the disabling state after ETS programming. The configured behaviour is executed at the beginning of the disabling function.

State when beginning a detection: In this setting, the state of active motion detection is switched to after the bus voltage returns. The processing of the motion detection is then subject only to the configured brightness threshold evaluation. In brightness-independent detection mode, the configured telegrams are transmitted at the beginning of the detection and the run-on time is started. In brightness-dependent detection mode, the configured telegrams are transmitted at the beginning of the detection, the run-on time is started and brightness-independent motion detection is switched to only if the brightness values are below the brightness threshold. If no further motion is then detected, the device processes the end of the detection after the run-on time has elapsed.

13.1.2 "Enabled functions" parameters

Function block (light control FB) - General -> Enabled functions

Manual operation	**Inactive** Active
The FB can be operated also manually. There is simple manual operation and permanent manual operation. This parameter enables manual operation. The "Light control FB - Manual operation" parameter page and other objects appear.	

Disabling function	**Inactive** Active
A disabling function can be configured for the FB. This parameter enables the disabling function. The "Light control FB - Disabling function" parameter page and other objects appear.	

Scenes	**Inactive** Active
Scenes can be configured for the FB. This parameter enables the scenes. The "Light control FB - Scenes" parameter page and other objects appear.	

Activity monitoring function	**Inactive** Active
This parameter enables the activity monitoring function for the FB. The "Activity monitoring function" parameter page and the "Activity monitoring - Time since last motion" object appear.	

13.1.3 Light control objects - "General and enabled functions"

Function	Name	Type	DPT	Flags
Motion status - External	FB light control - Input	1-bit	1.010	C, -, W, -, U
1-bit input object for transmitting the presence information to the light control ("1" = presence exists, "0" = presence does not exist). The light control is activated (start-up control phase) and deactivated (step-down control phase) by means of the presence information. This object is visible only if "Motion detection" has been configured as "external via object" on the "Light control FB - General" parameter page.				

Function	Name	Type	DPT	Flags
Motion status - External	FB light control - Input	1-bit	1.010	C, -, W, -, U
1-bit input object used to transmit the motion information of an extension unit ("1" = motion present, "0" = motion not present). The light control is activated (start-up control phase) and deactivated (step-down control phase) by means of the motion information. This object is visible only if "Use as" has been configured as "main unit" on the "Light control FB - General" parameter page.				

Function	Name	Type	DPT	Flags
Motion - Status	Light control FB - Output	1-bit	1.010	C, -, -, T, -
1-bit output object used to provide the motion information of the internal sensor ("1" = motion present, "0" = motion not present). This object is visible only if "Use as" has been configured as "main unit" on the "Light control FB - General" parameter page.				

Function	Name	Type	DPT	Flags
Changeable parameters - Reset	FB light control - Input	1-bit	1.017	C, -, W, -, U
1-bit object used to reset all light control parameters that have been 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.				

13.2 Motion evaluation

The device detects motion extremely sensitively by means of 3 digital PIR sectors with a total detection field of 360°, in which each PIR sector covers a subarea of 120°. The sensitivity of the motion detection, which is, among other things, a measure for the range of the PIR evaluation, can be configured here separately for the PIR sectors in the ETS.

Sensitivity of motion detection

The sensitivity of the motion detection, which is a measure for the range of the PIR evaluation, can be configured uniformly for all PIR sensors or separately for PIR sectors A, B and C in the ETS. In the ETS, the setting for motion evaluation can be made uniformly for all function blocks on the Sensors - Motion parameter page or individually for each function block on the Motion evaluation parameter page of the respective function block.
In addition, the sensitivity for the initial detection and presence phases can be set individually to adapt it ideally to the location and purpose. If day/night switchover is active, a different sensitivity value can be configured for the initial detection phase for day and night. The sensitivity for the presence phase is the same at day and night.

13.2.1 Motion evaluation parameter

Function blocks (FB) -> Light control FB - General -> Motion evaluation

(Sensor assignment) PIR sensor… (A, B, C)	**Active** Inactive
The device detects motion digitally by means of 3 PIR sensors with a total detection field of 360°. Each sensor therefore covers a detection field of 120°. These three parameters are used to assign one or more PIR sensors to the light control function block. A PIR sensor is assigned to the function block if it is set to active. The position of the PIR sensors in the room must be taken into account for the assignment. The motion signals of all assigned PIR sectors of a function block are logical OR linked and combined to form one motion signal.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic for the sensor assignment.	

Sensitivity

Source of sensitivity setting	**Like general sensor setting** Individual setting
This parameter is used to specify whether the general sensor setting or an individual setting is to be used. "Like general sensor setting" The sensor setting on the "Sensors - Motion" parameter page is used. "Individual setting" An individual sensitivity setting can be made for the assigned PIR sensors for the light control function block. The settings on the "Sensors - Motion" parameter page have no effect on this function block. Additional parameters appear.	

Setting	**The same for all PIR sensors** For each PIR sensor individually
The parameter is used to define whether the sensitivity is the same for all PIR sensors or whether it is separate for each PIR sensor. "The same for all PIR sensors" The same sensitivity setting is used for all PIR sensors. The sensitivity can be set separately for each PIR sensor. This may limit the influence of sources of interference such as heaters in individual sectors. Additional parameters appear.	

Differentiated according to initial detection and presence phase	**Inactive** Active
The parameter is used to set whether the sensitivity is the same for the initial detection and the presence phase, or whether a different sensitivity is selected during the initial detection than during the presence phase.	

PIR sensor A – B – C	1 … 8 … 10
This parameter is used to set the sensitivity of the PIR sensors. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the "same value for all PIR sensors" and the parameter "Differentiated according to initial detection and presence phase" is set to inactive.	

(PIR sensor A – B – C) At day	1 … 8 … 10
This parameter is used to set the sensitivity of the PIR sensors for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the "same value for all PIR sensors" and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. In addition, day/night switchover must be activated on the "General" parameter page.	

(PIR sensor A – B – C) At night	1 … 6 … 10
This parameter is used to set the sensitivity of the PIR sensors for night mode. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the "same value for all PIR sensors" and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. In addition, day/night switchover must be activated on the "General" parameter page.	

PIR sensor A - B - C: initial detection phase	1 … 8 … 10
This parameter is used to set the sensitivity of the PIR sensors during the initial detection phase. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the "same value for all PIR sensors" and the parameter "Differentiated according to initial detection and presence phase" is set to active.	

(PIR sensor A - B - C: initial detection phase) At day	1 … 8 … 10
This parameter is used to set the sensitivity of the PIR sensors during the initial detection phase in day mode. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the "same value for all PIR sensors" and the parameter "Differentiated according to initial detection and presence phase" is set to active. In addition, day/night switchover must be activated on the "General" parameter page.	

(PIR sensor A - B - C: initial detection phase) At night	1 … 6 … 10
This parameter is used to set the sensitivity of the PIR sensors during the initial detection phase in day mode. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the "same value for all PIR sensors" and the parameter "Differentiated according to initial detection and presence phase" is set to active. In addition, day/night switchover must be activated on the "General" parameter page.	

PIR sensor A - B - C: presence phase	1 … 10 (very high)
This parameter is used to set the sensitivity of the PIR sensors during the presence phase. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active.	

(PIR sensor A – B – C: presence phase) At day and at night	1 … 10 (very high)
This parameter is used to set the sensitivity of the PIR sensors during the presence phase. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. In addition, day/night switchover must be activated on the "General" parameter page.	

PIR sensor A, PIR-sensor B PIR sensor C	1 … 8 … 10

This parameter is used to set the sensitivity of the PIR sensors separately. The setting is made in 10 levels from 1 (very low) to 10 (very high).

This parameter is visible only if the "Setting" parameter is set to "individual for each PIR sensor" and the parameter "Differentiated according to initial detection and presence phase" is set to "inactive".

(PIR sensor A, PIR-sensor B PIR sensor C) At day	1 … 8 … 10

This parameter is used to set the sensitivity of the PIR sensors separately in day mode. The setting is made in 10 levels from 1 (very low) to 10 (very high).

This parameter is visible only if the "Setting" parameter is set to "individual for each PIR sensor" and the parameter "Differentiated according to initial detection and presence phase" is set to "inactive". In addition, day/night switchover must be activated on the "General" parameter page.

(PIR sensor A, PIR-sensor B PIR sensor C) At night	1 … 6 … 10

This parameter is used to set the sensitivity of the PIR sensors separately in night mode. The setting is made in 10 levels from 1 (very low) to 10 (very high).

This parameter is visible only if the "Setting" parameter is set to "individual for each PIR sensor" and the parameter "Differentiated according to initial detection and presence phase" is set to "inactive". In addition, day/night switchover must be activated on the "General" parameter page.

PIR sensor A, PIR-sensor B PIR sensor C Initial detection phase	1 … 8 … 10

These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the initial detection phase. The setting is made individually for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high).

This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active.

(PIR sensor A, PIR-sensor B PIR sensor C Initial detection phase) At day	1 … 8 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the initial detection phase in day mode. The setting is made individually for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. In addition, day/night switchover must be activated on the "General" parameter page.	

(PIR sensor A, PIR-sensor B PIR sensor C Initial detection phase) At night	1 … 6 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the initial detection phase in night mode. The setting is made individually for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. In addition, day/night switchover must be activated on the "General" parameter page.	

PIR sensor A, PIR-sensor B PIR sensor C Presence phase	1 … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the presence phase. The setting is made individually for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active.	

(PIR sensor A, PIR-sensor B PIR sensor C Presence phase) At day and at night	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the presence phase. The setting is made individually for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. In addition, day/night switchover must be activated on the "General" parameter page.	

Sensitivity can be set via object	Active **Inactive**
Activating this parameter makes up to 12 objects visible, depending on the configuration of the sensitivity evaluation. These are 1-byte objects "PIR sensor ... - Sensitivity" and "PIR sensor ... - Sensitivity - Status", which can be used to specify a new sensitivity or read out the status of the sensitivity. The 1-byte objects are a data type that does not correspond to any KNX standard data type. The 1-byte objects have the following structure: Bit 0 to bit 3: sensitivity (default setting or status) Bit 4: C flag (sensitivity -> valid = 1, invalid = 0 / If "invalid", the status configured in the ETS is activated). Bit 5 to bit 7: reserved (unused) The affected PIR sensor can be deactivated by setting the sensitivity level to "0". 0 = deactivate sensor 1 = sensor sensitivity 1 2 = sensor sensitivity 2 3 = sensor sensitivity 3 4 = sensor sensitivity 4 5 = sensor sensitivity 5 6 = sensor sensitivity 6 7 = sensor sensitivity 7 8 = sensor sensitivity 8 9 = sensor sensitivity 9 10 = sensor sensitivity 10 This parameter is visible only if the "Source of sensitivity setting" parameter is set to "Individual setting".	

<table>
<tr><td>Overwrite values in device during ETS programming</td><td>Active
Inactive</td></tr>
<tr><td colspan="2">This parameter can be used to specify whether the sensitivity values of the light control FB are overwritten during an ETS programming operation.
To set the values to the ETS specifications during an ETS programming operation, this parameter must be set to active.
This parameter is visible only if the "Sensitivity can be set via object" parameter is activated.</td></tr>
</table>

<table>
<tr><td>Show info graphic</td><td>Inactive
Active</td></tr>
<tr><td colspan="2">This parameter can be used to display the infographic used to differentiate the motion detection process according to the initial detection and presence phase.</td></tr>
</table>

13.2.2 Motion evaluation objects

Sensitivity evaluation

Function	Name	Type	DPT	Flags
PIR sensor A – B – C - Sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of the PIR sensors to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Sensitivity can be set via object" parameter is activated and the "Setting" parameter is set to "Same for all PIR sensors" and the "Differentiated according to first detection and presence phase" parameter is set to inactive.				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the active sensitivity; of the PIR sensors on the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to the same for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to inactive.				

Function	Name	Type	DPT	Flags
PIR sensor A, B, C presence sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A, B, C during an ongoing detection; on the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to individual for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to active.				

Function	Name	Type	DPT	Flags
PIR sensor A, B, C – Presence sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object for individual specification of the sensitivity for the PIR sensors A - B - C during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to individual for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to active.				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of the PIR sensors A, B, C for the initial detection on the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A for the initial detection by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42)..				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B for initial detection to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B for initial detection by a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity - Status	Light control FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor C for initial detection to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity	FB light control - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C for initial detection by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

13.3 Brightness evaluation

To determine the workplace brightness or ambient brightness, the device possesses a brightness sensor, located invisibly behind the lens. The brightness value determined by this internal sensor can be used for light control.

Optionally, an external 2-byte brightness value in accordance with DPT 9.004 can also be made available via the bus. This makes it possible to carry out the brightness evaluation independently of the installation location of the device (e.g. provision of an external brightness value by a more favourably installed KNX sensor). In special cases, it is possible to link the determined brightness value of the internal sensor to an external brightness value. In this way, light can be measured for the light control at two locations. At the same time, both sensor values are weighted to determine the effective brightness value. This active brightness value can also be sent to the bus.

Control dynamics

The light control needs certain parameters that define the brightness range in the room. These parameters are important for calculating certain control characteristics from which, among other things, the control dynamic and thus the subjective perceived comfort of the feedback control are derived. The required control parameters include, firstly, the information regarding which maximum illuminance can be set by the lighting in the room (artificial light). If there is a large difference between the brightness in the room and the brightness setpoint, this maximum value defines larger dimming value changes or increments and thus increases the control dynamics (rapid adjustment to the brightness setpoint with large dimming value commands). The maximum illuminance is also used to calculate the dimming value. This control parameter must be configured to the maximum brightness value adjustable by the lighting (P-component of the light control). The maximum value of the lighting is typically a factor of 1.2 higher than the brightness setpoint configured in the ETS. Secondly, the darkness value of the room lighting (lower brightness threshold) is decisive for the light control. If the lower brightness threshold is fallen below, the time between the dimming value telegrams is shortened thereby resulting in a higher control dynamic here as well.

The "Control dynamics" parameter defines whether the light control works with standard control parameters (automatic) predefined and generally adapted to many applications, or whether the control parameters can be customized...

- "Automatic" setting:
  The light control works with a standard configuration. The control dynamic is thus adapted effectively to very many applications. The maximum illuminance is then not configurable in the ETS. This is calculated automatically depending on the brightness setpoint configured in the ETS (factor x 1.2) and entered in the light control. When dimensioning the lighting system on-site, it must be ensured that the installed lighting can always supply brightness levels that correspond to the value "configured brightness setpoint x 1.2".
  The lower brightness threshold is preconfigured to 0 Lux in this setting (no special control dynamic in the lower brightness range).

– Setting "User-defined":
  With user-defined control dynamics, the maximum illuminance (10 ... 2,000 lux) and the lower brightness threshold (0...2,000 lux) can be configured in the ETS. In this way, it is possible to customize the control parameters to special applications.
  When configuring the control parameters, the following dependency should be noted: Lower brightness threshold < Brightness setpoint < Maximum illuminance.

The possible adjustment range of the "Brightness setpoint" parameter depends on the configuration of the control dynamic in the ETS. With automatic control dynamics, the brightness setpoint can be configured in the range from 20 lux to 1,000 lux (from 50 lux in 50 lux increments). As a result, virtually all standard applications are covered. In user-defined control dynamic, the brightness setpoint in the ETS is continuously configurable within a range from 10 Lux to 2,000 Lux. This allows extended setpoint presettings for special applications.

Brightness setpoint

The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. In order to avoid permanent readjustment of the connected lighting device due to slight brightness and measurement value fluctuations, a setpoint range with a lower and upper limit value is defined for the setpoint presetting (see figure 36).

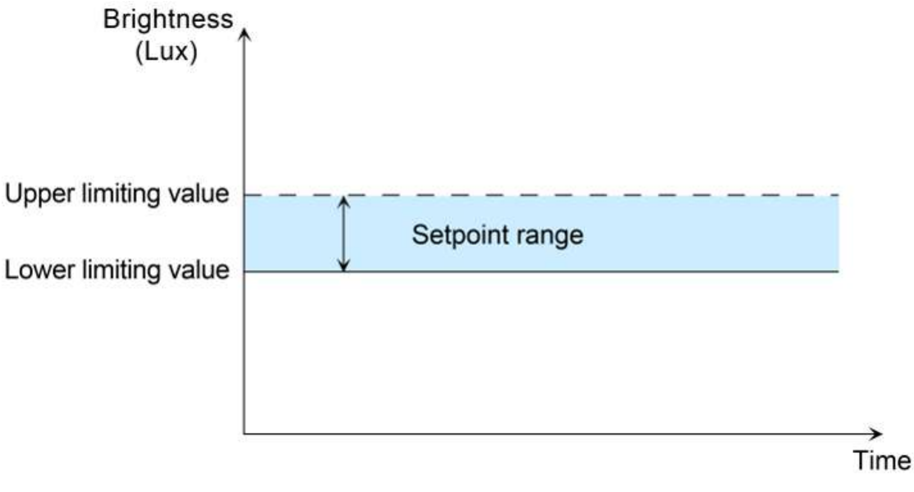


Figure 36: Setpoint range of the light control

During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint". The "Brightness setpoint" thus represents the minimum brightness to be maintained. The upper limit value is determined by specifying a relative hysteresis value (percentage value) in relation to the brightness setpoint.

Example:
Brightness setpoint = 400 lux, hysteresis value = 20%
-> Setpoint range: lower = 400 lux, upper limit value = 480 lux

In addition to the basic presetting of the brightness setpoint by the "Brightness setpoint" parameter in the ETS, this can also be changed by an external setpoint presetting or by the Teach-in function and thus adapted to user requirements. If the brightness setpoint is changed, the value of the upper limit of the setpoint range is also recalculated automatically by the device. The size of the setpoint range changes accordingly as a result of the relative hysteresis value (see figure 37).

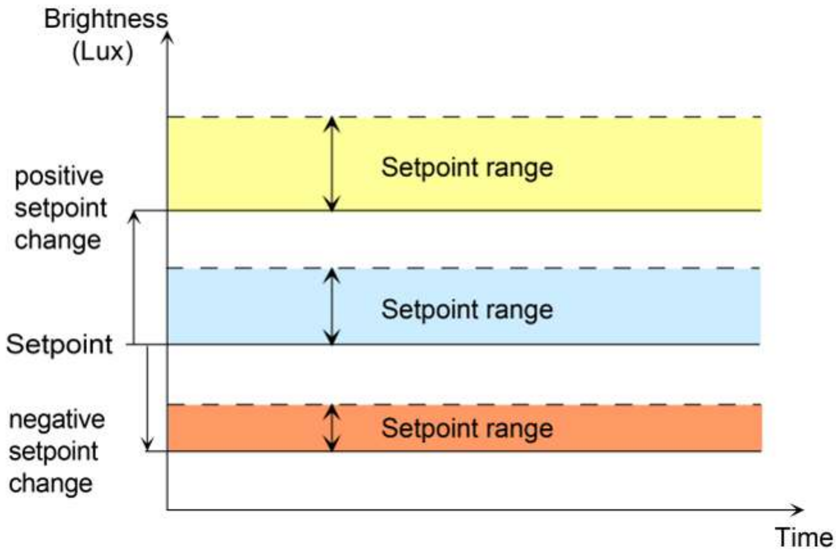


Figure 37: Shift of the setpoint range by means of setpoint adjustment

The " Brightness setpoint - Currently active - Status" object can be used to feed back the brightness setpoint currently active in the light control (lower limit of the setpoint range). This object contains the active brightness setpoint of the light control and can either transmit the value actively on change, or make it available passively. As an active signalling object, the current value is transmitted once automatically to the bus on each change of the brightness setpoint, after ETS programming or after the bus voltage returns (optionally delayed).

The possible adjustment range of the "Brightness setpoint" parameter depends on the configuration of the control dynamic in the ETS. With automatic control dynamics, the brightness setpoint can be configured in the range from 20 lux to 1,000 lux (from 50 lux in 50 lux increments). As a result, virtually all standard applications are covered. In user-defined control dynamic, the brightness setpoint in the ETS is continuously configurable within a range from 10 Lux to 2,000 Lux. This allows extended setpoint presettings for special applications.
With active day/night switchover, the brightness setpoint "By day" and "By night" can be selected separately.

External setpoint presetting

The currently set brightness setpoint can be reset in accordance with DPT 9.004 by transmitting a 2-byte brightness value to the "Brightness setpoint" object. This object can be configured if the "Brightness setpoint can be set via object" parameter is set to "Active" on the parameter page "Light control FB - General -> Brightness evaluation". The brightness setpoint received via the object remains unchanged until a new setpoint presetting (by means of external setpoint presetting, setpoint shift or teach-in function) or until a new reset command to the object "Brightness setpoint - Reset". Even a bus voltage failure will not reset the brightness setpoint received via the bus. An ETS programming operation resets the brightness setpoint automatically to the ETS presettings if this is provided for in the configuration.

The disabling function, the manual operation or current control state have no effect on the external setpoint presetting.

Setpoint shift

With the setpoint shift the brightness setpoint can be changed within the configured limits during the control phase by direct control of the assigned lighting. The setpoint shift is started by transmitting relative 4-bit dimming telegrams to the object "Brightness setpoint - Shift" during the control phase. At the same time, the light control controls the lighting via the relative dimming object of the first channel and thereby sets another brightness value. When the desired brightness is reached, a stop telegram must be received via the object "Brightness setpoint - Shift" which is then transmitted to lighting channel 1 and output to the lighting.
The new brightness set in this way is measured by the brightness sensor of the device after a delay time of approx. 2 seconds has elapsed and applied as a new brightness setpoint. If no stop telegram is received after the last dimming telegram of the setpoint shift, the device transmits a stop telegram automatically to the lighting via lighting channel 1 after 30 seconds. After a further 2 seconds, the determined brightness value is then saved as a new brightness setpoint.

In the ETS, limit values of the setpoint shift can be configured. If a configured limit value is exceeded during the setpoint shift, the setpoint shift stops automatically after detecting that the limit value has been exceeded. The device then transmits a stop telegram to the bus via lighting channel 1. The corresponding limit value is then applied as new brightness setpoint value instead of the set brightness value.

With the parameter "Duration of setpoint shift" it is possible to define in the ETS whether a setpoint shift should is to apply only temporarily for the control phase currently active, or alternatively, is to apply permanently. If permanently applied, the set brightness setpoint remains unchanged until a new setpoint presetting (by means of external setpoint presetting, setpoint shift or teach-in function) or until a new reset command via the object "Brightness setpoint - Reset". Even a bus voltage failure will not reset the brightness setpoint. An ETS programming operation resets the brightness setpoint automatically to the ETS presettings if this is provided for in the configuration.

Teach-in function

The teach-in function is another possibility for the external presetting of the brightness setpoint. The teach-in function is used to adopt the currently measured brightness value as the new brightness setpoint by sending a corresponding telegram to the 1-bit object "Brightness setpoint - Teach-in". This object can be configured if the "Teach-in function" parameter is set to "Active" on the parameter page "Light control - General -> Brightness evaluation".
The polarity of a teach-in telegram can be configured with the "Functionality" parameter. Depending on the configuration, it is possible to reset to the configured bright-

ness setpoint upon receiving the opposite object value (teach-in function inactive). The brightness setpoint previously learned will be lost in the process. However, if the function of the teach-in function is configured to "1"- and "0"-active, it is no longer possible to switch back to the configured brightness setpoint via this object during operation of the device! The new brightness setpoint set with the teach-in function is retained until a new setpoint is specified (by external setpoint specification, setpoint shift or a new teach-in process) or by a reset command to the "Brightness setpoint - Reset" object. Even a bus voltage failure will not reset the new brightness setpoint.
An ETS programming operation resets the brightness setpoint automatically to the ETS presettings if this is provided for in the configuration (see below).

The disabling function, manual operation or the current control state have no influence on the teach-in function.

Resetting the brightness setpoint

The currently set brightness setpoint can always be reset to the value configured in the ETS via the 1-bit object "Brightness setpoint - Reset". It makes no difference which function changed the brightness setpoint.

The disabling function, manual operation or the current control state have no influence on resetting the brightness setpoint.

Setpoint presetting with ETS programming

The "Overwrite brightness setpoint in device during ETS download" parameter determines whether an active brightness setpoint previously set by an external object specification or the teach-in function is automatically overwritten by the brightness setpoint 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. With "Inactive", the brightness setpoint specified last externally or by the teach-in function remains active even after an ETS programming operation.

If the parameter "Overwrite brightness setpoint in the device during ETS download" is set to "No" and no external presetting has been made yet - if provided for in the configuration - via the 2-byte object or by the teach-in function after the first ETS commissioning, the device always works with the ETS configured value. The ETS parameter only becomes invalid within the above configuration after an external presetting or after a teach-in function.

13.3.1 Channel configuration

The light control can control up to three lighting groups separately. Up to 3 output channels are available for this purpose. It is possible to adapt the dimming values for various installation locations of the lighting groups in the room by using several channels, for example. Thus, a lighting group near the window, for example, can be controlled by small dimming values as lighting in the centre of the room. These with lower dimming values, used in turn as lighting in a remote recess.
The number of channels can be defined via the parameter "Number of lighting channels to be controlled" on the parameter page "FB light control LC - General -> Bright-

ness evaluation". If several channels are used, the dimming value output of the control in the startup and main control phase only takes place with absolute 1-byte dimming values. The basic control (dimming value calculation) always applies to lighting channel 1. The dimming values of lighting channels 2 and 3 are calculated in relation to the dimming value of the first channel by means of the corresponding difference settings. Three methods are available to calculate the dimming values of lighting channels 2 and 3. The parameter "Differential behaviour of BK 2/3 to BK1" or "Differential behaviour of BK 2 to BK1" defines which method is used.

Method 1: Fixed difference with increasing dimming value

A fixed differential value for lighting channel 2 or lighting channels 2 and 3 to the dimming value of the first channel is selected by selecting this method. The difference remains constant over the entire dimming range. The difference calculation always starts from dimming value "1" of lighting channel 1. With dimming value "0" (OFF), the dimming values of lighting channels 2 and 3 are also set to "0".
To prevent lighting channels 2 and 3 from switching on and off too frequently with a negative difference within the limit range, an ON-OFF hysteresis can be configured in relation to the dimming values of lighting channel 1. The ON-OFF hysteresis should be smaller than the differential value to lighting channel 1.

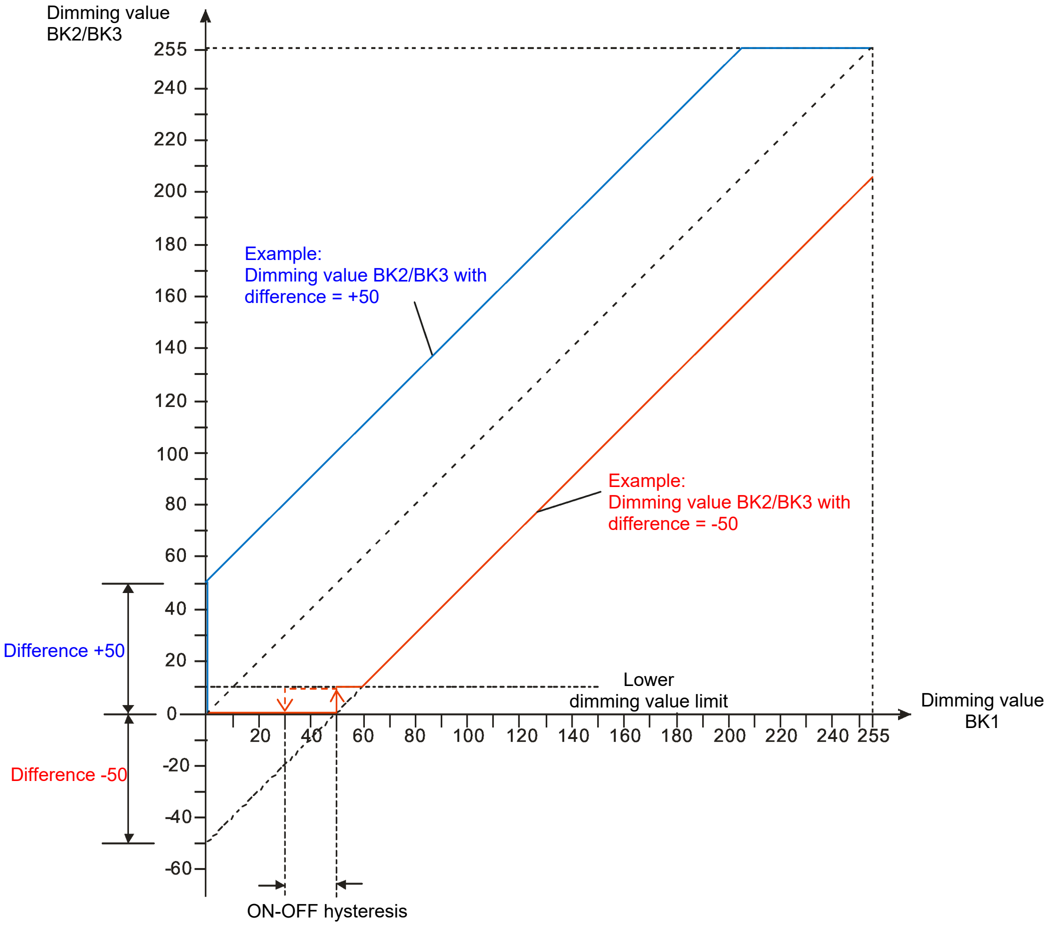


Figure 38: Dimming values for lighting channels 2 or 3 depending on the dimming value for lighting channel 1
Method 1: Fixed difference with increasing dimming value

Example:

Channel configuration: lighting channels 1 and 2
Differential behaviour: fixed difference with increasing dimming value
Difference between lighting channel 2 and lighting channel 1: -50
Lower dimming value limit: 10 (see main control phase)
ON-OFF hysteresis: 20

Dimming value for lighting channel 1: 128 (50%) -> Dimming value for lighting channel 2: 78 (30%)
Dimming value for lighting channel 1: 20 (8%) -> Dimming value for lighting channel 2: 0 (0%)

Method 2: Increasing difference with increasing dimming value

With this method, the differential value for lighting channel 2 or 3 is increased with increasing dimming values for lighting channel 1. This takes place until lighting channel 2 or 3 has reached the limit value 255. The differential settings for the dimming values of lighting channels 2 and 3 are specified in per cent in relation to the dimming value of lighting channel 1. Differential settings of less than 100% result in a negative differential value and differential settings of more than 100% result in a positive differential value to the dimming value of the first channel.

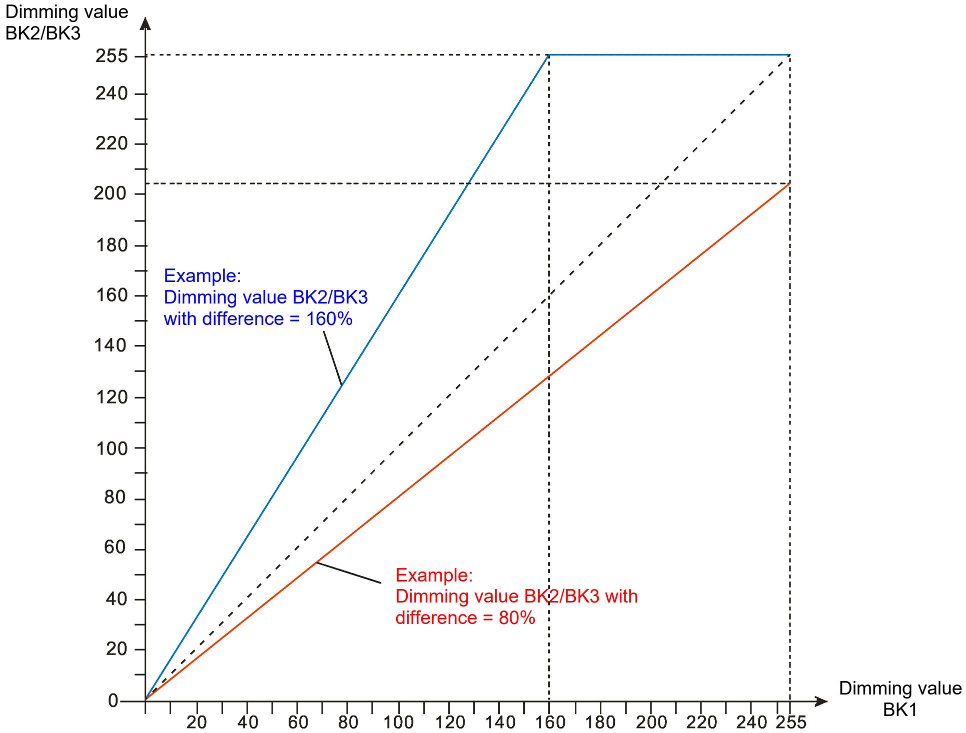


Figure 39: Dimming values for lighting channels 2 or 3 depending on the dimming value for lighting channel 1
Method 2: difference increases with increasing dimming value

Example:

Channel configuration: lighting channels 1, 2 and 3
Difference behaviour: increasing difference with increasing dimming value
Difference between lighting channel 2 and lighting channel 1: 160 %
Difference between lighting channel 3 and lighting channel 1: 80 %

Dimming value for lighting channel 1: 128 (50%) -> Dimming value for lighting channel 2: 204 (80%), dimming value for lighting channel 3: 102 (40%)
Dimming value for lighting channel 1: 20 (8%) -> Dimming value for lighting channel 2: 32 (12%), dimming value for lighting channel 3: 16 (6%)

Method 3: decreasing difference with increasing dimming value

In this setting, the differential value for lighting channel 2 or 3 is continuously reduced from a starting differential with increasing dimming values of the first channel up to a limit dimming value of lighting channel 1. At the limit dimming value of lighting channel 1, the difference for lighting channels 2 and 3 is always "0", resulting in synchronisation of the output channels. The difference calculation always starts from dimming value "1" of lighting channel 1. With dimming value "0" (OFF), the dimming values of lighting channels 2 and 3 are also set to "0". To configure this differential setting, a start difference must be specified for lighting channels 2 and 3 and the dimming value of lighting channel 1 for synchronisation.
To prevent lighting channels 2 and 3 from switching on and off too frequently with a negative difference within the limit range, an ON-OFF hysteresis can be configured in relation to the dimming values of lighting channel 1. The ON-OFF hysteresis must be adjusted appropriately to the start offset difference.

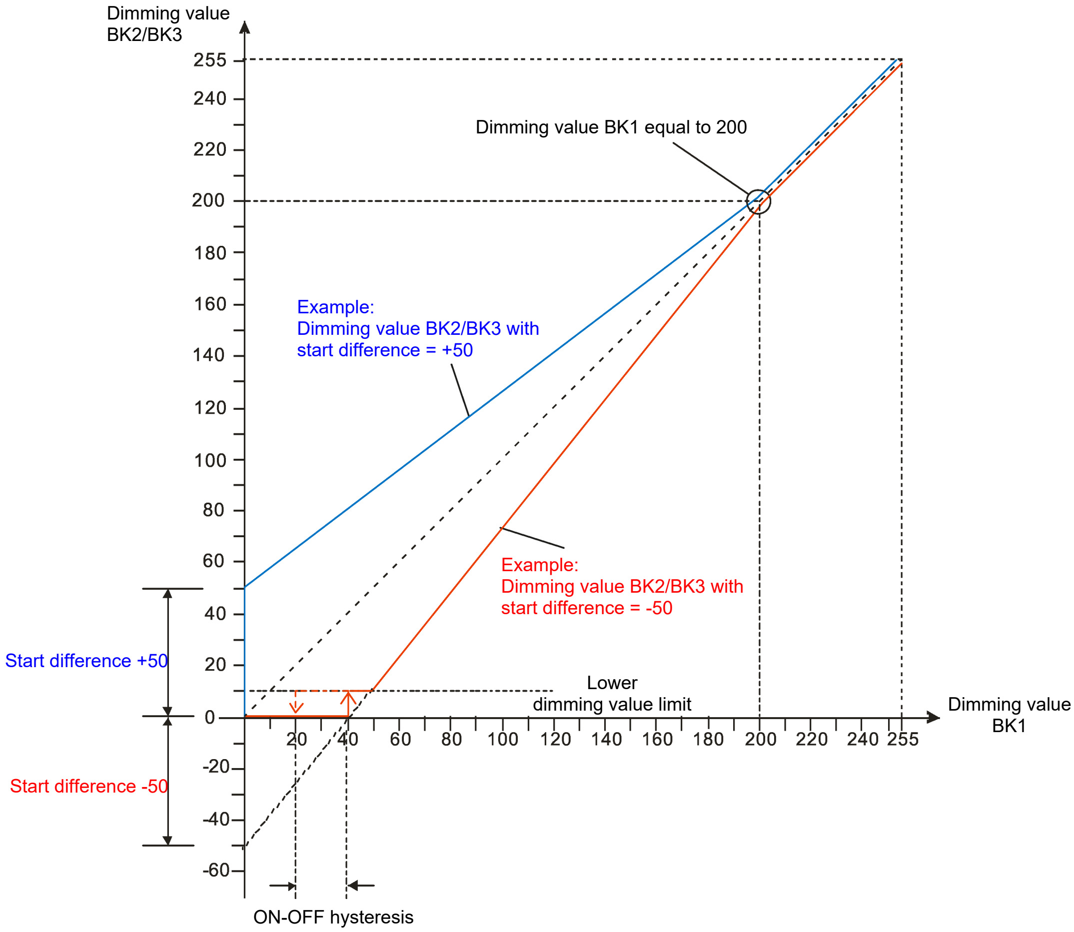


Figure 40: Dimming values for lighting channels 2 or 3 depending on the dimming value for lighting channel 1
Method 3: difference decreasing with increasing dimming value

Example:

Channel configuration: lighting channels 1, 2 and 3
Difference behaviour: decreasing difference with increasing dimming value
Start difference between lighting channel 2 and lighting channel 1: +50
Start difference between lighting channel 3 and lighting channel 1: -50
Dimming value of channel 1 for synchronisation with lighting channel 2: 200
Dimming value of channel 1 for synchronisation with lighting channel 3: 200
Lower dimming value limit: 10 (see main control phase)
ON-OFF hysteresis: 20

Dimming value for lighting channel 1: 180 (70%) -> Dimming value for lighting channel 2: 185 (72%), dimming value for lighting channel 3: 175 (68%)
Dimming value for lighting channel 1: 60 (24%) -> Dimming value for lighting channel 2: 95 (37%), dimming value for lighting channel 3: 25 (10%)

13.3.2 Brightness evaluation / channel configuration parameter

Function blocks (FB) -> Light control FB - General -> Brightness evaluation

Brightness measurement by	**Internal sensor** External sensor (object) Internal and external sensor (average value)
To determine the workplace brightness or ambient brightness, the device possesses a brightness sensor, located invisibly behind the lens. The brightness value determined by this internal sensor can be used for light control. Optionally, an external 2-byte brightness value in accordance with DPT 9.004 can also be made available via the bus. This makes it possible to carry out the brightness evaluation independently of the installation location of the device (e.g. provision of an external brightness value by a more favourably installed KNX sensor). 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 two locations. At the same time, both sensor values are weighted to determine the effective brightness value. This parameter defines which sensors are used for the brightness evaluation of a function block.	

Weighting of brightness values, internal to external	95% to 5% 90% to 10% 85% to 15% 80% to 20% 75% to 25% 70% to 30% 65% to 35 % 60% to 40 % 55% to 45 % **50% to 50%** 45% to 55% 40% to 60% 35% to 65% 30% to 70% 25% to 75% 20% to 80% 15% to 85% 10% to 90% 5% to 95%
This parameter defines the weighting of the brightness measured values from the internal sensor to the external sensor. The parameter is visible only if the brightness value is detected by means of a combined value from an internal and external sensor.	

Brightness value status object	**Inactive** Active
The "brightness value - Status" object used for light control can be read via the bus by activating the status object.	

Control dynamics

Control dynamics	**Automatic** User-defined
The light control needs certain parameters that define the brightness range in the room. These parameters are important for calculating certain control characteristics from which, among other things, the control dynamic and thus the subjective perceived comfort of the feedback control are derived. This parameter defines whether the light control works with standard control parameters that the manufacturer has predefined and generally adapted to many applications, or whether the control parameters can be customized. **Automatic**: The light control works with a standard configuration preset by the manufacturer. The control dynamic is thus adapted effectively to very many applications. The maximum illuminance is then not configurable in the ETS. This is calculated automatically depending on the brightness setpoint configured in the ETS (factor x 1.2) and entered in the light control. When dimensioning the lighting system on-site, it must be ensured that the installed lighting can always supply brightness levels that correspond to the value "Configured brightness setpoint x 1.2". The lower brightness threshold is preconfigured to 0 Lux in this setting (no special control dynamic in the lower brightness range). With **user-defined** control dynamics, the maximum illuminance (10 ... 2,000 lux) and the lower brightness threshold (0 ... 2,000 lux) must always be configured in the ETS. In this way, it is possible to customize the control parameters to special applications. In this setting, make sure the lower brightness threshold is always lower than the brightness setpoint. The maximum illuminance must always be above the set brightness setpoint.	

Maximum illuminance	10 … **720** … 2000 lux
The required control parameters in user-defined setting include the information regarding which maximum illuminance can be set by the lighting in the room (artificial light). If there is a large difference between the brightness in the room and the brightness setpoint, this maximum value defines larger dimming value changes or increments and thus increases the control dynamics (rapid adjustment to the setpoint by means of larger dimming value commands). The maximum illuminance is also used to calculate the automatically calculated dimming value. This control parameter must be configured to the maximum brightness value adjustable by the lighting (P-component of the light control). The maximum value of the lighting is typically a factor of 1.2 higher than the brightness setpoint configured in the ETS. When configuring the control parameters, the following dependency should be noted: Lower brightness threshold < Brightness setpoint < Maximum illuminance.	

Lower brightness threshold	10 … **200** … 2000 lux
The darkness value of the room lighting (lower brightness threshold) is also decisive for the light control. If the lower brightness threshold is fallen below, the time between the dimming value telegrams is shortened thereby resulting in a higher control dynamic here as well. When configuring the control parameters, the following dependency should be noted: Lower brightness threshold < Brightness setpoint < Maximum illuminance.	

Brightness setpoint

Brightness setpoint	20, 50, 100 ... **600** ... 1,000 lux (from 50 lux in 50-lux increments)
The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint" (setpoint range = setpoint + hysteresis). The "Brightness setpoint" thus represents the minimum brightness to be maintained. This parameter defines the brightness setpoint. The possible adjustment range of the parameter depends on the configuration of the control dynamic. In **"automatic"** control dynamics, this parameter is visible. The brightness setpoint can thus be configured within the range from 20 Lux to 1,000 Lux. As a result, virtually all standard applications are covered.	

(Brightness setpoint) At day	20, 50, 100 ... **600** ... 1,000 lux (from 50 lux in 50-lux increments)
The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint" (setpoint range = brightness setpoint + hysteresis). The "Brightness setpoint" thus represents the minimum brightness to be maintained. This parameter defines the brightness setpoint in day mode. The possible adjustment range of the parameter depends on the configuration of the control dynamic. In **"automatic"** control dynamics, this parameter is visible. The brightness setpoint can thus be configured within the range from 20 Lux to 1,000 Lux. As a result, virtually all standard applications are covered. This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

(Brightness setpoint) At night	20, 50, 100 ... **600** ... 1,000 lux (from 50 lux in 50-lux increments)
The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint" (setpoint range = brightness setpoint + hysteresis). The "Brightness setpoint" thus represents the minimum brightness to be maintained. This parameter defines the setpoint in night mode. The possible adjustment range of the parameter depends on the configuration of the control dynamic. In **"automatic"** control dynamics, this parameter is visible. The brightness setpoint can thus be configured within the range from 20 Lux to 1,000 Lux. As a result, virtually all standard applications are covered. This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

Brightness setpoint	10 … **600** … 2000 lux
The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint" (setpoint range = brightness setpoint + hysteresis). The "Brightness setpoint" thus represents the minimum brightness to be maintained. This parameter defines the setpoint. The possible adjustment range of the parameter depends on the configuration of the control dynamic. This parameter is visible in the event of **"user-defined"** control dynamics. The brightness setpoint is thus continuously configurable within a range from 10 Lux to 2,000 Lux. This allows extended setpoint presettings for special applications.	

(Brightness setpoint) At day	10 … **600** … 2000 lux
The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint" (setpoint range = brightness setpoint + hysteresis). The "Brightness setpoint" thus represents the minimum brightness to be maintained. This parameter defines the setpoint in day mode. The possible adjustment range of the parameter depends on the configuration of the control dynamic. This parameter is visible in the event of **"user-defined"** control dynamics. The brightness setpoint is thus continuously configurable within a range from 10 Lux to 2,000 Lux. This allows extended setpoint presettings for special applications. This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

(Brightness setpoint) At night	10 … **600** … 2000 lux
The brightness setpoint corresponds to the value of the desired brightness that the light control is to set and keep as constant as possible with the aid of an assigned lighting device while taking changing external light influences into account. During the control phase, the lighting is only readjusted if the measured brightness value is not within the preset setpoint range. The lower limit value of the setpoint range is preset directly by the "Brightness setpoint" (setpoint range = brightness setpoint + hysteresis). The "Brightness setpoint" thus represents the minimum brightness to be maintained. This parameter is used to define the brightness setpoint in night mode. The possible adjustment range of the parameter depends on the configuration of the control dynamic. This parameter is visible in the event of **"user-defined"** control dynamics. The brightness setpoint is thus continuously configurable within a range from 10 Lux to 2,000 Lux. This allows extended setpoint presettings for special applications. This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

Hysteresis	**10** … 50%
In order to avoid permanent readjustment of the connected lighting device due to slight brightness and measurement value fluctuations, a setpoint range with a lower and upper limit value is defined for the setpoint presetting. The upper limit value is determined by specifying a relative hysteresis value (percentage value) in relation to the brightness setpoint. This parameter defines the hysteresis value. In this way, the upper limit of the setpoint range is derived directly from the effective brightness setpoint.	

Allow setpoint shift	Active **Inactive**
With the setpoint shift the brightness setpoint can be changed within the configured limits during the control phase by direct control of the assigned lighting. The setpoint shift is started by transmitting relative 4-bit dimming telegrams to the object "Brightness setpoint - Shift" during the control phase. At the same time, the light control controls the lighting and thereby sets another brightness value. When the desired brightness is reached, a stop telegram must be received by means of the "Brightness setpoint - Shift" object, which is then output to the lighting.	

Lower limit	**10** … 2000 lux
The lower limit value of the setpoint shift is configured here. If this lower limit value is fallen below during the setpoint shift, the setpoint shift stops automatically after detecting this. The device then transmits a stop telegram to the bus via lighting channel 1. The corresponding limit value is then applied as new brightness setpoint value instead of the set brightness value. This parameter is visible only if the setpoint shift is enabled.	

Upper limit	**10** … 2000 lux
The upper limit value of the setpoint shift is configured here. If this upper limit value is exceeded during the setpoint shift, the setpoint shift then stops automatically after detecting that the limit value has been exceeded. The device then transmits a stop telegram to the bus via lighting channel 1. The corresponding limit value is then applied as new brightness setpoint value instead of the set brightness value. This parameter is visible only if the setpoint shift is enabled.	

Duration of setpoint shift	Until end of current control phase **Permanently**
With this parameter it is possible to define in the ETS whether a setpoint shift should only apply temporarily for the control phase that is currently active, or alternatively, should be applied permanently. If permanently applied, the set brightness setpoint remains unchanged until a new setpoint presetting (by means of external setpoint presetting, setpoint shift or teach-in function) or until a new reset command via the object "Brightness setpoint - Reset". Even a bus voltage failure will not reset the brightness setpoint value. An ETS programming operation resets the brightness setpoint automatically to the ETS presettings if this is provided for in the configuration. This parameter is visible only if the setpoint shift is enabled.	

Teach-in function	Active **Inactive**
The teach-in function is used to adopt the currently effective brightness value as the new brightness setpoint by sending a corresponding telegram to the 1-bit object "Brightness setpoint - Teach-in". The object can be configured if this parameter is set to "Active".	

Functionality	**0 = inactive / 1 = active** 0 = active / 1 = inactive 0 = active / 1 = active

The polarity of a teach-in telegram is configurable by this parameter. Depending on the configuration, it is possible to reset to the configured brightness setpoint upon receiving the opposite object value (teach-in function inactive). The brightness setpoint previously learned will be lost in the process. However, if the teach-in polarity is configured to "1"- and "0"-active, it is no longer possible to switch back to the configured brightness setpoint via this object during operation of the device!

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

Brightness setpoint can be set via object	Active **Inactive**

The 2-byte object "Setpoint" and the 1-bit object "Brightness setpoint - Reset" appears by activating this parameter. These input objects can be used by other bus devices to specify a new brightness setpoint or reset to the value from the last ETS programming.

Overwriting the brightness setpoint in the device during ETS download	**Active** Inactive

This parameter determines whether an actively set and active brightness setpoint previously set by external object presetting or by a teach-in procedure is overwritten automatically by the brightness setpoint configured in the ETS during ETS programming. In the "Active" setting, the last value specified externally or by the teach-in function, which is still active, is replaced automatically by the ETS presetting. If the setting is "Inactive", the last brightness setpoint preset externally or by teach-in still remains active even after ETS programming.

"Status object "Currently active brightness setpoint"	Active **Inactive**

The "Brightness setpoint - Currently active - Status" object, which can be enabled by this parameter, can be used to set the status of the brightness setpoint currently active in the light control (lower limit of the setpoint range).

Channel configuration

Number of lighting channels to be controlled	**1 (BK 1)** 2 (BK 1 and 2) 3 (BK 1, 2 and 3)

The light control can control up to three lighting groups. Up to 3 output channels are available for this purpose. It is possible to adapt the dimming values for various installation locations of the lighting groups in the room by using several channels, for example. Thus, a lighting group near the window, for example, can be controlled by small dimming values as lighting in the centre of the room. These with lower dimming values, used in turn as lighting in a remote recess. The number of channels can be defined via this parameter.

The following parameters is only configurable in the case of 2 or 3 channels...

Differential behaviour of BK 2/3 to BK1 Differential behaviour of BK2 to BK 1	**Fixed difference with increasing dimming value** Increasing difference with increasing dimming value Decreasing difference with increasing dimming value

The basic control (dimming value calculation) always applies to lighting channel 1. The dimming values of lighting channels 2 and 3 are calculated in relation to the dimming value of the first channel by means of the corresponding difference settings. Three methods are available to calculate the dimming values of lighting channels 2 and 3. This parameter defines which method is used".

Fixed difference with increasing dimming value: A fixed difference value is selected for lighting channel 2 or lighting channels 2 and 3 to the dimming value of the first channel by selecting this method. The difference remains constant over the entire dimming range. The difference calculation always starts from dimming value "1" of lighting channel 1. With dimming value "0" (OFF), the dimming values of lighting channels 2 and 3 are also set to "0".

Increasing difference with increasing dimming value: This method is used to increase the difference value for lighting channel 2 or 3 if the dimming values for lighting channel 1 increase. This takes place until lighting channel 2 or 3 has reached the limit value 255.

Decreasing difference with increasing dimming value: In this setting, the difference value for lighting channel 2 or 3 is continuously reduced from a starting difference with increasing dimming values of the first channel up to a limit dimming value of lighting channel 1. At the limit dimming value of lighting channel 1, the difference for lighting channels 2 and 3 is always "0", resulting in synchronisation of the output channels.

ON/OFF hysteresis for between BK 2/3 and BK 1	0 … **20** … 90

To prevent lighting channels 2 and 3 from switching on and off too frequently when a negative difference within the limit range, an ON/OFF hysteresis can be configured in relation to the dimming values of lighting channel 1. The ON-OFF hysteresis should be smaller than the dimming value for lighting channel 1 or the start difference.

This parameter is visible only with the differential behaviour "Fixed difference with increasing dimming value" and "Decreasing difference with increasing dimming value".

Difference between BK 2 and BK 1	-128 … **50** … 127

This parameter is used to define the static difference to lighting channel 1 for the second channel with the difference behaviour "Fixed difference with increasing dimming value".

Difference between BK 3 and BK 1	-128 … **-50** … 127
This parameter is used to define the static difference to lighting channel 1 for the third channel with the difference behaviour "Fixed difference with increasing dimming value".	

Difference between BK 2 and BK 1	1 … **150** … 200%
This parameter is used to define the relative difference to lighting channel 1 for the second channel with the difference behaviour "Increasing difference with increasing dimming value".	

Difference between BK 3 and BK 1	1 … **150** … 200%
This parameter is used to define the relative difference to lighting channel 1 for the third channel with the difference behaviour "Increasing difference with increasing dimming value".	

Start difference from BK 2 to BK 1	-128 … **50** … 127
To configure the differential behaviour "Decreasing differential with increasing dimming value", a start difference must be specified for lighting channel 2	

Difference between BK 3 and BK 1	-128 … **-50** … 127
To configure the differential behaviour "Decreasing differential with increasing dimming value", a start difference must be specified for lighting channel 3	

Synchronisation of BK 1 and BK 2, from a BK 1 dimming value of	0 … **200** … 255
To configure the differential behaviour "Decreasing differential with increasing dimming value", a start difference must be specified for lighting channel 2	

Synchronisation of BK 1 and BK 3, from a BK 1 dimming value of	0 … **200** … 255
To configure the differential behaviour "Decreasing differential with increasing dimming value", a start difference must be specified for lighting channel 3	

Show info graphic	Active **Inactive**
An infographic is displayed in the ETS if this parameter is activated.	

13.3.3 Brightness evaluation / channel configuration objects

Function	Name	Type	DPT	Flag
Brightness setpoint	FB light control - Input	2-byte	9.004	C, -, W, -, U
2-byte object used to specify a brightness setpoint. The brightness setpoint received via this object remains unchanged until a new setpoint presetting (by means of external setpoint presetting, setpoint shift or teach-in function) or until a new reset command to the object "Brightness setpoint - Reset". Even a bus voltage failure will not reset the brightness setpoint received via the bus. This object is visible only if the external setpoint specification is enabled by the "Brightness setpoint can be set via object" parameter.				

Function	Name	Type	DPT	Flag
Brightness setpoint - Reset	FB light control - Input	1-bit	1.015	C, -, W, -, U
1-bit object for resetting the brightness setpoint to the ETS presetting ("1" = reset setpoint, "0" = no reaction). It makes no difference which function changed the brightness setpoint. This object is visible only if the external setpoint specification is activated by the "Brightness setpoint can be set via object" parameter.				

Function	Name	Type	DPT	Flag
Brightness setpoint - Shift	FB light control - Input	4-bit	3.007	C, -, W, -, U
4-bit object for relative shifting of the active brightness setpoint. With the setpoint shift the brightness setpoint can be changed within the configured limits during the control phase by direct control of the assigned lighting. The setpoint shift is started by transmitting relative 4-bit dimming telegrams to the object "Brightness setpoint - Shift" during the control phase. At the same time, the light control controls the lighting via the dimming object of the first channel and thereby sets another brightness value. When the desired brightness is reached, a stop telegram must be received via the object "Brightness setpoint - Shift" which is then transmitted to lighting channel 1 and output to the lighting. This object is visible only if the setpoint shift is enabled by the "Allow setpoint shift" parameter.				

Function	Name	Type	DPT	Flag
Brightness setpoint - Teach-in	FB light control - Input	1-bit	1.017	C, -, W, -, U
1-bit object used to trigger a teach-in process for learning a brightness setpoint. With the teach-in function, the currently effective brightness value is applied instantly by transmitting a corresponding telegram to this object as a new brightness setpoint. The telegram polarity can be configured via the "Functionality" parameter. Teach-in active = the currently effective brightness value becomes the new brightness setpoint Teach-in inactive = switches back to the brightness setpoint configured in the ETS. This object is visible only if the teach-in function for setpoint specification is enabled by the "Teach-in function" parameter.				

Function	Name	Type	DPT	Flag
Brightness setpoint currently active - Status	Light control FB - Output	2-byte	9.004	C, R, -, T, A
2-byte object for feedback of the active brightness setpoint of the light control. Each time the brightness setpoint is changed, after an ETS programming operation or after bus voltage returns (optionally delayed), the current brightness setpoint is sent once to the bus. This object is visible only if the parameter - status object "Currently active brightness setpoint" - has been activated.				

Objects of the lighting channels

Function	Name	Type	DPT	Flag
Lighting channel 1 - Switching	Light control FB - Output	1-bit	1.001	C, R, -, T, A
1-bit object for switching activation of the KNX actuator of lighting channel 1. Its use depends on the configuration of the data formats of the control phases. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 1 with the same function via a separate group address regardless of the control phase configuration.				

Function	Name	Type	DPT	Flag
Lighting channel 1 - Dimming step	Light control FB - Output	4-bit	3.007	C, R, -, T, A
4-bit object for activating the KNX actuator of lighting channel 1 via relative dimming commands. Its use depends on the configuration of the data formats of the control phases. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 1 with the same function via a separate group address regardless of the control phase configuration. This object is visible only if only lighting channel 1 is used. As soon as another channel is activated, this object disappears. The first lighting channel can then only be controlled by means of absolute dimming commands.				

Function	Name	Type	DPT	Flag
Lighting channel 1 - Dimming value	Light control FB - Output	1-byte	5.001	C, R, -, T, A
1-bit object for activating the KNX actuator of lighting channel 1 via absolute dimming values. Its use depends on the configuration of the data formats of the control phases. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 1 with the same function via a separate group address regardless of the control phase configuration.				

Function	Name	Type	DPT	Flag
Lighting channel 1 - Dimming value - Actuator status	FB light control - Input	1-byte	5.001	C, -, W, -, U
1-byte object via which the light control receives the current brightness value of the KNX actuator from lighting channel 1. This information is important for some control processes. This object must always be linked to the brightness value status object of the KNX actuator controlled via lighting channel 1! The light control (dimming value calculation) always refers to lighting channel 1. The dimming values of lighting channels 2 and 3 are calculated in relation to the dimming value of the first channel via configured difference settings.				

Function	Name	Type	DPT	Flag
Lighting channel 2 - Switching	Light control FB - Output	1-bit	1.001	C, R, -, T, A
1-bit object for switching activation of the KNX actuator of lighting channel 2. Its use depends on the configuration of the data formats of the control phases. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 2 with the same function via a separate group address regardless of the control phase configuration. This object is visible only if lighting channel 2 is used.				

Function	Name	Type	DPT	Flag
Lighting channel 2 - Dimming value	Light control FB - Output	1-byte	5.001	C, R, -, T, A
1-bit object for activating the KNX actuator of lighting channel 2 via absolute dimming values. Its use depends on the configuration of the data formats of the control phases. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 2 with the same function via a separate group address regardless of the control phase configuration. This object is visible only if lighting channel 2 is used.				

Function	Name	Type	DPT	Flag
Lighting channel 2 - Dimming value - Actuator status	FB light control - Input	1-byte	5.001	C, -, W, -, U
1-byte object via which the device receives the current brightness value of the KNX actuator from lighting channel 2. This status object is not used for the actual light control, only in the step-down control phase of the light control. This object is visible only if lighting channel 2 is used.				

Function	Name	Type	DPT	Flag
Lighting channel 3 - Switching	Light control FB - Output	1-bit	1.001	C, R, -, T, A
1-bit object for switching activation of the KNX actuator of lighting channel 3. Its use depends on the configuration of the data formats of the control phases. This also makes combined activations possible by means of switching and dimming commands. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 3 with the same function via a separate group address regardless of the control phase configuration. This object is visible only if lighting channel 3 is used.				

Function	Name	Type	DPT	Flag
Lighting channel 3 - Dimming value	Light control FB - Output	1-byte	5.001	C, R, -, T, A
1-bit object for activating the KNX actuator of lighting channel 3 via absolute dimming values. Its use depends on the configuration of the data formats of the control phases. This also makes combined activations possible by means of switching and dimming commands. It is recommended to link this object to the objects of the dimmable KNX actuator of lighting channel 3 with the same function via a separate group address regardless of the control phase configuration. This object is visible only if lighting channel 3 is used.				

Function	Name	Type	DPT	Flag
Lighting channel 3 - Dimming value - Actuator status	FB light control - Input	1-byte	5.001	C, -, W, -, U
1-byte object via which the device receives the current brightness value of the KNX actuator from lighting channel 3. This status object is not used for the actual light control, only in the step-down control phase of the light control. This object is visible only if lighting channel 3 is used.				

13.4 Control behaviour

Start-up control phase

The start-up control phase represents the start behaviour of the light control and should quickly ensure sufficient brightness in the room. For this purpose, the brightness value setpoint is compared with the measured brightness value at the beginning of the start-up control phase. If the measured value is greater or equal to the setpoint, the main control state is changed to immediately. If the measured value is below the setpoint, the configured start-up control behaviour is executed. At the same time, there are settings in the ETS...

– Start-up control behaviour = "Switching on"
  If the currently determined brightness value is less than the preset setpoint, the light control switches on the assigned lighting via a switching telegram (1-bit).
  The lighting is activated by the channel object "Switching".

This setting is available only if just one lighting channel is configured.

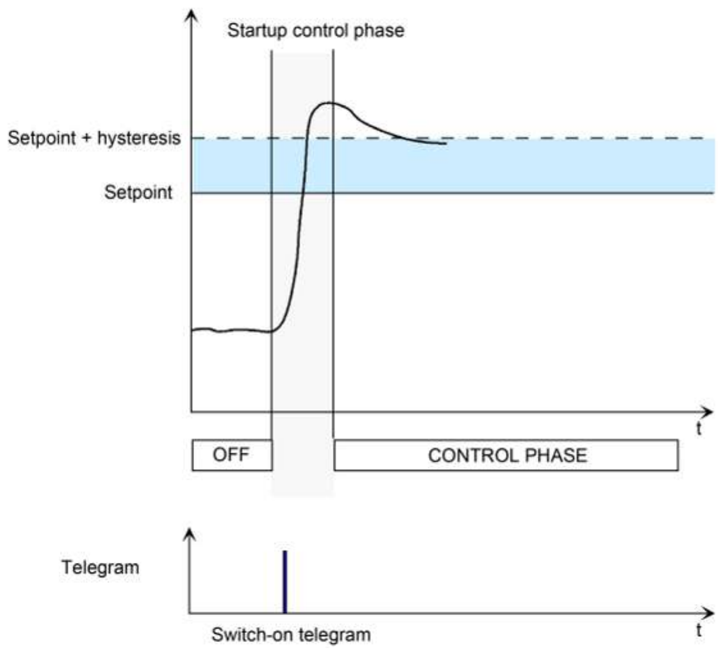


Figure 41: Start-up control behaviour with switching telegram (1-bit)

– Start-up control behaviour = "Dimming steps (relative)"
  If the currently determined brightness value is less than the preset setpoint, the light control dims up the lighting via cyclically output dimming step telegrams until the brightness value has reached or even exceeded the setpoint. The increment of the dimming telegrams and the time interval between two dimming steps can be configured. After reaching or exceeding the setpoint limit, a stop telegram is transmitted. In the case of dimmer actuators with steep dimming curves, slight overshooting may occur that is then offset again by the main control phase.
  The lighting is activated by the "Dimming" channel object.

This setting is available only if just one lighting channel is configured.

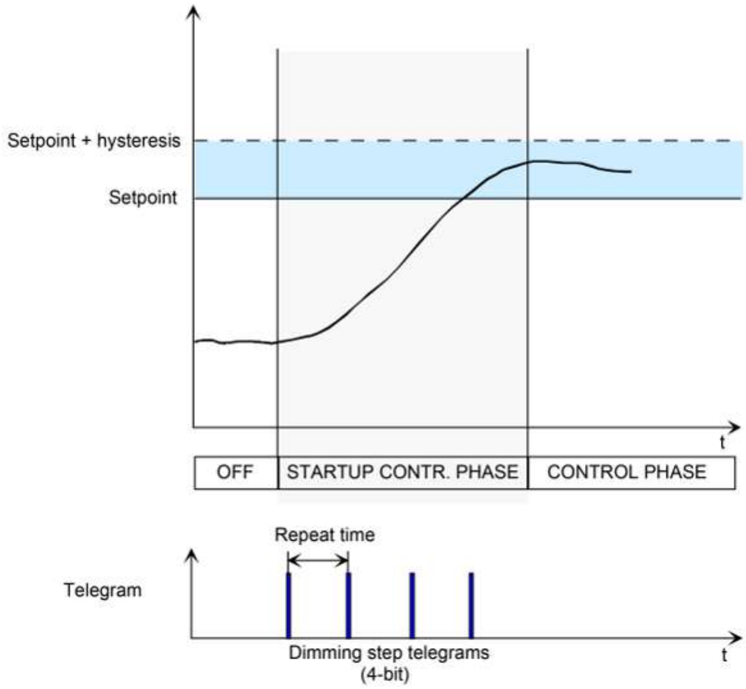


Figure 42: Start-up control behaviour with relative dimming step telegrams (4-bit)

– Start-up control behaviour = "Configurable dimming value (absolute)"
  If the light control detects a lower brightness value than the preset setpoint, the lighting is then switched on by transmission of a configured dimming value. If a higher brightness value is preset (e.g. 100 %), this results in a brightness jump (like when switching on), which is then offset again by the main control phase if the higher brightness value is not required.
  The lighting is activated by the "Dimming value" channel object.

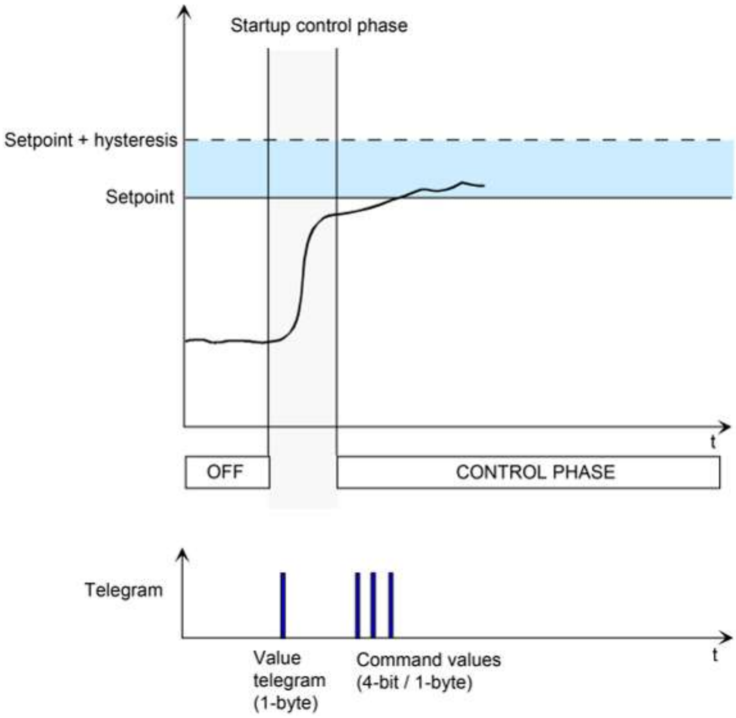


Figure 43: Start-up control behaviour with absolute value telegrams (1-byte)

– Start-up control behaviour = "Automatically calculated dimming value (absolute)"
With this startup control behaviour, depending on the currently measured brightness by the light control, a dimming value (1-byte) is calculated and transmitted automatically by means of the setpoint presetting and defined brightness range in order to approximately reach the exact setpoint range. The lighting is activated by the "Dimming value" channel object.

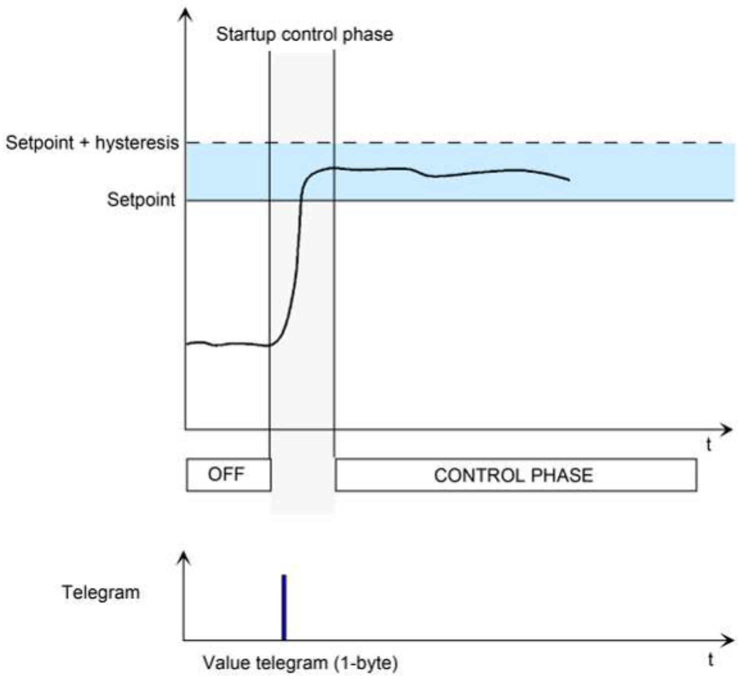


Figure 44: Start-up control behaviour with automatically calculated dimming value specification (1 byte)

Waiting time after start-up control

Before changing from the start-up control phase to the main control phase, the activated actuator should have reached its final value so that the feedback control can control with stable actuator states. For this purpose, a configurable waiting time is started after the start-up control phase. The main control phase is only changed to after this waiting time has elapsed.
The length of the waiting time should be adapted to the start-up control method used (e.g. longer waiting time with relative start-up control behaviour) and the characteristics of the connected actuator (fast or slow dimming speed).

Main control phase

In the main control phase, the light control adjusts the brightness of the lighting continuously to the active setpoint. The data format used for the dimming values can be configured by the ETS parameter "Main control behaviour". Alternatively, the lighting can be activated by absolute dimming step telegrams ("Dimming value" channel object) or by relative dimming step telegrams ("Dimming" channel object). The "Minimum dimming increment" parameter defines the steps in which the light control can dim the lighting with one telegram at a time. With relative dimming steps by percentage values and with absolute dimming steps, these are absolute dimming values.
The "Minimum time interval between two dimming steps" parameter specifies the minimum waiting time between two dimming step telegrams for the lighting control.
As a rule, small dimming steps (relatively 1 ... 3% / absolute 2 ... 10) with short time intervals (2 ... 10 seconds) so that light control is carried out without interruption in a subjectively pleasant manner. Since the dimming speed is primarily defined by the configuration of the actuator, the parameter of the light control should therefore be adapted to the dimming times of the actuators.

Minimum dimming value and switch-off brightness

When switching off the lighting in the room using the light control, it should be ensured that the lighting is not switched on again immediately by falling below the setpoint due to the light jump. For this purpose, the minimum dimming value can be evaluated and a switch-off brightness can be configured.
After reaching the minimum dimming value, the switch-off brightness in the room must also be reached or exceeded so that the lighting is switched off automatically during the main control phase. The switch-off brightness is above the setpoint + hysteresis. The switch-off brightness is derived from an additional relative hysteresis value that is added to the hysteresis value of the setpoint: Switch-off brightness = setpoint + (setpoint x (hysteresis setpoint + additional hysteresis switch-off brightness))
The additional hysteresis for the switch-off brightness is configured separately in the ETS.

Example:
Setpoint = 300 lux, hysteresis setpoint = 10%,
Additional hysteresis switch-off brightness = 10 %
-> Upper setpoint limit = 330 lux, switch-off brightness = 360 lux

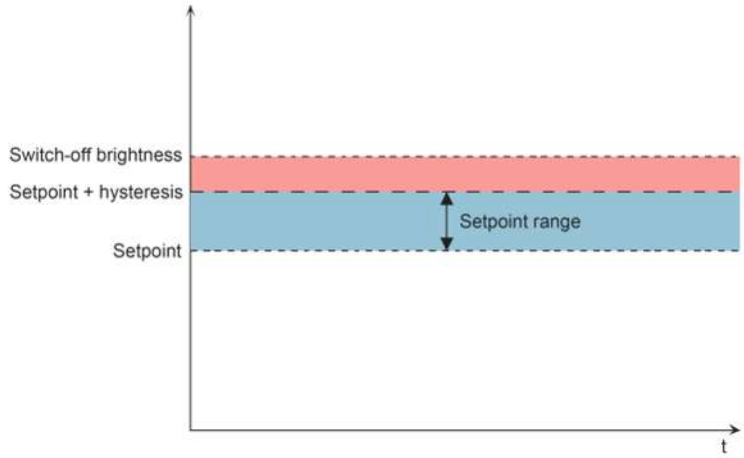


Figure 45: Switch-off brightness, setpoint and hysteresis value of the setpoint

As the ambient brightness increases, the dimming value decreases. The further behaviour can be configured as follows with the parameter "When falling below the minimum dimming value"...

– Setting "Switch off at switch-off brightness"
  As soon as the minimum dimming value is reached and the switch-off brightness in the room has also been reached or exceeded, the light control switches off the lighting. The additional hysteresis for the switch-off brightness can be configured in this setting.
– Setting "No reaction"
  The light control does not react when the minimum dimming value is reached. A switch-off does not takes place. The dimming value remains unchanged until the control has to dim up the lighting again or until the step-down control phase is started due to the presence signal.

With absolute dimming step specification, the minimum dimming value is defined by the corresponding parameter within a range of 1 ... 128 (0.4 ... 50%) is defined. With relative dimming step specification, the minimum dimming value cannot be configured. In this configuration, the device calculates rather the minimum dimming value limit itself by means of the configured minimum dimming step width. The relative dimming step telegrams transmitted to the actuator then enable the light control to detect during the ongoing control process whether or not the minimum dimming value has been reached. It is important that the activated KNX dimmer actuators can be dimmed to the lowest brightness level (basic brightness). The dimmable brightness range must not be limited by a minimum brightness on the actuators!

If the "When dimming below the minimum dimming value" parameter is configured to "No reaction", the light control never reacts when the lower dimming value is reached. Here too, the dimming value remains unchanged until the control has to dim up the lighting again or until the step-down control phase is started due to the presence signal.

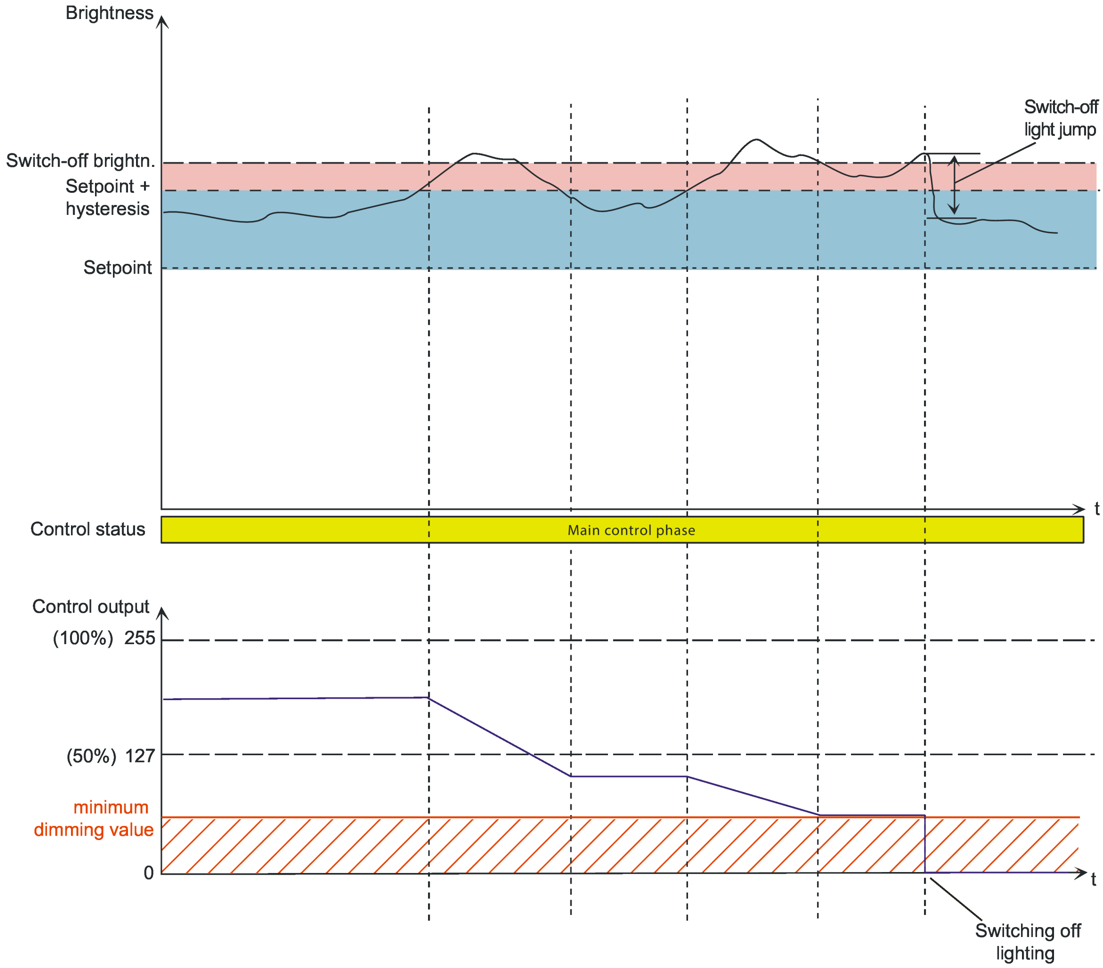


Figure 46: Example of a dimming value specification when evaluating the minimum dimming value

The relative setting of the additional hysteresis for the switch-off brightness makes it possible to also influence the interval of the switch-off brightness for the upper setpoint limit during a setpoint shift (see figure 47).

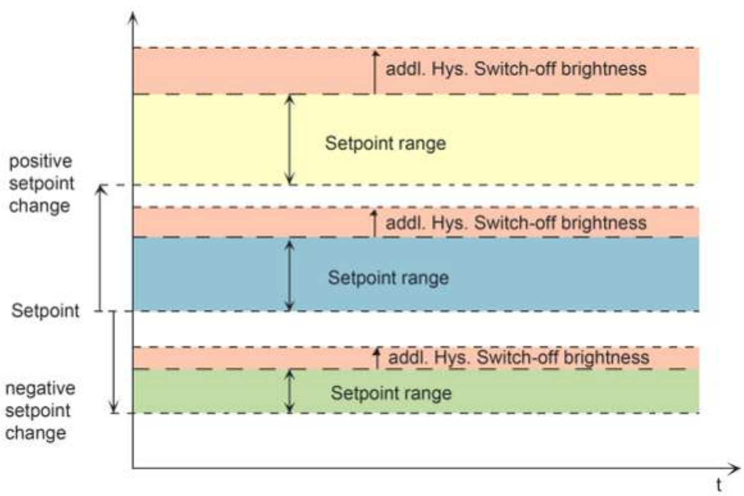


Figure 47: Dependency of the additional hysteresis for the switch-off brightness during a setpoint shift

Step-down control phase

The behaviour at the end of the control is determined in the step-down control phase. Here, -defined by the parameter "Behaviour at the beginning of the step-down control phase - the assigned lighting device can optionally be switched off immediately, or first dimmed down to minimum brightness by transmitting the minimum dimming value "Absolutely" or "Relatively". It is also possible for the device to transmit a configured dimming value (1...100 %).
When dimming down to minimum brightness or when dimming to the configured dimming value, a delay time is started at the beginning of the dimming process. The duration of the waiting time is derived from a standard waiting time (10 seconds) plus an additional waiting time that can be configured in the ETS. The standard waiting time ensures that the minimum or preset brightness also can actually be set by the activated dimmer actuators before the end of the step-down control process.
After the waiting time has elapsed, the parameter "After waiting time has elapsed" decides which state the lighting adopts at the end of the control process. In the "Switch off" setting , the light control finally switches off the lighting. The parameter "Switch off by" defines with which data format this takes place. As an alternative to switching off, the minimum dimming value can be maintained. This setting is appropriate, for example, if a permanent basic brightness is to be set in the room (e.g. in long corridors or passageways).

During an ongoing waiting time in the step-down control phase, a new presence can be transferred to the light control if, for example, people are present again in the room. In this case, the parameter "With new presence detection during waiting time" defines how the light control should behave. The presence detection can either be ignored. The light control then completes the step-down control phase without interruption as specified. If the presence signal is still present at the end of the step-down control phase, the light control restarts the start-up control phase.
Alternatively, the step-down control phase can be aborted immediately during the detection of a new presence and the start-up control phase started immediately without interruption.

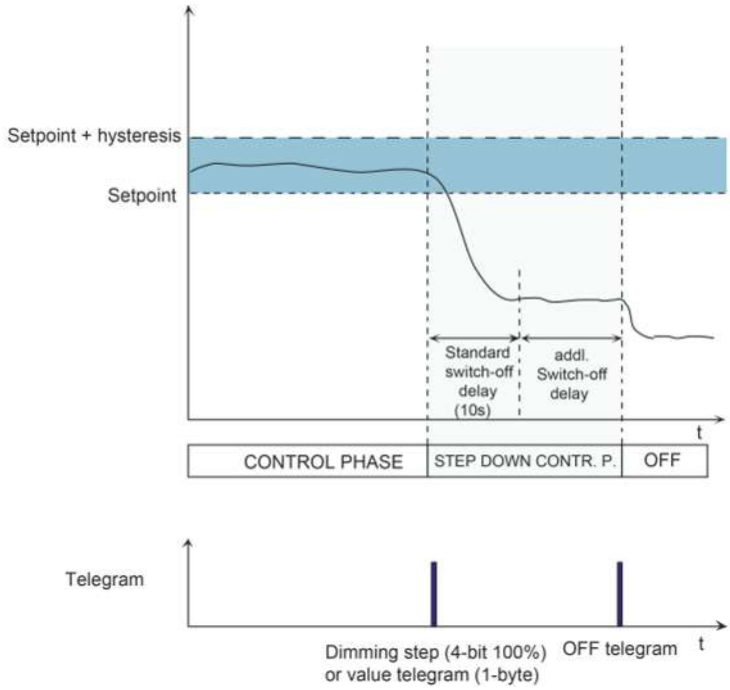


Figure 48: Step-down control behaviour with waiting time

13.4.1 Control behaviour parameter

Function blocks (FB) -> Light control FB - General -> Control behaviour

Start-up control phase

Start-up control behaviour	Switch on Dimming steps (relative) **Configurable dimming value (absolute)** Automatically calculated dimming value (absolute)
The start-up control phase represents the start behaviour of the light control and should quickly ensure sufficient brightness in the room. For this purpose, the brightness setpoint is compared with the measured brightness value at the beginning of the start-up control phase. If the measured value is greater or equal to the brightness setpoint, the main control state is changed to immediately. If the measured value is below the setpoint, the configured start-up control behaviour is executed. Switch on: If the currently determined brightness value is less than the preset setpoint, the light control switches on the assigned lighting via a switching telegram (1-bit). The lighting is activated by the channel object "Switching". This setting cannot be selected if 2 or 3 lighting channels have been set in the channel configuration. Dimming steps (relative): If the currently determined brightness value is less than the preset brightness setpoint, the light control dims up the lighting via cyclically output dimming step telegrams until the brightness value has reached or even exceeded the setpoint. The increment of the dimming telegrams and the time for the telegram repetition are configurable (optional). After reaching or exceeding the setpoint limit, a stop telegram is transmitted. In the case of dimmer actuators with steep dimming curves, slight overshooting may occur that is then offset again by the main control phase. The lighting is activated by the "Dimming" channel object. This setting cannot be selected if 2 or 3 lighting channels have been set in the channel configuration. Configurable dimming value (absolute): If the light control detects a lower brightness value than the preset brightness setpoint, the lighting is then switched on by transmission of a configured dimming value. If a higher brightness value is preset (e.g. 100 %), this results in a brightness jump (like when switching on), which is then offset again by the main control phase if the higher brightness value is not required. The lighting is activated by the channel object "Brightness value". Automatically calculated dimming value (absolute): With this start-up control behaviour, depending on the currently measured brightness by the light control, a dimming value (1-byte) is calculated and transmitted automatically by means of the setpoint presetting and defined brightness range in order to approximately reach the exact setpoint range. The lighting is activated by the channel object "Brightness value".	

Dimming step width	**100 %** 50 % 25 % 12.5 % 6 % 3 % 1 %

If the start-up control behaviour is executed via relative dimming commands (4-bit), the dimming step width can be configured here.

This parameter is visible only with the "dimming steps (relative)" start-up control behaviour.

Send dimming step cyclically	**Inactive** Active

If the start-up control behaviour is executed via relative dimming steps (relative), a telegram repetition can be configured here cyclically. A telegram repetition is advisable if the dimming step width is configured to values less than 100 % and should still be dimmed across the entire brightness range. Dimming processes can thus also be executed more smoothly in the actuators even in the case of steep dimming curves.

Cycle time	**0**…59 s 100 … **500** ...900 ms

During cyclical transmission of the dimming steps, this parameter defines the cycle time.

Dimming value	1 … **100**%

If the start-up control behaviour takes place by means of absolute dimming commands (1 byte), the dimming value can be configured here.

This parameter is visible only with the start-up control behaviour "configured dimming value (absolute)".

(Dimming value) At day	1 … **100**%

If the start-up control behaviour takes place by means of absolute dimming commands (1 byte), the dimming value can be configured here in day mode.

This parameter is visible only with the start-up control behaviour "configured dimming value (absolute)" and activated day/night switchover on the "General" parameter page.

(Dimming value) At night	1 … **100**%
If the start-up control behaviour takes place by means of absolute dimming commands (1 byte), the dimming value can be configured here in night mode. This parameter is visible only with the start-up control behaviour "configured dimming value (absolute)" and activated day/night switchover on the "General" parameter page.	

Waiting time before switching to main control behaviour	1 … **5** … 59 s
Before changing from the start-up control phase to the main control phase, the activated actuator should have reached its final value so that the feedback control can control with stable actuator states. For this purpose, the waiting time configurable here is started after the start-up control phase. The main control phase is only changed to after this waiting time has elapsed. The length of the waiting time should be adapted to the start-up control method used (e.g. longer waiting time with relative start-up control behaviour) and the characteristics of the connected actuator (fast or slow dimming speed).	

Main control phase

Main control behaviour	Dimming steps (relative) **Dimming steps (absolute)**
In the main control phase, the light control adjusts the brightness of the lighting continuously to the active brightness setpoint. The data format used for the dimming values can be configured using this ETS parameter. Alternatively, the lighting can be activated by absolute brightness value telegrams ("Dimming value" channel object) or by relative dimming step telegrams (channel object "Dimming"). The setting "Dimming value presetting (relative dimming)" cannot be selected in the case of 2 or 3 channels.	

Minimum dimming step width	12.5% 6% **3%** 1%
This parameter defines in which steps the light control can dim the lighting by one telegram each, in the case of relative dimming step behaviour.	

Minimum dimming step width	2 … **4** … 32
This parameter defines in which steps the light control can dim the lighting by one telegram each, in the case of absolute dimming step behaviour.	

Minimum time interval between two dimming steps	1 … **2** … 59 s
This parameter specifies for the light control how long the minimum waiting time between two dimming steps must be. As a rule, small dimming steps (relatively 1 ... 3% / absolute 2 ... 10) with short time intervals (2 ... 10 seconds) so that light control is carried out without interruption in a subjectively pleasant manner. Since the dimming speed is primarily defined by the configuration of the actuator, the parameter of the light control should therefore be adapted to the dimming times of the actuators.	

Minimum dimming value	**1** … 128
With absolute dimming step specification, the minimum dimming value - if evaluated - is defined by this parameter within a range of 1 ... 128 (0.4%...50%) defined. The lower dimming value is permanently set to "1" if the behaviour of the control at the lower dimming value is not to be influenced. The minimum dimming value cannot be configured with relative dimming value specification. In this configuration, the device calculates rather the minimum dimming value limit itself by means of the configured minimum dimming step width. The relative dimming step telegrams transmitted to the actuator then enable the light control to detect during the ongoing control process whether or not the minimum dimming value has been reached. It is important that the activated KNX dimmer actuators can be dimmed to the lowest brightness level (basic brightness). The dimmable brightness range must not be limited by a minimum brightness on the actuators!	

If value falls below minimum dimming value	**No reaction** Switch off at switch-off brightness
When reaching the minimum dimming value using the light control, it should be ensured during the main control phase that the lighting is not switched on again immediately by falling below the brightness setpoint when switching off the lighting due to the light jump. For this purpose, the minimum dimming value can be evaluated and switch-off can be prevented or a switch-off brightness can be configured. No reaction: The light control does not react when the minimum dimming value is reached. A switch-off does not takes place. The dimming value remains unchanged until the control has to dim up the lighting again or until the step-down control phase is started due to the presence signal. Switch off at switch-off brightness: The light control switches off the lighting as soon as the minimum dimming value is reached and the switch-off brightness in the room has also been reached or exceeded. The additional hysteresis for the switch-off brightness can only be configured in this setting.	

Hysteresis for switch-off brightness	0 … **10** … 100%
After reaching the minimum dimming value, the switch-off brightness in the room must also be reached or exceeded so that the lighting is switched off automatically during the main control phase. The switch-off brightness is above the setpoint + hysteresis. The switch-off brightness is derived from an additional relative hysteresis value that is added to the hysteresis value of the brightness setpoint: Switch-off brightness = setpoint + (setpoint x (hysteresis setpoint + additional hysteresis switch-off brightness)) The additional hysteresis for the switch-off brightness is configured here.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic of the currently set light control behaviour.	

Step-down control phase

Behaviour at the beginning of the step-down control phase	**Minimum dimming value (absolute)** **Minimum dimming value (relative)** Switch off Configurable dimming value (absolute)
The behaviour at the end of the control is determined in the step-down control phase. This behaviour is defined by this parameter. The assigned lighting device can optionally be switched off immediately or first dimmed down to minimum brightness by transmitting the minimum dimming value. The minimum dimming value is a relative value (only for one channel) or an absolute dimming value (for two or three channels), depending on the number of configured outputs. Alternatively, it is possible for the device to set a configured dimming value (1 ... 100 %) is emitted.	

Dimming value	0 … **50** … 100%
This parameter defines the dimming value transmitted at the beginning of the step-down control phase. The parameter is available only in the setting "Behaviour at the start of the step-down control phase = configured dimming value (absolute)"!	

(Dimming value) At day	0 … **50** … 100%
This parameter defines the dimming value transmitted at the beginning of the step-down control phase in day mode. The parameter is available only in the setting "Behaviour at the start of the step-down control phase = configured dimming value (absolute)" with activated day/night switchover on the "General" parameter page.	

(Dimming value) At night	0 … **50** … 100%
This parameter defines the dimming value transmitted at the beginning of the step-down control phase in night mode. The parameter is available only in the setting "Behaviour at the start of the step-down control phase = configured dimming value (absolute)" with activated day/night switchover on the "General" parameter page.	

Additional waiting time	**0** … 59 min, **0** … 59 s
When dimming down to minimum brightness or when dimming to the configured dimming value, a delay time is started at the beginning of the dimming process. The duration of the waiting time is derived from a standard waiting time (10 seconds) plus an additional waiting time that can be configured with this parameter. The standard waiting time ensures that the minimum or preset brightness also can actually be set by the activated dimmer actuators before the end of the step-down control process.	

With new presence detection during waiting time	Ignore presence detection **Stop step-down control behaviour and restart control**
During an ongoing waiting time in the step-down control phase, a new presence can be transferred to the light control if, for example, people are present again in the room. In this case, this parameter defines how the light control should behave. Ignore presence detection: In this setting, a presence detection is ignored. The light control then executes the step-down control phase interruption-free until the end as preset. If the presence signal is still present at the end of the step-down control phase, the light control restarts the start-up control phase. Stop step-down control phase and restart control: In this setting, the step down control phase is cancelled immediately during the detection of a new presence and the startup control phase is started at once interruption-free.	

After waiting time has elapsed	Maintain minimum dimming value **Switch off**
After the waiting time has elapsed, this parameter decides which state the lighting adopts at the end of the control process. In the "Switch off" setting , the light control finally switches off the lighting. As an alternative to switching off, the minimum dimming value can be kept constant. This setting is appropriate, for example, if a permanent basic brightness is to be set in the room (e.g. in long corridors or passageways).	

Switch off by	**Switching telegram** Dimming telegram
You define here in which data format the switch-off takes place at the end of the step-down control phase. Either with switching telegram (1 bit) or dimming telegram (1 byte).	

Transmission behaviour of the actuated actuators

Status signal of the actuators is	**Active signalling object** Passive status object
This parameter can be used to set whether the actuated actuators actively send their own status to the bus with every change as an "active signalling object" or must be queried actively as a "passive status object".	

13.5 Start and end of detection

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. A configurable evaluation delay is available for this purpose. The light control may therefore not react to a movement detected only temporarily (e.g. walking quickly through a room). 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.

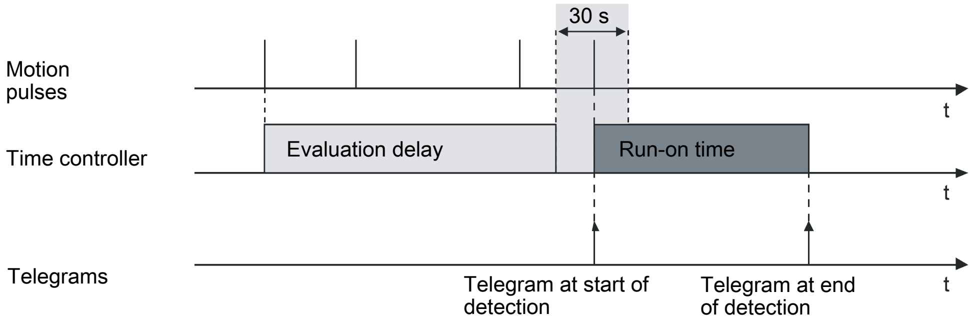


Figure 49: Evaluation delay]

Behaviour at end of detection

The end of a detection process is recognised by the absence of motion signals and expiry of the run-on time. The control parameters of the light control function block determine when the device gives the command to switch off the lighting.

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 "Light control FB - Start and end of detection" parameter page defines whether a fixed or self-learning run-on time is used.

– "Fixed time" setting:
  The run-on time is configured in the ETS. This makes it possible to dynamically adapt the additional run-on time user-defined via the bus.
– "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.

13.5.1 Start and end of detection parameter

Function blocks (FB) -> Light control FB - General -> Start and end of detection

Start of detection

Transmission behaviour	**Send directly** Evaluation delay
This parameter is used to specify when a telegram is sent to the bus after a detection process. 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 **Send directly:** After a detection, a telegram is sent directly to the bus. **Evaluation delay**: A telegram is sent to the bus only after a detection process with expiry of a delay time. Another parameter appears.	

Delay time	**0** … 59 min 0 … **30** …-59 s
This parameter is used to set the delay time in minutes and seconds. The minimum configurable time is one second.	

End of detection

Run-on time	**Fixed time** Self-learning
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 end of a detection process is signalled. **Fixed run-on time**: A fixed run-on time starts to expire at the end of the detection process. **Self-learning:** 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 minimum run-on time duration is used if you are only present for a short time and a long duration is used if you are present for a long time.	

Run-on time	**0** … 59 min 0 … **30** … 59 s
This parameter is used to define the run-on time. The setting is made in minutes and seconds. The minimum configurable time is 10 seconds. This parameter is visible only in the "Fixed run-on time" setting.	

At day	**0** … 59 min 0 … **30** … 59 s
This parameter is used to set the run-on time in day mode. The setting is made in minutes and seconds. The minimum configurable time is 10 seconds. This parameter is visible only in the "Fixed run-on time" setting with activated day/ night switchover.	

At night	**0** … 59 min 0 … **30** … 59 s
This parameter is used to set the run-on time in night mode. The setting is made in minutes and seconds. The minimum configurable time is 10 seconds. This parameter is visible only in the "Fixed run-on time" setting with activated day/night switchover.	

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 min 0 … **30** … 59 s
This parameter is used to set the lower limit of the self-learning run-on time for short presence times. The setting is made in minutes and seconds. The minimum configurable time is 10 seconds. This parameter is visible only if the "Run-on time" parameter is set to self-learning.	

Maximum duration	**0** … 59 min 0 … **30** … 59 s
This parameter is used to define the upper limit of the self-learning run-on time for long presence times. The setting is made in minutes and seconds. The minimum configurable time is 10 seconds. This parameter is visible only if the "Run-on time" parameter is set to self-learning.	

Evaluate short presence	Active **Inactive**
This parameter enables the evaluation of a short presence. In the event of a short presence, the minimum duration is called up in the event of a self-learning run-on time. 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. This parameter is visible only if the "Run-on time" parameter is set to self-learning.	

Time window for detection	**10** … 59 s
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. This parameter is visible only if the "Evaluate short presence" parameter is set to active.	

Overwrite run-on time in device during ETS programming operation	**Active** Inactive
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. These parameters are visible only if the "Can be set via object" parameter is set to active.	

13.5.2 Start and end of detection objects

Function	Name	Type	DPT	Flags
Run-on time	FB light control - Input	2-byte	7.005	C, -, W, -, U
2-byte object used to specify a fixed run-on time. For this time, the light control remains in the main control phase at the end of a detection process. 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 "Can be set via object".				

Function	Name	Type	DPT	Flags
Run-on time - Status	Light control FB - 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 "Can be set via object".				

13.6 Manual operation

With manual operation, the light control can be switched on or deactivated by means of KNX commands, e.g. with push-button sensors, and the lighting to be controlled can be operated directly. A distinction is made between two manual operating options.

Simple manual operation

With simple manual operation (ON/OFF) the light control can be started and stopped by the user regardless of the control process e.g. using a push-button sensor, whereby no brightness is evaluated when starting. Thus, activation of the lighting is forced when switching on manually.
After manual activation of the light control, this 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 switches off the lighting off directly without taking the step-down control behaviour into account.

The following is a list of triggers for simple manual operation by the "Reacts to" parameter ...

– ON
  The light control reacts only to ON telegrams to the "Manual operation - Simple" object. When an ON telegram is received, presence is simulated and the start-up control phase is started brightness independently. A control system disabled by permanent manual operation is enabled. The light control now works like after a presence detected by the PIR sensor. If the presence signal is subsequently cancelled, the device starts the step-down control phase after the run-on time has elapsed.
– OFF
  The light control reacts only to OFF telegrams to the "Manual operation - Simple" object. With the OFF telegram the light control is set to the state OFF, the presence signal is reset and the lighting is switched off. A control system disabled by permanent manual operation is enabled. Afterwards, the light control is ready immediately or - configured immediately - for a new motion detection after the locking time.
– ON and OFF
  The light control reacts to ON and OFF telegrams to the "Manual operation - Simple" object.
  When an ON telegram is received, presence is simulated and the start-up control phase is started brightness independently. The light control now works like after a presence detected by the PIR sensor. If the presence signal is subsequently cancelled, the device starts the step-down control phase after the run-on time has elapsed.
  With the OFF telegram the light control is set to the state OFF, the presence signal is reset and the lighting is switched off.
– ON/OFF as TOGGLE
  The light control reacts to each telegram input to the "Manual operation - Simple" object. When a telegram is received, the lighting is switched on or off

immediately brightness and motion independently. This depends on the current status of the lighting, 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.

Permanent manual operation

With permanent manual operation, the light control is deactivated and a fixed configurable dimming value is called up for the lighting to be controlled. A different dimming value can be entered for day and night mode, depending on the configuration.
Manual operation is carried out by means of the 1-bit object "Manual operation - Permanent". The switched-on lighting either remains switched on until another telegram is sent to the "Manual operation - Permanent" object or until a configurable run-on time has expired or the end of presence or relapse time. This can be configured separately.

The following is a list of triggers for permanent manual operation by the "Reacts to" parameter ...

- ON:
  The light control reacts only to ON telegrams to the "Manual operation - Permanent" object. When an ON telegram is received, the configurable "dimming value at ON" is immediately switched to regardless of the brightness and motion. The light control is deactivated. The evaluation of movements and brightness is disabled. The "Manual operation - Permanent - ON - Status" object can be used to indicate the deactivated light control.
  To end permanent manual operation, send another ON telegram to the object "Manual operation - Permanent". Light control is active again. The state of the light control is the same as at the start of a detection process.
- OFF
  The light control reacts only to OFF telegrams to the "Manual operation - Permanent" object. When an OFF telegram is received, the lighting is switched off immediately regardless of the brightness and motion. The light control is deactivated. The evaluation of movements and brightness is disabled. The "Manual operation - Permanent - OFF - Status" object can be used to indicate the deactivated light control.
  To end permanent manual operation, send another OFF telegram to the object "Manual operation - Permanent". The lighting is switched off and automatic mode is active again.
- ON and OFF:
  The function block reacts to ON and OFF telegrams to the "Manual operation - Permanent" object. When an ON telegram is received, the configurable "dimming value at ON" is immediately switched to regardless of the brightness and motion. When an OFF telegram is received, the lighting is switched off immediately regardless of the brightness and motion. The light control is deactivated. The object "Manual operation - Permanent - ON - Status" or "Manual operation - Permanent - OFF - Status" can be used to indicate the deactivated light control.

To end permanent manual operation, send another ON or OFF telegram to the "Manual operation - Permanent" object. The lighting is like at the start of a detection process or switched off, depending on the telegram.

– ON/OFF as TOGGLE
The function block reacts to switchover telegrams to the "Manual operation - Permanent" object. When a telegram is received, the system immediately switches between "Dimming value at ON" and OFF regardless of the brightness and motion. This depends on the current status of the lighting, which must be communicated to the operating device, e.g. push-button sensor, via group addresses. The light control is deactivated. The object "Manual operation - Permanent - ON - Status" or "Manual operation - Permanent - OFF - Status" can be used to indicate the deactivated light control.
To end permanent manual operation, send a switchover telegram to the object "Manual operation - Permanent" again. The lighting is like at the start of a detection process or switched off, depending on the previous state.

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 relapse time". Different times can be entered for day and night mode, depending on the configuration.

Parallel operation

The "Objects for parallel operation via other control points" parameter enables parallel operation of the actuators actuated by the light control. In parallel operation, the assigned lighting device can be activated directly, for example, via a push-button sensor or operating panel. In addition, the manually triggered dimming or scene commands to the lighting also have to be transmitted to the lighting control. Otherwise, the light control would override the manual operation. For this purpose, the light control has 3 objects each with different data formats ("Parallel operation input" - 4-bit relative dimming, 1-byte brightness value, 1-byte scene extension unit). By "Listening in" to the telegrams via the named objects, the light control is deactivate during parallel operation, whereby the lighting is no longer influenced by the control but only by the user.

i The light control is activated after parallel operation either by simple 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 light control 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.

13.6.1 Manual operation application examples

Two application examples are shown below, which illustrate the linking of the necessary communication objects between sensors, the presence detector incl. light control, actuators and manual operation.

Application example 1: light control with main and extension unit and manual operation

Application example:
At a laboratory with a window front and several entrances, constant brightness should prevail at the work tables even when daylight levels change. Two presence detectors are required to detect movement throughout the laboratory.
As one entrance is not in the detection field of the presence detectors, a push-button sensor is installed there, which can be used to switch on the light when entering the laboratory and switch it off when leaving.
Another push-button sensor in the laboratory can be used to switch the lighting to a fixed value and change the brightness of the lighting. The light control is deactivated in the process.

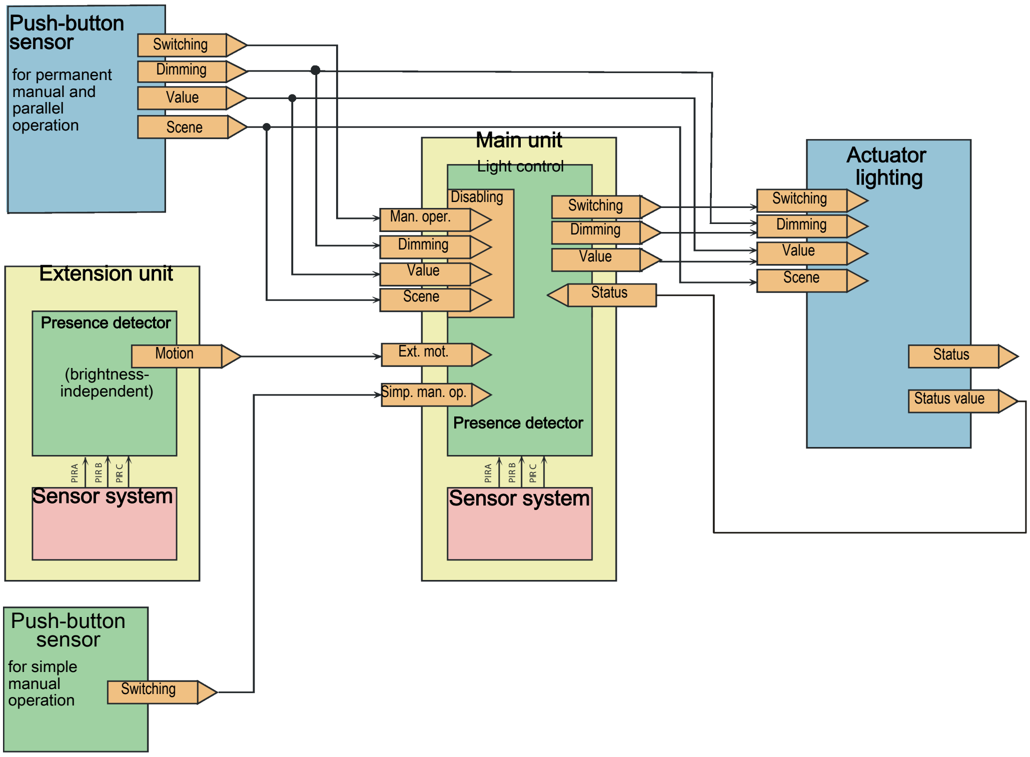


Figure 50: Light control with presence detector as extension unit and push-button sensors for manual operation

Implementation:
The light control works as a main unit with an extension unit, which reports motion detection to the main unit by means of the "Motion status - External" object.
A push-button sensor can be used to simulate motion detection brightness independently by means of the "Manual operation - Simple" object. The automatic mode of the

light control is still active.
"Permanent manual operation" can be activated with another push-button sensor. The light control is disabled and the automatic function is deactivated. The lighting switches to the configured value.
Parallel operation is also implemented with the same push-button sensor, which can be used to change the brightness of the lighting. The brightness of the lighting can be changed by means of absolute or relative dimming telegrams. The light control is deactivated until the disabling is revoked by "permanent manual operation" or simple manual operation.

Special features of the implementation:

– Simple manual operation with a push-button sensor is connected via a group address to the input object of simple manual operation of the presence detector.
– Permanent manual operation with a push-button sensor is connected via a group address to the input object of the permanent manual operation of the presence detector.
– In parallel operation, the dimming and scene commands from the push-button sensor go directly to the actuators and also to the corresponding input objects of the light control, so that the light control is aware of each parallel operation of the actuator and is deactivated during operation.

Application example 2 light control controls three output circuits

Application example:
In an office with a window front, constant brightness is to prevail at the desks even when daylight levels change. There are three lighting circuits that are integrated into the lighting control system but are intended to operate at a different brightness level. A push-button sensor in the office can be used to switch the lighting to a fixed value and change the brightness of the lighting. The light control is deactivated in the process.

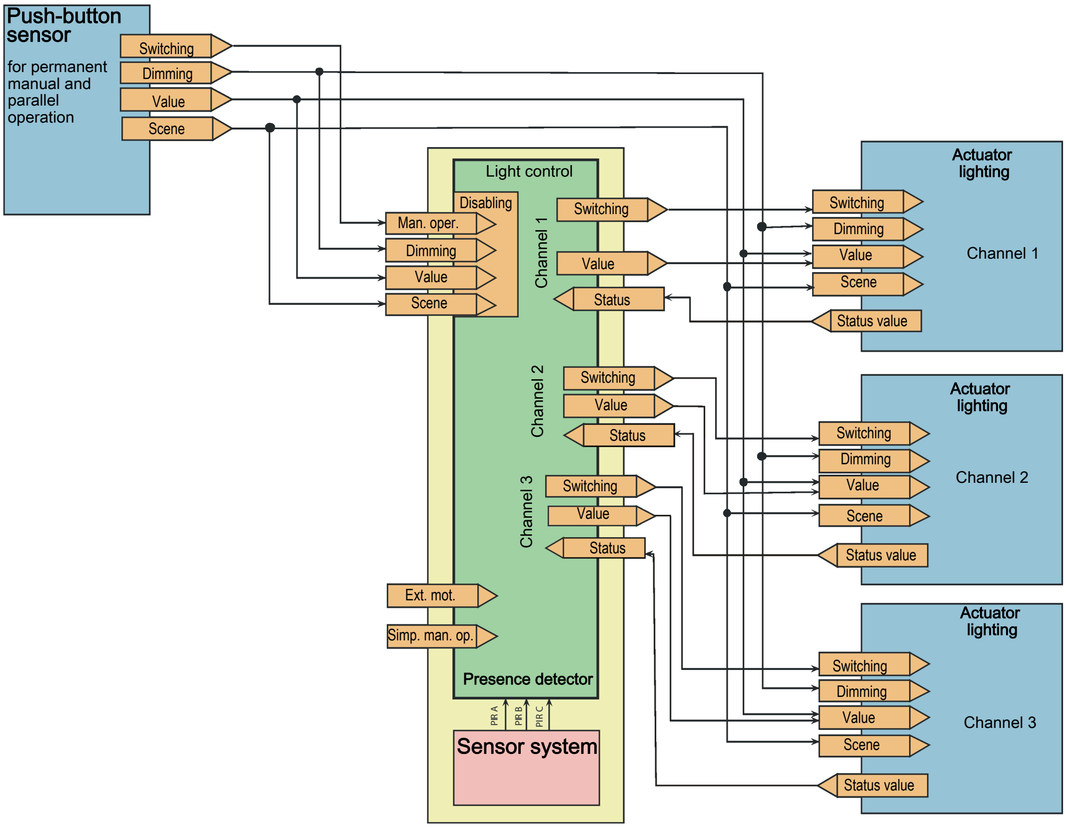


Figure 51: Light control with 3 lighting channels and push-button sensor for permanent manual operation

Implementation:
The light control controls the three lighting channels, whereby only lighting channel 1 is actively integrated into the light control and the brightness of the other two lighting channels depends on lighting channel 1.
"Permanent manual operation" can be activated with a push-button sensor. The light control is disabled and the automatic function is deactivated. The lighting switches to the configured value.
Parallel operation is also implemented with additional buttons of the push-button sensor, which can be used to change the brightness of the lighting. The brightness of the lighting can be changed by means of absolute or relative dimming telegrams. All three lighting circuits can be actuated individually or together and can integrated into light scenes.
The light control is deactivated until the disabling is revoked by further "permanent manual operation".

Special features of the implementation:

– Permanent manual operation with a push-button sensor is connected via a group address to the input object of the permanent manual operation of the presence detector.
– In parallel operation, the dimming and scene commands from the push-button sensor go directly to the actuators and also to the corresponding input objects of the light control, so that the light control is aware of each parallel operation of the actuator and is deactivated during operation.

13.6.2 Manual operation parameter

Light control FB - General -> Enabled functions

Manual operation	Active Inactive
Manual operation allows the light control and the related actuators to be operated presence and brightness independently. There is simple manual operation and permanent manual operation.	

FB light control - General -> Manual operation

Use simple manual operation	Inactive Active
This parameter enables simple manual operation. Set the parameter to active for this purpose. Additional parameters appear.	

Reacts to	ON OFF **ON and OFF** ON/OFF as TOGGLE
The "Reacts to" parameter specifies how and to which telegram the light control reacts. ON: The light control reacts only to ON telegrams to the "Manual operation - Simple" object. When an ON telegram is received, presence is simulated and the start-up control phase is started brightness independently. A control system disabled by permanent manual operation is enabled. The light control now works like after a presence detected by the PIR sensor. If the presence signal is subsequently cancelled, the device starts the step-down control phase after the run-on time has elapsed. OFF: The light control reacts only to OFF telegrams to the "Manual operation - Simple" object. With the OFF telegram the light control is set to the state OFF, the presence signal is reset and the lighting is switched off. A control disabled by manual operation is enabled. Afterwards, the light control is ready immediately or - configured immediately - for a new motion detection after the locking time. ON and OFF: The light control reacts to ON and OFF telegrams to the "Manual operation - Simple" object. When an ON telegram is received, presence is simulated and the start-up control phase is started brightness independently. The light control now works like after a presence detected by the PIR sensor. If the presence signal is subsequently cancelled, the device starts the step-down control phase after the run-on time has elapsed. With the OFF telegram the light control is set to the state OFF, the presence signal is reset and the lighting is switched off. ON/OFF as TOGGLE: The light control reacts to each telegram input to the "Manual operation - Simple" object. When a telegram is received, the lighting is switched on or off immediately brightness and motion independently. This depends on the current status of the lighting, which must be communicated to the operating device, e.g. push-button sensor, via group addresses. Automatic operation continues to run in the background. This parameter is visible only if the "Use simple manual operation" parameter is set to active.	

Use permanent manual operation	**Inactive** Active
This parameter enables permanent manual operation. Set the parameter to active for this purpose. Additional parameters appear.	

Reacts to	ON OFF **ON and OFF** ON/OFF as TOGGLE

The "Reacts to" parameter specifies how and to which telegram the light control reacts during permanent manual operation.

ON: The light control reacts only to ON telegrams to the "Manual operation - Permanent" object. When an ON telegram is received, the configurable "dimming value at ON" is switched to regardless of the brightness and motion. The light control is deactivated. The evaluation of movements and brightness is disabled. The "Manual operation - Permanent - ON - Status" object can be used to indicate the deactivated light control.
To end permanent manual operation, send another ON telegram to the object "Manual operation - Permanent". Light control is active again. The state of the light control is the same as at the start of a detection process

OFF: The light control reacts only to OFF telegrams to the "Manual operation - Permanent" object. When an OFF telegram is received, the lighting is switched off immediately regardless of the brightness and motion. The light control is deactivated. The evaluation of movements and brightness is disabled. The "Manual operation - Permanent - OFF - Status" object can be used to indicate the deactivated light control.
To end permanent manual operation, send another OFF telegram to the object "Manual operation - Permanent". The lighting is switched off and automatic mode is active again.

ON and OFF: The function block reacts to ON and OFF telegrams to the "Manual operation - Permanent" object. When an ON telegram is received, the configurable "dimming value at ON" is immediately switched to regardless of the brightness and motion. When an OFF telegram is received, the lighting is switched off immediately regardless of the brightness and motion. The light control is deactivated. The object "Manual operation - Permanent - ON - Status" or "Manual operation - Permanent - OFF - Status" can be used to indicate the deactivated light control.
To end permanent manual operation, send another ON or OFF telegram to the "Manual operation - Permanent" object. The lighting is like at the start of a detection process or switched off, depending on the telegram.

ON/OFF as TOGGLE: The light control reacts to each telegram input to the "Manual operation - Permanent" object. When a telegram is received, the system immediately switches between "Dimming value at ON" and OFF regardless of the brightness and motion. This depends on the current status of the lighting, which must be communicated to the operating device, e.g. push-button sensor, via group addresses. The light control is deactivated.
To end permanent manual operation, send a switchover telegram to the object "Manual operation - Permanent" again. The lighting is like at the start of detection or switched off, depending on the previous state.

Dimming value at ON	0 … **90** … 100%
This parameter specifies the dimming value at which the lighting is switched on during permanent manual operation.	

(Dimming value at ON) At day	0 … **90** … 100%
This parameter specifies the dimming value at which the lighting is switched on during permanent manual operation in day mode. Visible only if day/night switchover is activated.	

(Dimming value at ON) At night	0 … **90** … 100%
This parameter specifies the dimming value at which the lighting is switched on during permanent manual operation in night mode. Visible only if day/night switchover is activated.	

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
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. Deactivated: Permanent manual operation is not terminated automatically. To end it, a telegram must be sent again to the object "Manual operation - Permanent". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose. After run-on time: Permanent manual operation is automatically ended after the time set with the "Run-on time" parameter has elapsed. Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose. At end of presence and relapse 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 "Relapse time" parameter is used to set the relapse time. Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose. Visible only if the motion detection takes place "internally". At end of external presence and relapse time: Permanent manual operation is automatically terminated when external presence is no longer detected (end of external presence) and the run-on time has expired. The run-on time is set with the "Run-on time" parameter. Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose. Visible only if motion is detected "externally via object". This parameter is visible only if the parameter "Manual operation - Permanent" is set to active.	

Run-on time	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. 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 "Exit automatically" parameter is set to "After run-on time".	

(Run-on time) At day	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. 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 "after run-on time" and day/night switchover is activated.	

(Run-on time) At night	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. 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 "after run-on time" and day/night switchover is activated.	

Relapse time	0 … 23 h 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. 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 relapse time" or "At end of external presence and relapse time".	

(Relapse time) At day	0 … 23 h 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 relapse time" or "At end of external presence and relapse time" with day/night switchover activated.	

(Relapse time) At night	0 … 23 h 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 relapse time" or "At end of external presence and relapse time" with day/night switchover activated.	

Objects for parallel operation via additional control points	Inactive Active
This parameter makes objects visible that enable the light control to be disabled if the actuators actuated by the light control are operated in parallel. If the lighting device is to be actuated directly with a push-button sensor or a control panel, for example, the telegrams must also be transmitted to the input objects of the light control for parallel operation. Otherwise, the light control would override the manual operation. In parallel operation, the light control behaves in the same way as in permanent manual operation, i.e. the light control is deactivated. This state remains active until it is revoked by simple manual operation or permanent manual operation. When parallel operation is activated, the four input objects are visible: "Manual operation - Permanent - Parallel operation - Dimming step" Setting the brightness by sending relative dimming telegrams. "Manual operation - Permanent - Parallel operation - Dimming value" Specification of an absolute dimming value in per cent "Manual operation - Permanent - Parallel operation - Scene extension unit" Call up a scene. "Manual operation - Permanent - Parallel operation - Actuator status" Feedback of the switching state of the actuated lighting circuits ("1" = On / "0" = Off). This parameter is visible only if the "Permanent manual operation" parameter is set to active.	

Show info graphic	Inactive Active
This parameter can be used to display the infographic for manual operation.	

Ignore motion if OFF	0 … 59 min 0 … 5 …59 s
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. This parameter is visible only if at least one type of manual operation has been activated.	

Orientation light OFF when ON via manual operation	Active Inactive
This parameter can be used to define the behaviour of the orientation light if the lighting in the room is switched on by manual operation of the light control function block. Active: The orientation light is switched off when the light is switched on by manual operation of the light control FB. Inactive: The orientation light does not react when the light is switched on by manual operation of the light control FB. This parameter is visible only if at least one type of manual operation has been activated.	

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13.6.3 Manual operation objects

Function	Name	Type	DPT	Flag
Manual operation - Simple	FB light control - Input	1-bit	1.001	C, -, W, -, U
1-bit object for activating the light control. The light control is activated, e.g. with a push-button sensor or control panel, brightness independently and the lighting is switched on by means of an ON switching command instead of presence detection. The activated light control runs through all configured control phases and switches the light off or to a predefined value at the end. The light of the lighting device is switched off directly by an OFF switching command by means of this object. This object is visible only if simple manual operation is enabled.				

Function	Name	Type	DPT	Flag
Manual operation - Permanent	FB light control - Input	1-bit	1.001	C, -, W, -, U
1-bit object used to manually actuate (switch on/off) the lighting, which is controlled by the light control. The light control is deactivated in the event of manual control by means of this object. "1" = switch on to configured brightness value, "0" = switch off the lighting. To reactivate automatic mode, another telegram must be sent to this object. This object is visible only if permanent manual operation is enabled.				

Function	Name	Type	DPT	Flag
Manual operation - Permanent - ON - Status	Light control FB - Output	1-bit	1.011	C, R, -, T, A
1-bit object for feedback that the lighting has been switched on by permanent manual operation and therefore the light control and automatic function are deactivated. This object is visible only if permanent manual operation is enabled.				

Function	Name	Type	DPT	Flag
Manual operation - Permanent - OFF - Status	Light control FB - Output	1-bit	1.011	C, R, -, T, A
1-bit object for feedback that the lighting has been switched off by permanent manual operation and therefore the light control and automatic function are deactivated. This object is visible only if permanent manual operation is enabled.				

Parallel operation

The lighting actuators controlled by the light control can also be controlled by other sensors in the KNX installation. This is referred to as parallel operation. 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	Flag
Manual operation - Permanent - Parallel operation - Dimming step	FB light control - Input	4-bit	3.007	C, -, W, -, U
This 4-bit object informs the presence detector that dimming commands are being sent to the lighting controlled via the light control, e.g. with a push-button sensor. This deactivates the light control.				

Function	Name	Type	DPT	Flag
Manual operation - Permanent - Parallel operation - Dimming value	FB light control - Input	1-byte	5.001	C, -, W, -, U
This 1-byte object informs the presence detector that dimming values are being sent to the lighting controlled by the light control, e.g. with a push-button sensor. This deactivates the light control.				

Function	Name	Type	DPT	Flag
Manual operation - Permanent - Parallel operation - Scene extension unit	FB light control - Input	1-byte	17.001	C, -, W, -, U
This 1-byte object informs the presence detector that a scene call is being sent to the lighting controlled by the light control, e.g. with a push-button sensor. This deactivates the light control.				

Function	Name	Type	DPT	Flag
Manual operation - Permanent - Parallel operation - Actuator status	FB light control - Input	1-bit	1.011	C, -, W, -, U
1-bit object for feedback of the actuator status of the lighting that is controlled by the light control.				

13.7 Disabling function

The light control can be disabled independently of the other functional units via the disabling function. The light control is deactivated when disabling is active. The assigned lighting can be brought to a defined state at the beginning or end of the disabling function. The disabling function can be activated by force after the bus voltage returns or after ETS programming.

Behaviour at the beginning of the disabling function

The parameter "Behaviour at the beginning of the disabling function" defines the behaviour of the light control if the disabling function is activated. The following settings are possible...

- "No reaction"
  At the start of disabling the function block, no telegrams are transmitted via the outputs. The assigned lighting is not influenced by the disabling.
- "Send telegram":
  At the start of the disabling function, freely configurable switching or brightness value telegrams can be output via the output channels in order to set the assigned lighting to the desired state. The telegrams are configured in the ETS separately for each channel. With active day/night switchover, the "At day" and "At night" behaviour can be selected separately.
- "Execute step-down control behaviour":
  In this setting, the configured step-down control behaviour is executed on activation of the disabling function. Presence signals are ignored during execution of the step-down control behaviour.

Behaviour at the end of the disabling function

On ending the disabling function, the light control is reset and the basic state (state OFF, no presence) set. The device then stops ongoing disabling reactions (e.g. step-down control behaviour) immediately. The parameter "At the end of disabling" defines the behaviour of the light control at the end of the disabling function. The following settings are possible here...

- "Enable and send no telegram":
  In this setting, the light control after enabling is internally in the state OFF and reacts to the newly received presence according to the configuration. The lighting state, which might have been changed externally during an active disabling function depending on the application, must be taken into account when enabling! At the end of the disabling function, the current existing lighting state will not be changed until new presence information by the light control.
- "Enable and switch off":
  At the end of the disabling function, the assigned lighting is switched off to restore a defined basic state of the lighting. If a presence exists or a new presence is received, the control is restarted according to the measured brightness.

– "Enable and execute start-up control behaviour":
  In this setting, a presence signal is activated artificially at the end of the disabling function. As a result, the start-up control behaviour is executed automatically at the appropriate brightness value (determined brightness < value setpoint). The main control phase is then changed to. The further behaviour of the control process is dependent on the actual presence information.

Optionally, the disabling status of the light control can be made available via the 1-bit object "Disabling function - Status". To do this, the "Status object" parameter must be configured to "active" on the parameter page "Light control FB - General -> Disabling function". If the object has been enabled, the light control actively sends its own disabling status to the bus each time a change is made.
The "Object polarity" parameter defines the telegram polarity of the light control enabling object.

13.7.1 Disabling function parameter

Function blocks (FB) -> Light control FB - General -> Enabled functions

Disabling function	Active **Inactive**
The function block can be disabled independently of the other function blocks using the disabling function. The disabling function can be used if this parameter is configured to "active". The disabling is then activated and deactivated by means of the object "Disabling function - Activate/Deactivate".	

Function blocks (FB) -> Light control FB -> Disabling function

Behaviour of the channels

At start of disabling	**No reaction** Send telegram Execute step-down control behaviour
This parameter defines the behaviour of the light control as soon as the disabling function is activated. **No reaction:** At the start of disabling the function block, no telegrams are transmitted via the outputs. The assigned lighting is not influenced by the function block. **Send telegram**: At the start of the disabling function, freely configurable switching or brightness value telegrams can be output via the output channels in order to set the assigned lighting to the desired state. The telegrams are configured separately for each channel. **Execute step-down control behaviour**; In this setting, the configured step down control behaviour is executed on activation of the disabling function. Presence signals are ignored during execution of the step-down control behaviour.	

Lighting channel 1 Lighting channel 2 Lighting channel 3	**Switching** Dimming value
This selection can be made separately for each channel. Depending on whether 1, 2 or 3 channels are configured. This parameter is visible only if the "At the start of disabling" parameter is set to "Disable and send telegram".	

Value	ON **OFF**
This parameter is used to set the switching state of the selected channel. This parameter is visible only if the "At the start of disabling" parameter is set to "Disable and send telegram" and the corresponding channel is set to "switching".	

At day	ON OFF
This parameter is used to set the switching state of the selected channel in day mode. This parameter is visible only if a day/night switchover has been activated on the "General" parameter page and the "At the start of disabling" parameter is set to "Disable and send telegram" and the corresponding channel is set to "switching". This parameter is visible only if day/night switchover has been activated on the "General" parameter page.	

At night	ON OFF
This parameter is used to set the switching state of the selected channel in night mode. This parameter is visible only if a day/night switchover has been activated on the "General" parameter page and the "At the start of disabling" parameter is set to "Disable and send telegram" and the corresponding channel is set to "switching".	

Value	0 … 100%
This parameter is used to set the dimming value of the selected channel. This parameter is visible only if the "At the start of disabling" parameter is set to "Disable and send telegram" and the corresponding channel is set to "dimming value".	

At day	0 … 100%
This parameter is used to set the dimming value of the selected channel in day mode. This parameter is visible only if a day/night switchover has been activated on the "General" parameter page and the "At the start of disabling" parameter is set to "Disable and send telegram" and the corresponding channel is set to "dimming value".	

At night	0 … 100%
This parameter is used to set the dimming value of the selected channel in night mode. This parameter is visible only if a day/night switchover has been activated on the "General" parameter page and the "At the start of disabling" parameter is set to "Disable and send telegram" and the corresponding channel is set to "dimming value".	

At end of disabling	**Enable and send no telegram** Enable and switch off Enable and execute start-up control behaviour
On ending the disabling function, the light control is reset and the basic state (state OFF, no presence) set. The device then stops ongoing disabling reactions (e.g. step-down control behaviour) immediately. This parameter defines the behaviour of the light control at the end of disabling. **Enable and send no telegram:** In this setting, the light control after enabling is internally in the state OFF and reacts to the newly received presence according to the configuration. The lighting state, which might have been changed externally during an active disabling function depending on the application, must be taken into account when enabling! At the end of the disabling function, the current existing lighting state will not be changed until new presence information by the light control. **Enable and switch off**: At the end of disabling, the assigned lighting is switched off by means of the actuators to restore a defined basic state of the lighting. If a presence exists or a new presence is received, the control is restarted according to the measured brightness. **Enable and execute start-up control behaviour**: In this setting, a presence signal is artificially activated at the end of the disabling function. As a result, the start-up control behaviour is executed automatically at the appropriate brightness value (determined brightness < value setpoint). The main control phase is then changed to. The further behaviour of the control process is dependent on the actual presence information. The behaviour at the end of disabling is the same for all active channels.	

Unlocking behaviour

Unlock automatically	**Deactivated** After configured disabling time At end of presence and individual run-on time
This parameter is used to specify whether a disabling process must be ended manually or is performed automatically. **Deactivated:** An active disabling process must be ended manually by sending a telegram to the "Disabling function - Activate/Deactivate" communication object. **After configured disabling period:** A disabling process does not remain permanently in place, but is automatically deactivated after the disabling period has expired. Additional parameters appear. **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. Even if automatic termination of the disabling process has been activated, it is still possible to unlock by means of the "Disabling function - Activate/Deactivate" communication object.	

Disabling time	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the disabling period in hours, minutes and seconds. This parameter is visible only if the "Unlock automatically" parameter is set to "at end of disabling period".	

(Disabling time) At day	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the disabling period in hours, minutes and seconds in day mode. This parameter is visible only if day/night switchover has been activated on the "General" parameter page and the "Unlock automatically" parameter is set to "at the end of the disabling period".	

(Disabling time) At night	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the disabling period in hours, minutes and seconds in night mode. This parameter is visible only if day/night switchover has been activated on the "General" parameter page and the "Unlock automatically" parameter is set to "at the end of the disabling period".	

Disabling time can be set via object	**Inactive** Active
When this parameter is activated, the "Disabling period" and "Disabling period" communication objects appear. The disabling period can be changed or read out by means of these 2-byte objects. This parameter is visible only if the "Unblock automatically" parameter is set to "after configured disabling period".	

Unlocking delay after manual unlocking	**Inactive** Active
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. Inactive: The disabling is revoked immediately. Active: The disabling is revoked only after the set delay time has elapsed. Additional parameters appear.	

Duration of unblocking delay	**0** … 59 min 0 … **15** … 59 s
This parameter is used to set the duration of the unlocking delay in minutes and seconds. This parameter is visible only if the "Unlocking delay after manual unlocking" parameter is active.	

(Duration of unblocking delay) At day	**0** … 59 min 0 … **15** … 59 s
This parameter is used to set the duration of the unlocking delay in minutes and seconds in day mode. This parameter is visible only if day/night switchover has been activated on the "General" parameter page and the "Unlocking delay after manual unlocking" parameter is active.	

(Duration of unblocking delay) At night	**0** … 59 min 0 … **15** … 59 s
This parameter is used to set the duration of the unlocking delay in minutes and seconds in night mode. This parameter is visible only if day/night switchover has been activated on the "General" parameter page and the "Unlocking delay after manual unlocking" parameter is active.	

Individual run-on time	**0** … 23 h **0** … 59 min 0 … **30** … 59 s
This parameter is used to set the length of the individual run-on time for automatic unlocking in hours, minutes and seconds. This parameter is visible only if the "Unlock automatically" parameter is set to "at end of presence and individual run-on time".	

(Individual run-on time) At day	**0** … 23 h **0** … 59 min 0 … **30** … 59 s
This parameter is used to set the length of the individual run-on time for automatic unlocking in hours, minutes and seconds in day mode. This parameter is visible only if day/night switchover has been activated on the "General" parameter page and the "Unlock automatically" parameter is set to "at end of presence and individual run-on time".	

(Individual run-on time) At night	**0** … 23 h **0** … 59 min 0 … **30** … 59 s
This parameter is used to set the length of the individual run-on time for automatic unlocking in hours, minutes and seconds in night mode. This parameter is visible only if day/night switchover has been activated on the "General" parameter page and the "Unlock automatically" parameter is set to "at end of presence and individual run-on time".	

Individual run-on time can be set via object	**Inactive** Active
When this parameter is activated, the communication objects "Disabling function - Individual run-on time" and "Disabling function - Individual run-on time - Status" appear. The individual run-on time can be changed or read out by means of these 2-byte objects. This parameter is visible only if the "Unlock automatically" parameter is set to at end of presence and individual run-on time.	

Overwrite values in device after ETS programming	Inactive **Active**
The disabling period and the individual run-on time of the disabling function can be changed in the device by means of corresponding communication objects. If these changed parameters are to be retained permanently in the device even after an ETS programming operation, this parameter must be switched to "Inactive". If the disabling period or the individual run-on time of the disabling function is to be overwritten by the value preset in the ETS after an ETS programming operation in the device, this parameter must be set to "Active". The parameter is visible only if the parameter "Disabling duration can be set via object" or "Individual run-on time can be set via object" is set to active.	

Object polarity	**0 = enable / 1 = disable** 0 = disable / 1 = enable
This parameter defines the telegram polarity of the disabling object. The parameter is visible only if the disabling function is enabled.	

Status object	**Inactive** Active
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: Default setting 0 = normal operation, 1 = disabling function active The parameter is visible only if the disabling function is enabled.	

13.7.2 Disabling function objects

Function	Name	Type	DPT	Flag
Disabling function - Activate/Deactivate	FB light control - Input	1-bit	1.003	C, -, W, -, U
1-bit object used to activate and deactivate the disabling function (telegram polarity configurable).				

Function	Name	Type	DPT	Flag
Disabling function - Status	Light control FB - Output	1-bit	1.003	C, R, -, T, A
1-bit object for feedback on whether the disabling function is active or inactive. Visible only if the status object is activated.				

Function	Name	Type	DPT	Flag
Disabling function - Disabling time	FB light control - 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 duration".				

Function	Name	Type	DPT	Flag
Disabling function - Disabling time - Status	Light control FB - Output	2-byte	7.005	C, R, -, T, A
2-byte object used to output the currently active disabling period in seconds. This object is visible only if a configured disabling period has been activated as the unlocking behaviour and the "Disabling period can be set via object" parameter is activated.				

Function	Name	Type	DPT	Flag
Disabling function - Individual run-on time	FB light control - 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	Flag
Disabling function - Individual run-on time - Status	Light control FB - Output	2-byte	7.005	C, R, -, T, A
2-byte object used to output the currently active individual run-on time in seconds. This object is visible only if the "Unlock automatically" parameter is set to "at end of presence and individual run-on time".				

13.8 Activity monitoring

Activity monitoring

In the light control function block, the time period since the last motion can be determined and sent 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 "Activity monitoring function" parameter is set to active on the parameter page "FB Light control - General -> Enabled" in the ETS.

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.

13.8.1 Activity monitoring parameter

Light control FB - General -> Enabled functions

Activity monitoring function	Active **Inactive**
This parameter enables the activity monitoring function for the light control FB. The "Activity monitoring function" parameter page and the "Activity monitoring - Time since last motion" object appear.	

Light control FB - General -> Activity monitoring

Transmit meter reading cyclically	**Active** Inactive
This parameter is used to define whether the meter reading is sent cyclically to the bus. Active: The meter reading is sent automatically. The interval is defined with the "Cycle time" parameter. Inactive: The parameter must be queried by means of a telegram to the "Activity monitoring - Time since last movement" object.	

Cycle time	**0** … 23 h 0 … **10** …59 min
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. This parameter is visible only if the "Transmit meter reading cyclically" parameter is set to active	

13.8.2 Activity monitoring objects

Function	Name	Type	DPT	Flags
Activity monitoring - Time since last movement	Light control FB - Output	2-byte	7.006	C, R, -, T, A
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. This object is visible only if the activity monitoring function is activated in the ETS.				

13.9 Scenes

In the light control function block, up to 64 scenes can also be called up, which can change brightness setpoints or activate/deactivate disabled functions only for the light control function block, in addition to the direct actuation of a lighting group.
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.

i To activate and deactivate the disabling function by calling up a scene, the disabling function must be enabled and configured for the light control area.

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.

13.9.1 Light control scenes parameters

Function blocks (FB) -> Light control FB - General -> Enabled functions

Scenes	**Inactive** Active
The scene function of the function block can be activated or deactivated here. The parameter page Light control FB -> Scenes appears.	

Function blocks (FB) -> Light control FB - General -> Scenes

Delay scene recall	**Inactive** Active
A scene is called up by means of the scene extension object. The scene call-up can be delayed after receiving a call-up telegram (parameter activated) if necessary. The scene is alternatively called up immediately after receiving the telegram (Inactive parameter).	

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
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. **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. **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. This parameter is visible only when the extended scene call-up is activated.	

Scene configuration	**Variable (1...64 scenes)** Fixed (64 scenes)
The scene configuration selected here decides whether the number of scenes is variable (1 ... 64) or alternatively fixed to the maximum (64). 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. 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. To do this, remove the tick from the corresponding scene under "Scene active".	

Number of scenes	1...**10**...64
This parameter defines how many scenes are visible for the function block in the ETS and can therefore be used. This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes)	

Scene number	0...**1***...64 *: The predefined scene number depends on the scene (1...64).
It is possible to set which scene number (1 ... 64) actuates each scene. 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. This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes).	

Function	**Activate disabling** Deactivate disabling Setpoint presetting (lux)
This parameter is present for each scene separately. The number depends on the setting of the "Number of scenes" parameter. This parameter is used to configure the function executed when the scene is called up. **Activate disabling**: When the scene is called up, a telegram is sent to the object "Disabling function - Activate/Deactivate", 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. To end automatically, set the "Unlock automatically" parameter on the parameter page "Light control FB -> Disabling function". This setting makes sense only if the "Disabling function" parameter is set to active. **Deactivate disabling:** When the scene is called up, a telegram is sent to the object "Disabling function - Activate/Deactivate", which deactivates the disabling function. If configured, the function block sends the "End of disabling" telegram. Automatic mode is active again. This setting makes sense only if the "Disabling function" parameter is set to active. **Setpoint specification (lux):** A new brightness setpoint for light control is specified when the scene is called up. The setpoint received by calling up the scene is retained until a new setpoint is specified (by external setpoint specification, setpoint shift or scene call-up) or a reset command is sent to the "Brightness setpoint - Reset" object. Even a bus voltage failure does not reset this new brightness setpoint. An ETS programming operation resets the setpoint automatically to the ETS presettings if this is provided for in the configuration.	

13.9.2 Light control scenes objects

Function	Name	Type	DPT	Flag
Scenes - Scene extension unit	FB light control - Input	1-byte	17.001	C, -, W, -, U
1-byte object used to call up, switch or save one of a maximum of 64 scenes from a scene extension unit. This object is visible only if the scene function for light control is activated in the ETS.				

Function	Name	Type	DPT	Flag
Scenes - Extended scene recall	FB light control - Input	1-bit	1.001	C, -, W, -, U
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). This object is visible only if the scene function and the extended scene call-up for light control are activated in the ETS.				

14 Orientation light function block

The presence detector allows the white LEDs to be used as orientation light. This makes it possible to provide demand-orientated lighting for orientation in the room. The orientation light can be switched automatically, semi-automatically or manually, depending on the configuration. The brightness of the LEDs can be adapted to the environment and the purpose. This makes the orientation light ideal, for example for use in offices or hotel corridors.

The orientation light is an independent function block that can be used independently of the other function blocks. The function block works brightness-independently.

i If the orientation light is switched on, it is no longer possible to measure the brightness with the internal brightness sensor. The last value before the orientation light is switched on is therefore frozen. The function blocks work with this value until the orientation light is switched off again.

i If the orientation light has been switched on or off, the sensitivity of the PIR sensors is reduced for a short period of time to prevent faulty switching processes and then gradually increased again to the set value.

i When the orientation light is switched on and off, its temperature changes. This temperature change may occasionally result in faulty detections. In this case, the brightness of the orientation light should be reduced slightly.

14.1 "General" parameters

Function blocks (FB) -> Orientation light FB - General

Designation	Free text Max. 40 characters long text
This parameter assigns a name for identification to the "orientation light FB". The name serves merely as an aid in the ETS and is not programmed into the device.	

Function properties

Trigger	**Motion** Day/night Motion + day/night
The "Trigger" parameter specifies the event to which the orientation light FB reacts. "Motion" The function block evaluates movements. The orientation light is switched according to the configuration. "Day/night" The function block reacts to the day/night switchover. The orientation light is switched according to the configuration. It can be selected only if the day/night operation function has been activated on the General parameter page. "Motion + day/night" The function block evaluates movements and reacts to the day/night switchover. The orientation light is switched according to the configuration. It can be selected only if the day/night operation function has been activated on the General parameter page.	

Use as	**Single device** Main unit
When using the orientation light with several devices in one room, it is necessary to configure the devices as main units. This allows the motion detection of all devices to switch on the orientation light of all devices by means of the "Motion status - External" object that appears. With the single device configuration, each presence detector switches its own orientation light when motion is detected.	

Control mode	**Auto ON, auto off** Manual ON, auto off Auto ON, manual off
This parameter defines the control mode used by the FB and how it reacts to the configured "trigger". "Auto ON, auto OFF" In this operating mode, the outputs of the function block are automatically activated by the "trigger". Manual actuation of the device is not necessary. "Manual ON, auto OFF" In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" or "Manual operation - Permanent" object before a trigger is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of triggering is detected automatically or initiated by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. Afterwards, a manual ON telegram is required again to evaluate a new triggering process. "Auto ON, manual OFF" In this control mode, triggers are detected automatically. No run-on time is started after detecting a triggering process and outputting the telegrams at the "Start of detection". This means that the end of triggering can be achieved only by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. The function block is then ready again for a new triggering process.	

(Control mode) At day	**Auto ON, auto off** Manual ON, auto off Auto ON, manual off
The "At day" parameter is used to define the control mode that the FB orientation light uses at day and how it reacts to the configured "trigger". "Auto ON, auto OFF" In this operating mode, the outputs of the function block are automatically activated by the "trigger". Manual actuation of the device is not necessary. "Manual ON, auto OFF" In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" or "Manual operation - Permanent" object before a trigger is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of triggering is detected automatically or initiated by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. Afterwards, a manual ON telegram is required again to evaluate a new triggering process. "Auto ON, manual OFF" In this control mode, triggers are detected automatically. No run-on time is started after detecting a triggering process and outputting the telegrams at the "Start of detection". This means that the end of triggering can be achieved only by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. The function block is then ready again for a new triggering process.	

(Control mode) At night	**Auto ON, auto off** Manual ON, auto off Auto ON, manual off

The "At night" parameter defines the control mode used by the FB orientation light at night and how it reacts to the configured "Trigger".

"Auto ON, auto OFF"
In this operating mode, the outputs of the function block are automatically activated by the "trigger". Manual actuation of the device is not necessary.

"Manual ON, auto OFF"
In this control mode, an ON telegram must be sent first to the "Manual operation - Simple" or "Manual operation - Permanent" object before a trigger is evaluated. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. At the same time, the ON telegram starts the first motion detection process including the run-on time. The end of triggering is detected automatically or initiated by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. Afterwards, a manual ON telegram is required again to evaluate a new triggering process.

"Auto ON, manual OFF"
In this control mode, triggers are detected automatically. No run-on time is started after detecting a triggering process and outputting the telegrams at the "Start of detection". This means that the end of triggering can be achieved only by an OFF telegram to the "Manual operation - Simple" or "Manual operation - Permanent" object. To do this, manual operation must be configured to active on the "Enabled functions" parameter page. The function block is then ready again for a new triggering process.

Reset behaviour

Changeable parameters can be reset via object	Active **Inactive**

The parameters of the orientation light 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" according to DPT 1.017, which can be enabled by this parameter.
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.

After bus voltage return	No reaction Disabling function active State when starting a detection **State as before bus voltage failure**
When used as a "Single device" and "Main unit", different operating states can be assumed when the bus voltage returns. The behaviour of the orientation light FB is defined by this parameter. "No reaction" The function block switches to the basic state (no motion, run-on time inactive, disabling function inactive). No telegram is output. "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, run-on time inactive, disabling function inactive) is set as previous state for the disabling function. "State when starting a detection" In this setting, the system switches to the active motion detection state after the bus voltage returns (an evaluation delay is not processed) and the configured telegrams are sent at the start of the detection and the run-on time is started. If no further motion is then detected, the device processes the end of the detection after the run-on time has elapsed. "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.	

After ETS programming operation	**No reaction** Disabling function active State when starting a detection
When used as a "Single device" and "Main unit", various states of operation (possibly with telegram output) can be assumed after ETS programming. The behaviour of the orientation light FB is defined by this parameter. "No reaction" The function block switches to the basic state (no motion, run-on time inactive, disabling function inactive). No telegram is output. "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, run-on time inactive, disabling function inactive) is set as previous state for the disabling function. "State when starting a detection" In this setting, the system switches to the active motion detection state after an ETS programming operation (an evaluation delay is not processed) and the configured telegrams are sent at the beginning of the detection and the run-on time is started. If no further motion is then detected, the device processes the end of the detection after the run-on time has elapsed.	

14.2 "Enabled functions" parameters

Function blocks (FB) -> Orientation light FB - General -> Enabled functions

Manual operation	**Inactive** Active
The orientation light FB can also be operated manually. There is simple manual operation and permanent manual operation. This parameter enables manual operation. The "FB orientation light - Manual operation" parameter page appears.	

Disabling function	**Inactive** Active
A disabling function can be configured for the orientation light FB. This parameter enables the disabling function. The "Orientation light FB - Disabling function" parameter page and other objects appear.	

Scenes	**Inactive** Active
Scenes can be configured for the orientation light FB. This parameter enables the scenes. The "Orientation light FB - Scenes" parameter page and other objects appear.	

Orientation light status objects	**Inactive** Active
This parameter enables the "LED brightness - Status" and "Switching - Status" objects for the orientation light FB. The objects appear.	

14.3 "General and enabling" objects

Function	Name	Type	DPT	Flags
Changeable parameters - Reset	Orientation light FB - Input	1-bit	1.017	C, -, W, -, U
1-bit object used to reset all parameters of this function block that were changed by means of objects to the settings in the ETS. A telegram is sent to this object for this purpose.				

Function	Name	Type	DPT	Flags
LED brightness - Status	Orientation light FB - Output	1-byte	5.001	C, R, -, T, A
1-byte object used to output the current brightness of the LED of the orientation light FB to the bus. The output is in per cent				

Function	Name	Type	DPT	Flags
Motion - Status	Orientation light FB - Output	1-bit	1.010	C, -, -, T, U
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). This object is visible only if the "Use as" parameter is set to main unit.				

Function	Name	Type	DPT	Flags
Motion status - External	Orientation light FB - Input	1-bit	1.010	C, -, W, -, U
1-bit object used to receive an external motion signal for main units ("1" = motion present, "0" irrelevant). An external 1-bit motion signal can be supplied to the device by means of this object, which, for example, originates from a motion detector in the room. 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). This object is visible only if the "Use as" parameter is set to main unit.				

Function	Name	Type	DPT	Flags
Orientation light - Status	Orientation light FB - Output	1-bit	1.011	C, R, -, T, A
1-bit object used to output the status of the orientation light FB to the bus. 0 = inactive 1 = active				

14.4 Motion evaluation

Sensitivity of motion detection

The sensitivity of the motion detection, which is a measure for the range of the PIR evaluation, can be configured uniformly for all PIR sensors or separately for PIR sectors A, B and C in the ETS. In the ETS, the setting for the motion evaluation can be made uniformly for all function blocks on the "Sensors - Motion" parameter page or individually for the orientation light function block on the "FB orientation light - Motion evaluation" parameter page.

In addition, the sensitivity for the initial detection and presence phases can be set individually to adapt it ideally to the location and purpose. If day/night switchover is active, a different sensitivity value can be configured for the initial detection phase for day and night. The sensitivity for the presence phase is the same at day and night.

14.4.1 "Motion evaluation" parameters

Function blocks (FB) -> Orientation light FB - General -> Motion evaluation

Sensor assignment

(Detection fields for motion) PIR sensor… (A, B, C)	**Active** Inactive
These three parameters are used to assign one or more PIR sensors to the orientation light FB. A PIR sensor is assigned to the function block if it is set to active. The position of the PIR sensors in the room must be taken into account for the assignment.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic for the sensor assignment.	

Sensitivity

Source of sensitivity setting	**Like general sensor setting** Individual setting
This parameter is used to specify whether the general sensor setting or an individual setting is to be used. "Like general sensor setting" The sensor setting on the "Sensors - Motion" parameter page is used. "Individual setting" An individual sensitivity setting can be made for the assigned PIR sensors for the orientation light FB. The settings on the "Sensors Motion" parameter page have no effect. Additional parameters appear.	

Setting	**The same for all PIR sensors** For each PIR sensor individually
This parameter is used to define whether the sensitivity is the same for all PIR sensors or is separate for each PIR sensor. "The same for all PIR sensors" The same sensitivity setting is used for all PIR sensors. The sensitivity can be set separately for each PIR sensor. This may limit the influence of sources of interference such as heaters in individual sectors. Additional parameters appear.	

Differentiated according to initial detection phase and presence phase	**Inactive** Active
This parameter is used to specify whether the sensitivity can be set separately for the initial detection of a motion and for retriggering. "Active" The sensitivity can be set separately for the initial detection phase of a movement and re-triggering during the presence phase. "Inactive" It is the same for the initial detection of a movement and the retriggering during presence. Additional parameters appear.	

PIR sensor A – B - C	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor A – B – C) At day	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor A – B – C) At night	1 … **6** … 10
This parameter is used to set the sensitivity of the PIR sensors for nighttime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor A – B – C) Initial detection phase	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for the initial detection phase (initial detection of a movement). The setting applies uniformly to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity if there is an increase in faulty switching processes. Increase the sensitivity if the detection is insufficient. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor A - B - C initial detection phase) At day	1 … **8** … 10
This parameter is used to set the sensitivity of the PIR sensors for the detection phase (initial detection of a movement) for daytime operation. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor A - B - C initial detection phase) At night	1 … **6** … 10
This parameter is used to set the sensitivity of the PIR sensors for the detection phase (initial detection of a movement) for night mode. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient. These parameters are visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

PIR sensor… (A, B, C)	1 … **8** … 10
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C). This setting is made separately for each PIR sensor. The setting is made in increments of 1 (very low) to 10 (very high). These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to inactive. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor… (A, B, C)) Initial detection phase	1 … **8** … 10

These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high).
The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient.

This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.

(PIR sensor... (A, B, C) initial detection phase) At day	1 … **8** … 10

These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase for daytime operation. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high).
The sensitivity is set by default to level 8. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient.

These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.

(PIR sensor... (A, B, C) initial detection phase) At night	1 … **6** … 10

These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the detection phase for nighttime operation. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high).
The sensitivity is set by default to level 6. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. Increase the sensitivity if the detection is insufficient.

These parameters are visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page. The day/night switchover function must be set to active on the "General" parameter page.

(PIR sensor (A – B - C)) Presence phase	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity for the individual PIR sensors if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to the same value for all PIR sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor (A - B - C) presence phase) At day and night	1 … **10**
This parameter is used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting applies to day and night time operation. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to the same value for all sensors and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

(PIR sensor… (A, B, C)) Presence phase	1 … **10**
These three parameters are used to set the sensitivity of the PIR sensors (A, B, C) for the presence phase. This setting is made separately for each PIR sensor. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to inactive on the "General" parameter page.	

(PIR sensor... (A, B, C) presence phase) At day and night	1 … **10**
This parameter is used to set the sensitivity of the PIR sensors for the presence phase. The setting applies to all PIR sensors. The setting applies to day and night time operation. The setting is made in 10 levels from 1 (very low) to 10 (very high). The sensitivity is set by default to level 10. Reduce the sensitivity if there is an increase in faulty switching processes. This may limit the influence of sources of interference such as heaters in individual sectors. This parameter is visible only if the "Setting" parameter is set to individual for each PIR sensor and the parameter "Differentiated according to initial detection and presence phase" is set to active. The day/night switchover function must be set to active on the "General" parameter page.	

Sensitivity can be set via object	Active **Inactive**
The sensitivity of the PIR sensors for the FB orientation light is set again in the device by sending a telegram to one of the 1-byte objects "PIR sensor - Sensitivity" in accordance with the DPT "non standard", which can be enabled by this parameter. The values are retained until a new specification is made by a telegram. An ETS programming operation sets the parameters automatically to the ETS pre-settings if this is provided for in the configuration.	

Overwrite values in device during ETS programming	Active **Inactive**
This parameter can be used to specify whether the sensitivity values of the FB orientation light are overwritten during an EST programming operation. The values are retained until a new specification is made by a telegram. To automatically set the values to the ETS specifications during an ETS programming operation, set this parameter to active. This parameter is visible only if the "Sensitivity can be set via object" parameter is set to active.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic used to differentiate the motion detection process according to the initial detection and presence phase.	

14.4.2 "Motion evaluation" objects

Function	Name	Type	DPT	Flags
PIR sensors A - B - C - Sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of the PIR sensors to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Sensitivity can be set via object" parameter is activated and the "Setting" parameter is set to "Same for all PIR sensors" and the "Differentiated according to first detection and presence phase" parameter is set to inactive.				

Function	Name	Type	DPT	Flags
PIR sensors A - B - C sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object for standardised specification of the active sensitivity of the PIR sensors on the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to the same for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to inactive.				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C presence sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C during an ongoing detection process to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to the same for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to active.				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C – Presence sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object for the standardised specification of the sensitivity for PIR sensors A - B - C during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to the same for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to active.				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C initial detection sensitiv- ity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensors A - B - C for the ini- tial detection to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to the same for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to active.				

Function	Name	Type	DPT	Flags
PIR sensor A – B – C initial detection sensitiv- ity	Orientation light FB - In- put	1-byte	Non standard	C, -, W, -, U
1-byte object for the standardised specification of the sensitivity of PIR sensors A - B - C for the initial detection by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42). This object is visible only if the "Setting" parameter is set to the same for all PIR sensors and the "Differentiated according to initial detection and presence phase" parameter is set to active.				

Function	Name	Type	DPT	Flags
PIR sensor A – Sensitiv- ity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Sensitiv- ity	Orientation light FB - In- put	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Pres- ence sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Presence sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A for initial detection to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor A – Initial detection sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor A for the initial detection by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B to the bus. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B to the bus during an ongoing detection process. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Presence sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▸ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor B for initial detection to the bus. This non-standardised data type is described here. Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor B – Initial detection sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor B for initial detection by a telegram. This non-standardised data type is described here. Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor C to the bus. This non-standardised data type is described here. Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C by means of a telegram. This non-standardised data type is described here. Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor A to the bus during an ongoing detection process. This non-standardised data type is described here. Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Presence sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C during an ongoing detection process by means of a telegram. This non-standardised data type is described here. Table : Motion [▷ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity - Status	Orientation light FB - Output	1-byte	Non standard	C, R, -, T, A
1-byte object used to output the active sensitivity of PIR sensor C for initial detection to the bus. This non-standardised data type is described here. Table : Motion [▶ Page 42).				

Function	Name	Type	DPT	Flags
PIR sensor C – Initial detection sensitivity	Orientation light FB - Input	1-byte	Non standard	C, -, W, -, U
1-byte object used to specify the sensitivity of PIR sensor C for initial detection by means of a telegram. This non-standardised data type is described here. Table : Motion [▶ Page 42)..				

14.5 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 PIR 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.

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 processed and the telegram is transmitted at the start of the detection process only if the detection process takes place for a prolonged time.

The evaluation delay and the monitoring time window are available for this purpose.

"Evaluation delay"
The evaluation delay is started when motion is detected. The orientation light is switched on and the run-on time started only if another movement is detected within 30 seconds after the evaluation delay has elapsed.

"Monitoring time window"
The orientation light is switched on only after reaching a defined number of detection processes within a defined time window. If no more motion is detected within the monitoring time, the orientation light remains off and the run-on time does not start either.
Several monitoring time windows can be combined with each other.

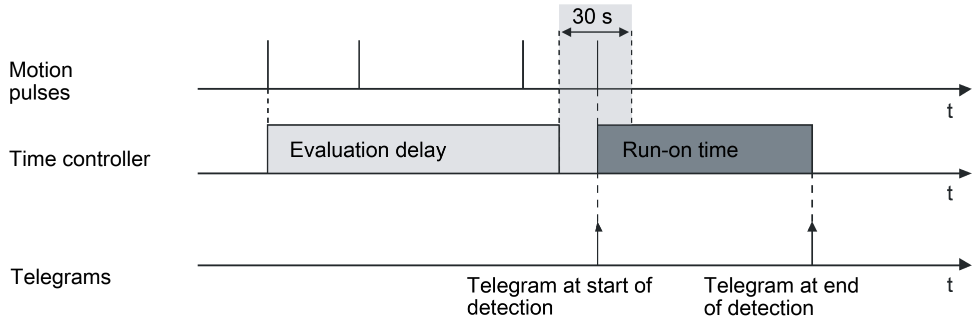

Figure 52: Evaluation delay

Motion evaluation with active monitoring time window

If the monitoring time window is active, the number of motion pulses can be specified within a monitoring time whereby it is possible to adapt the motion evaluation to meet individual requirements. The function block reacts less sensitively to detected movements, because the orientation light is switched on only after querying the motion signal several times. The criterion for switching on the orientation light is the configurable number of motion pulses that occur within the selectable duration of the monitoring time window.

The following diagram illustrates the behaviour of the function block with monitoring time window. In the example, the number of motion pulses was set to "4".

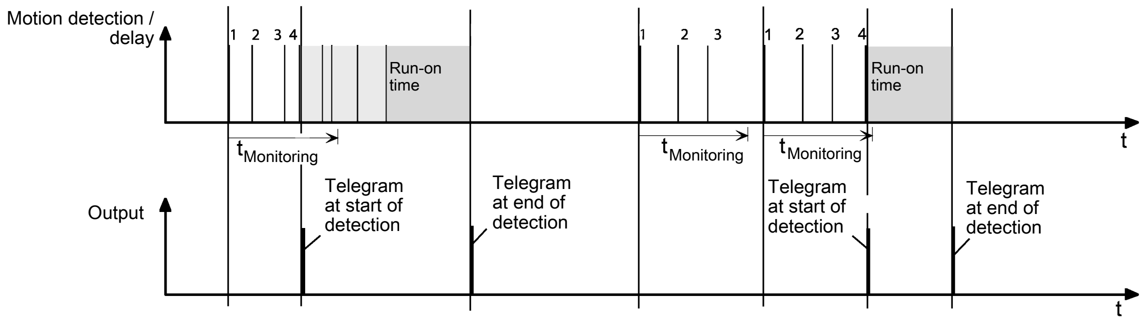

Figure 53: Motion evaluation with detector

After detecting the fourth motion pulse within the monitoring period ($t_{monitoring}$), the orientation light is switched on and the run-on time is started. The run-on time is retriggered by further motion pulses within the run-on time. The orientation light is switched off if there are no motion signals and the run-on time has elapsed.
The orientation light remains off if fewer than 4 motion pulses are detected during the monitoring period. After the monitoring period has elapsed, the next motion pulse is the first one of a new monitoring period. The monitoring period is stopped and reset when a detection process begins (start of run-on time). The monitoring is restarted again with the first motion pulse after the run-on time has elapsed.

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.
  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 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 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 if the "Evaluate short presence" parameter is set to active on the parameter page "FB orientation light - Start 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.

14.5.1 "Start and end of detection" parameter

Function blocks (FB) -> Orientation light FB - General -> Start and end of detection

Transmission behaviour	**Send directly** Evaluation delay Monitoring time window
This parameter is used to specify when a telegram is sent to the bus after a detection process. The evaluation delay and the monitoring time window at the beginning of a motion detection process ensure that there is no reaction to just a briefly detected movement (e.g. when quickly striding through a room). 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 "Send directly" A telegram is sent directly to the bus after a detection process. "Evaluation delay" The evaluation delay is started when motion is detected. The telegram is 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. "Monitoring time window" A telegram is sent to the bus only once a defined number of detection processes has been reached within a defined time window. Additional parameters appear.	

Delay time	**0** … 59 min 0 … **30** …-59 s
This parameter is used to set the delay time in minutes and seconds. Minutes and seconds can be set.	

(Monitoring time window) Number	**1** … 10
The parameter is used to define how many monitoring time windows are available. If only continuous motion over a long period of time is to cause the orientation light to switch on, it is recommended to use several monitoring time windows.	

(Monitoring time window) Duration per time window	**0** … 59 min 0 … **10** … 59 s
This parameter is used to set the length of a monitoring time window in seconds and minutes.	

(Monitoring time window) Trigger message from	1 … **20** … 255 motion pulses per time window
This parameter defines how many motion pulses must be detected in a time window before a telegram is sent to the bus.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic for the monitoring time windows.	

End of detection

Run-on time	**Fixed time** Self-learning
This parameter is used to define whether a fixed or self-learning run-on time is to be used at the end of detection before the orientation light is switched off. "Fixed run-on time" At the end of detection, a fixed run-on time starts to expire. The setting is made in hours, minutes and seconds. This parameter is visible only if the "Day/night switchover" parameter is deactivated on the General parameter page. "Self-learning" 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. 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. Additional parameters appear.	

(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.	

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. These parameters are 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**
This parameter enables the evaluation of a short presence. 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. This parameter is visible only if the "Run-on time" parameter is set to self-learning.	

Time window for detection	1 … **10** … 59 s
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. This parameter is visible only if the "Evaluate short presence" parameter is set to active.	

Behaviour during ETS programming

(Overwrite values during ETS programming) Run-on time	**Active** Inactive
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. These parameters are visible only if the "Can be set via object" parameter is set to active.	

14.5.2 "Start and end of detection" objects

Start and end of detection

Function	Name	Type	DPT	Flags
Run-on time	Orientation light FB - Input	2-byte	7.005	C, -, W, -, U
2-byte object used to specify a fixed run-on time. The orientation light remains switched on for this time at the end of a detection process. This entry is made in seconds. This object is visible only if the "Run-on time" parameter is set to a fixed time for the end of detection on the FB orientation light - Start and end of detection parameter page and can be set by means of an object.				

Function	Name	Type	DPT	Flags
Run-on time - Status	Orientation light FB - 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 is set to a fixed time for the end of detection on the FB orientation light - Start and end of detection parameter page and can be set by means of an object.				

14.6 LED

The brightness of the orientation light at the start and end of detection can be set individually in the ETS. It is also possible to set the brightness externally by means of a telegram to the "LED brightness" object.

14.6.1 "LED" parameter

Function blocks (FB) -> Orientation light FB - General -> LED

At start of detection	0 … **80**… 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light at the start of a detection process. The entry is made as a percentage. This parameter is visible only if the "Trigger" parameter is set to motion.	

At end of detection	**0** … 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light at the end of a detection process. The entry is made as a percentage. This parameter is visible only if the "Trigger" parameter is set to motion.	

(At day and night) At day	0 … **80**… 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light during active daytime operation. The LEDs lights up as long as day mode is active. No further trigger is required. The entry is made as a percentage. This parameter is visible only if the "Trigger" parameter is set to day/night switchover.	

(At day and night) At night	**0** … 100%
This parameter is used to set the brightness of the LEDs of the orientation light FB during active night operation. The LEDs lights up as long as day mode is active. No further trigger is required. The entry is made as a percentage. This parameter is visible only if the "Trigger" parameter is set to day/night switchover.	

(At start of detection) At day	0 … **80**… 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light at the start of detection in day mode. The entry is made as a percentage This parameter is visible only if the "Trigger" parameter is set to motion and day/night switchover.	

(At start of detection) At night	0 … **50** … 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light at the start of detection in night mode. The entry is made as a percentage. This parameter is visible only if the "Trigger" parameter is set to motion and day/night switchover.	

(At end of detection) At day	**0**… 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light at the end of detection in day mode. The entry is made as a percentage This parameter is visible only if the "Trigger" parameter is set to motion and day/night switchover.	

(At end of detection) At night	0 … **10** … 100%
This parameter is used to set the brightness of the LEDs of the FB orientation light at the end of detection in night mode. The entry is made as a percentage. This parameter is visible only if the "Trigger" parameter is set to motion and day/night switchover.	

Brightness values adjustable via object	Active **Inactive**
The brightness values of the LEDs in the device are reset by sending a brightness value in per cent to the 1-byte object "LED brightness" according to DPT 5.001, which can be enabled by this parameter. The new brightness values are retained until a new specification is made. An ETS programming operation resets the values automatically to the ETS presettings if this is provided for in the configuration.	

14.6.2 "LED" objects

Function	Name	Type	DPT	Flags
LED brightness	Orientation light FB - Input	1-byte	5.001	C, -, W, -, U
1-byte object used to set the brightness of the orientation light in per cent.				

14.7 Manual operation

In manual operation, the orientation light 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 orientation light can be switched on and off by the user independently of the sensors, e.g. with a push-button sensor, or the brightness can be set, whereby no ambient brightness is evaluated at the start. This forces the device to switch on when it is switched on manually.
Simple manual operation is activated by means of the "Manual operation - Simple" object.
After manual activation, the function block works as usual presence dependently, which ensures automatic switch-off if no one is present.
The lighting off is witched off by an OFF command in simple manual operation.
Parameters can be used to set which telegrams (ON/OFF/TOGGLE) the orientation light reacts to during simple manual operation.

Activating permanent manual operation

With this type of manual operation, the orientation light can also be switched on and off by the user independently of the sensor, e.g. with a push-button sensor, or the brightness can be set. However, the automatic function is deactivated so that the orientation light remains permanently its called-up state until it is operated again.
Permanent manual operation is activated by means of the "Manual operation - Permanent" 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 relapse time". Different times can be entered for day and night mode, depending on the configuration.

Ignoring motion with off telegram

The lighting is switched off directly by switching off the lighting in simple or permanent manual operation mode. 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.

14.7.1 "Manual operation" parameter

Function blocks (FB) -> Orientation light FB - General -> Manual operation

Simple manual operation

Use simple manual operation	**Inactive** Active
This parameter enables simple manual operation. Set the parameter to active for this purpose. Additional parameters appear. This parameter is visible only if the "Manual operation" parameter is set to active on the Orientation light FB - Enabled functions parameter page.	

Reacts to	ON only OFF only **ON and OFF** Switch over if telegram arrives

The "Reacts to" parameter specifies how and to which telegram the orientation light FB reacts.

"ON only"
The function block reacts to an ON telegram to the "Manual operation - Simple" object. When an ON telegram is received, the orientation light is switched on motion independently. The light is switched on only temporarily. Automatic operation continues to run in the background. This means, for example, that the orientation light is switched off again if there is no detection.

"OFF only"
The function block reacts to an OFF telegram to the "Manual operation - Simple" object. When an OFF telegram is received, the orientation light is switched off motion independently. This occurs even if the run-on time has not yet expired. The light is switched off only temporarily. Automatic operation continues to run in the background. This means, for example, that the orientation light is switched on again in the event of a detection process.

"ON and OFF"
The function block reacts to an ON and OFF telegram to the "Manual operation - Simple" object. When an ON telegram is received, the orientation light is switched on motion independently. When an OFF telegram is received, the orientation light is switched off motion independently. This occurs even if the run-on time has not yet expired. Automatic operation continues to run in the background. The orientation light is switched to the configured state when a new event occurs, e.g. new detection.

"Switch over if telegram arrives"
The function block reacts to an ON and OFF telegram to the "Manual operation - Simple" object. When a telegram is received, the orientation light is switched over motion independently. This occurs even if the run-on time has not yet expired. Automatic operation continues to run in the background. The orientation light is switched to the configured state when a new event occurs, e.g. new detection.

This parameter is visible only if the "Use simple manual operation" parameter is set to active.

Permanent manual operation

Use permanent manual operation	**Inactive** Active

This parameter enables permanent manual operation. Set the parameter to active for this purpose. Additional parameters appear.

This parameter is visible only if the "Manual operation" parameter is set to active on the Orientation light FB - Enabled functions parameter page

Reacts to	ON only OFF only **ON and OFF** ON/OFF as TOGGLE

The "Reacts to" parameter specifies how and to which telegram the orientation light FB reacts.

"ON only"
The orientation light reacts to an ON telegram to the "Manual operation - Permanent" object. When an ON telegram is received, the orientation light is switched on motion independently. The evaluation of movements is disabled. The light remains switched on until permanent manual operation is ended again. To end permanent manual operation, send another ON telegram to the object "Manual operation - Permanent". The orientation light remains on and automatic mode is active again.

"OFF only"
The orientation light reacts to an OFF telegram to the "Manual operation - Permanent" object. When an OFF telegram is received, the orientation light is switched off motion independently. This occurs even if the run-on time has not yet expired. The evaluation of movements is disabled. The light remains switched off until permanent manual operation is revoked again. To end permanent manual operation, send another OFF telegram to the object "Manual operation - Permanent". The orientation light remains switched off and automatic mode is active again.

"ON and OFF"
The orientation light reacts to an ON and OFF telegram to the "Manual operation - Permanent" object. When an ON telegram is received, the orientation light is switched on motion independently. When an OFF telegram is received, the orientation light is switched off motion independently. This occurs even if the run-on time has not yet expired. The evaluation of movements is disabled. To end permanent manual operation, send another ON or OFF telegram to the object "Manual operation - Permanent".

"ON/OFF as TOGGLE"
The orientation light reacts to a switchover telegram to the "Manual operation - Permanent" object. When a telegram is received, the orientation light is switched over motion independently. This occurs even if the run-on time has not yet expired. The evaluation of movements is disabled. To end permanent manual operation, send a switchover telegram to the object "Manual operation - Permanent" again.

This parameter is visible only if the "Use permanent manual operation" parameter is set to active.

End automatically	**Deactivated** After run-on time At end of presence and relapse time

This parameter is used to define whether permanent manual operation is ended automatically. Automatic mode is active at the end of permanent manual operation. The orientation light is switched off.

"Deactivated"
Permanent manual operation is not ended automatically. To end it, a telegram must be sent again to the object "Manual operation - Permanent". The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.

"After run-on time"
Permanent manual operation is automatically ended after the time set with the "Run-on time" parameter has elapsed.
Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.

"At end of presence and relapse time"
Permanent manual operation is automatically terminated when no more detection takes place (end of presence) and the relapse time has expired. The "Relapse time" parameter is used to set the relapse time.
Permanent manual operation can still be terminated manually. To do this, send a telegram to the object "Manual operation - Permanent". Transmit. The "Reacts to" parameter is used to specify the telegram type that can be used for this purpose.

This parameter is visible only if the parameter "Manual operation - Permanent" is set to active.

Run-on time	**0** … 23 h 0 … **30** …59 min **0** … 59 s

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.
After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process.

This parameter is visible only if the "End automatically" parameter is set after the run-on time and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.

(Run-on time) At day	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process. This parameter is visible only if the "End automatically" parameter is set after the run-on time and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(Run-on time) At night	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process. This parameter is visible only if the "End automatically" parameter is set after the run-on time and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

Relapse time	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process. This parameter is visible only if the "End automatically" parameter is set at the end of the presence and relapse time and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.	

(Relapse time) At day	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process. This parameter is visible only if the "End automatically" parameter is set at the end of the presence and relapse time and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(Relapse time) At night	**0** … 23 h 0 … **30** …59 min **0** … 59 s
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. After exiting permanent manual operation, the function block behaves in the same way as at the end of a detection process. This parameter is visible only if the "End automatically" parameter is set at the end of the presence and relapse time and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

Show info graphic	**Inactive** Active
This parameter can be used to display the infographic for manual operation.	

Manual operation in general

Ignore motion if OFF	**0** … 59 min 0 … **5** …59 s
This parameter is used to specify for how long no movements are to be evaluated after switching off by simple or permanent operation. The setting is made in minutes and seconds. This parameter is visible only if at least one type of manual operation has been activated.	

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14.7.2 "Manual operation" objects

Simple manual operation

Function	Name	Type	DPT	Flags
Manual operation - Simple	Orientation light FB - Input	1-bit	1.001	C, -, W, -, U
1-bit object used to manually actuate (switch on/off) the orientation light. Manual operation is detected and processed by the device by means of this object. With manual control by means of the "Manual operation - Simple" object, the automatic function is still active ("1" = ON / reaction as at start of detection, "0" = OFF / reaction as at end of detection).				

Permanent manual operation

Function	Name	Type	DPT	Flags
Manual operation - Permanent	Orientation light FB - Input	1-bit	1.001	C, -, W, -, U
1-bit object used to manually actuate (switch on/off) the orientation light. 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 object "Manual operation - Permanent".				

Function	Name	Type	DPT	Flags
Manual operation - Permanent - ON - Status	Orientation light FB - Output	1-bit	1.011	C, R, -, T, A
1-bit object for feedback that the orientation light has been switched on by permanent manual operation and the automatic function is therefore deactivated.				

Function	Name	Type	DPT	Flags
Manual operation - Permanent - OFF - Status	Orientation light FB - Output	1-bit	1.011	C, R, -, T, A
1-bit object for feedback that the orientation light has been switched off by permanent manual operation and the automatic function is therefore deactivated.				

14.8 Disabling function

The disabling function can be used to disable the orientation light function block independently of the other functional units. Automatic mode is deactivated in the event of an active disabling process. The orientation light is set to a defined brightness at the start or end of disabling. 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. If necessary, the disabling function can be ended automatically. To do this, set the "Unlock automatically" parameter accordingly.

Behaviour at the beginning of the disabling function

The brightness of the orientation light at the start of disabling can be set in the ETS. If the "Day/night switchover" parameter is activated on the "General" parameter page, this is done separately for day and night mode.

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.

Behaviour during the disabling function

No motion detection takes place during an active disabling process. External motion telegrams from extension units and telegrams for manual operation are ignored.

i Repeated disabling telegrams (disabling active after disabling active) received during an active disabling process cause the device to execute the disabling reaction again.

Behaviour at the end of the disabling function

The brightness configured for the orientation light is set. The function block is in the state before the start of detection.

i 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.

14.8.1 "Disabling function" parameter

Function blocks (FB) -> Orientation light FB - General -> Disabling function

Behaviour of the outputs

(Brightness) At start of disabling	**0** … 100%
This parameter is used to set the brightness of the orientation light at the start of disabling. This entry is made in per cent. This parameter is visible only if the "Day/night switchover" parameter is set to inactive on the General parameter page.	

(Brightness) At end of disabling	0 … **10** … 100%
This parameter is used to set the brightness of the orientation light at the end of disabling. This entry is made in per cent. This parameter is visible only if the "Day/night switchover" parameter is set to inactive on the General parameter page.	

(At start of disabling) At day	**0** … 100%
This parameter is used to set the brightness of the orientation light at the start of disabling in day mode. This entry is made in per cent. This parameter is visible only if the "Day/night switchover" parameter is set to active on the General parameter page.	

(At start of disabling) At night	**0** … 100%
This parameter is used to set the brightness of the orientation light at the start of disabling in night mode. This entry is made in per cent. This parameter is visible only if the "Day/night switchover" parameter is set to active on the General parameter page.	

(At end of disabling) At day	0 … **10** … 100%
This parameter is used to set the brightness of the orientation light at the end of disabling in day mode. This entry is made in per cent. This parameter is visible only if the "Day/night switchover" parameter is set to active on the General parameter page.	

(At end of disabling) At night	0 … **10** … 100%
This parameter is used to set the brightness of the orientation light at the end of disabling in night mode. This entry is made in per cent. This parameter is visible only if the "Day/night switchover" parameter is set to active on the General parameter page.	

Unlocking behaviour

Unlock automatically	**Deactivated** After configured disabling time At end of presence and individual run-on time
This parameter is used to specify whether a disabling process must be ended manually or is ended automatically. "Deactivated" An active disabling function must be ended manually by sending a telegram to the "Disabling function - Activate/Deactivate" object. "After configured disabling time" An active disabling process is automatically deactivated after the disabling period has expired. Additional parameters appear. "At end of presence and individual run-on time" An active disabling process is automatically ended if no more presence is detected anymore (end of presence) and the individual run-on time has expired. Additional parameters appear. Furthermore, it is still possible to unlock with an object, regardless of the selected setting.	

Disabling time	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the disabling period in hours, minutes and seconds. This parameter is visible only if the "Unlock automatically" parameter is set to At the end of the disabling period and the "Day/night switchover" parameter is set to inactive on the parameter page.	

(Disabling time) At day	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the disabling period in day mode. The setting is made in hours, minutes and seconds. This parameter is visible only if the "Unblock automatically" parameter is set to after the configured disabling time and the "Day/night switchover" parameter is set to active on the parameter page.	

(Disabling time) At night	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the disabling period in night mode. The setting is made in hours, minutes and seconds. This parameter is visible only if the "Unblock automatically" parameter is set to after the configured disabling time and the "Day/night switchover" parameter is set to active on the parameter page.	

Disabling time can be set via object	**Inactive** Active
This parameter is used to enable the objects "Disabling function - Disabling duration - Specification" 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 by means of telegrams. This parameter is visible only if the "Unlock automatically" parameter is set to At end of disabling period.	

Individual run-on time	**0** … 23 h 0 … **15** …59 min **0** … 59 s
This parameter is used to set the length of the individual run-on time in hours, minutes and seconds. 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 set to inactive on the parameter page.	

(Individual run-on time) At day	**0** … 23 h 0 … **15** …59 min **0** … 59 s
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. 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 set to active on the parameter page.	

(Individual run-on time) At night	**0** … 23 h 0 … **15** …59 min **0** … 59 s
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. 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 set to active on the parameter page.	

Individual run-on time can be set via object	**Inactive** Active
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. This parameter is visible only if the "Unlock automatically" parameter is set to at end of presence and individual run-on time.	

Unlocking delay after manual unlocking	**Inactive** Active
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. "Inactive" The disabling is revoked immediately. "Active" The disabling is revoked only after the set delay time has elapsed. Additional parameters appear.	

Duration of unblocking delay	**0** … 59 min 0 … **30** … 59 s
This parameter is used to set the length of the unlocking delay in minutes and seconds. This parameter is visible only if the "Unlocking delay after manual unlocking" parameter is set to active and the "Day/night switchover" parameter is set to inactive on the General parameter page.	

(Duration of unblocking delay) At day	**0** … 59 min 0 … **30** … 59 s
This parameter is used to set the length of the unlocking delay in day mode. The setting is made in minutes and seconds. This parameter is visible only if the "Unlocking delay after manual unlocking" parameter and the "Day/night switchover" parameter are set to active on the General parameter page.	

(Duration of unblocking delay) At night	**0** … 59 min 0 … **30** … 59 s
This parameter is used to set the length of the unlocking delay in night mode. The setting is made in minutes and seconds. This parameter is visible only if the "Unlocking delay after manual unlocking" parameter and the "Day/night switchover" parameter are set to active on the General parameter page.	

Overwrite values in device after ETS programming	Inactive **Active**
This parameter must be set to active 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. The parameter is visible only if the parameter "Disabling duration can be set via object" or "Individual run-on time can be set via object" is set to active.	

Object polarity	**0 = enable / 1 = disable** 0 = disable / 1 = enable
This parameter defines the telegram polarity of the disabling object. The parameter is visible only if the disabling function is enabled.	

Status object	**Inactive** Active
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: Default setting 0 = normal operation, 1 = disabling function active The parameter is visible only if the disabling function is enabled.	

Acknowledgement	**Inactive** Active
This parameter enables the Acknowledgement object. If the disabling function is to be terminated manually, e.g. by a telegram from a push-button sensor, this must be done by sending a telegram to this object. Any configured unlocking delay after manual unlocking is executed after acknowledgement. The acknowledgement has no effect on automatic unlocking. The parameter is visible only if the disabling function is enabled.	

The disabling function can be used to disable the orientation light function block independently of the other functional units. Automatic mode is deactivated in the event of an active disabling process. The orientation light is set to a defined brightness at the start or end of disabling. 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. If necessary, the disabling function can be ended automatically. To do this, set the "Unlock automatically" parameter accordingly.

Behaviour at the beginning of the disabling function

The brightness of the orientation light at the start of disabling can be set in the ETS. If the "Day/night switchover" parameter is activated on the "General" parameter page, this is done separately for day and night mode.

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.

Behaviour during the disabling function

No motion detection takes place during an active disabling process. External motion telegrams from extension units and telegrams for manual operation are ignored.

i Repeated disabling telegrams (disabling active after disabling active) received during an active disabling process cause the device to execute the disabling reaction again.

Behaviour at the end of the disabling function

The brightness configured for the orientation light is set. The function block is in the state before the start of detection.

i 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.

14.8.2 "Disabling function" objects

Function	Name	Type	DPT	Flags
Disabling function - Activate/Deactivate	Orientation light FB - 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.				

Function	Name	Type	DPT	Flags
Disabling function - Activate/Deactivate - Status	Orientation light FB - 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	Orientation light FB - Input	1-bit	1.016	C, -, W, -, U
1-bit object used to revoke the disabling function by means of manual operation. A telegram is sent to this object for this purpose. This object is visible only when the "Acknowledgement" parameter is set to active.				

Function	Name	Type	DPT	Flags
Disabling function - Disabling time	Orientation light FB - 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 the configured disabling time.				

Function	Name	Type	DPT	Flags
Disabling function - Disabling time - Status	Orientation light FB - Output	2-byte	7.005	C, R, -, T, A
2-bit object used to output the currently active individual disabling period in seconds.				

Function	Name	Type	DPT	Flags
Disabling function - Individual run-on time	Orientation light FB - 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	Orientation light FB - Output	2-byte	7.005	C, R, -, T, A
2-bit object used to output the currently active individual run-on time in seconds.				

14.9 Scenes

Up to 64 scenes can be called up in the orientation light function block, 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 by force by means of the object "Disabling function - Activate/Deactivate", after the bus voltage returns or after an ETS programming operation.

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.

14.9.1 "Scenes" parameter

Function blocks (FB) -> Orientation light FB - General -> Scenes

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 to be called up in sequence with the orientation light FB. 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
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 is reached when counting down and an additional telegram in the last counting direction is received by the actuator. Parameter activated: After reaching the last scene of the selected configuration, another 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. Parameter deactivated: 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. This parameter is visible only if the extended scene call-up is used.	

Scene configuration	**Variable (1...64 scenes)** Fixed (64 scenes)
The scene configuration selected here decides whether the number of scenes is either variable (1 ... 64) or, alternatively, fixed to the maximum (64). 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 for the switching output in the ETS and can therefore be used. It is possible to specify which scene number (1 ... 64) controls each scene. 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. To do this, remove the tick from the corresponding scene under "Scene active".	

Number of scenes	1...**10**...64
This parameter defines how many scenes are visible for the FB orientation in the ETS and can therefore be used. This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes)	

Scene number	0...**1***...64 *: The predefined scene number depends on the scene (1...64).
It is possible to set which scene number (1 ... 64) actuates each scene. A setting of "0" deactivates the corresponding scene to prevent it from being called up or stored. If the same scene number (1…16) 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. Scene number 0 deactivates a scene. This parameter is visible only if the "Scene configuration" parameter is set to variable (1…64 scenes).	

Function	**Activate disabling function** Deactivate disabling function Simple manual operation - As with ON Simple manual operation - As with OFF Permanent manual operation - As with ON Permanent manual operation - As with OFF Deactivate permanent manual operation

This parameter is present for each scene separately.
This parameter is used to configure the function executed when the scene is called up. The disabling function or manual operation can be called up only if it has been configured elsewhere.

Activate disabling function: When the scene is called up, a telegram is sent to the object "Disabling function - Activate/Deactivate", which activates the disabling function. The orientation light lights up at the configured brightness at the start of a disabling process. Automatic mode is deactivated. The orientation light remains in this state until the disabling is deactivated again. This can be done by a telegram or automatically if configured. To end automatically, set the "Unlock automatically" parameter on the parameter page "FB orientation light - Disabling function".

Deactivate disabling function: When the scene is called up, a telegram is sent to the object "Disabling function - Activate/Deactivate", which deactivates the disabling function. The orientation light lights up in the configured brightness at the end of a disabling process. Automatic mode is active again.

Simple manual operation - As with ON: When the scene is called up, an ON telegram is sent to the object "Manual operation - Simple". The orientation light behaves in the same way as when operated by means of an extension unit, see parameter page FB orientation light - Manual operation.

Simple manual operation - As with OFF: When the scene is called up, an OFF telegram is sent to the object "Manual operation - Simple". The orientation light behaves in the same way as when operated by means of an extension unit, see parameter page FB orientation light - Manual operation.

Permanent manual operation - As with ON: When the scene is called up, an ON telegram is sent to the object "Manual operation - Permanent". The orientation light behaves in the same way as when operated by means of an extension unit, see parameter page FB orientation light - Manual operation.

Permanent manual operation - As with OFF: When the scene is called up, an OFF telegram is sent to the object "Manual operation - Permanent". The orientation light behaves in the same way as when operated by means of an extension unit, see parameter page FB orientation light - Manual operation'

Deactivate permanent manual operation: When the scene is called up, a telegram is sent to the object "Manual operation - Permanent", which ends the permanent manual operation. The orientation light is then switched off and automatic mode is active again.

14.9.2 "Scenes" objects

Function	Name	Type	DPT	Flags
Scenes - Extended scene recall	Orientation light FB - Input	1-bit	1.001	C, -, W, -, U
1-bit object to which a telegram is sent to call up the next or previous scene. Each ON telegram received calls up the next scene. Each OFF telegram received calls up the previous scene.				

Function	Name	Type	DPT	Flags
Scenes - Scene extension unit	Orientation light FB - Input	1-byte	17.001	C, -, W, -, U
1-byte object to which a telegram with the scene number to be called up is sent. If the scenes are set to variable, the scene to which the sent number was assigned is called up.				

15 Brightness limit values

The device has up to three mutually independent brightness limit values that are continuously compared with the brightness value detected. If a limit value configured in the ETS or predefined externally is exceeded or fallen below, the device can transmit switching, dimming value or scene call-up telegrams to the bus and thus trigger appropriate reactions in other bus subscribers.
The "Function brightness limit values" must be enabled in the ETS on the "General" parameter page so that the function can be configured and used. This is done by specifying the number of brightness limit values there.

Output functions

Up to three limit values can be evaluated. Each limit value has its own output object. The "Number of brightness limit values" parameter defines how many limit values and thus how many output objects are can be configured in the ETS.
Each output can be configured independently to one of the following data formats by the "Function" parameter:

- "Switching" function:
  1-bit switching telegrams (ON/OFF) can be output.
- "Dimming value" function:
  It is possible to output 1-byte dimming value telegrams (0...100%).
- "Scene extension unit" function:
  It is possible to execute a 1-byte scene call-up (0...64) in another bus subscriber by means of the output object of a limit value.

15.1 Limit value definition

A brightness limit value to be monitored always consists of an upper and lower brightness threshold. The brightness thresholds are assigned by means of a limit value and hysteresis derived relatively from the limit value. The type of limit value (upper or lower threshold) must be preset accordingly by the parameter "Brightness limit value corresponds to".
A limit value output can transmit a telegram if the brightness value exceeds the upper threshold and/or is below the lower threshold, depending on the configuration.

The limit value is configured in the ETS and can be changed during operation of the device either by an external specification by means of the 2-byte object "Brightness limit value" or by the teach-in function.
The hysteresis is a static value that is configured in the ETS. The hysteresis cannot be adapted during operation of the device. The device recalculates the hysteresis automatically if a new brightness limit value is specified.

Example of a limit value definition:
1. Brightness limit value = upper threshold (see figure 54)
-> Lower threshold = Brightness limit value - Hysteresis

2. Brightness limit value = lower threshold (see figure 55)
-> Upper threshold = brightness limit value + hysteresis

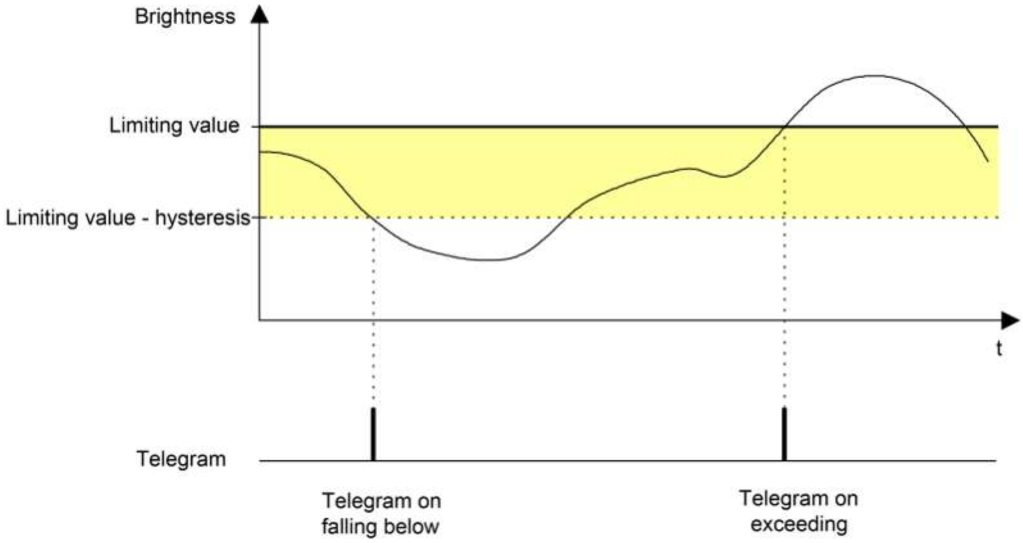


Figure 54: Example 1 of the limit value definition
Limit value is upper threshold

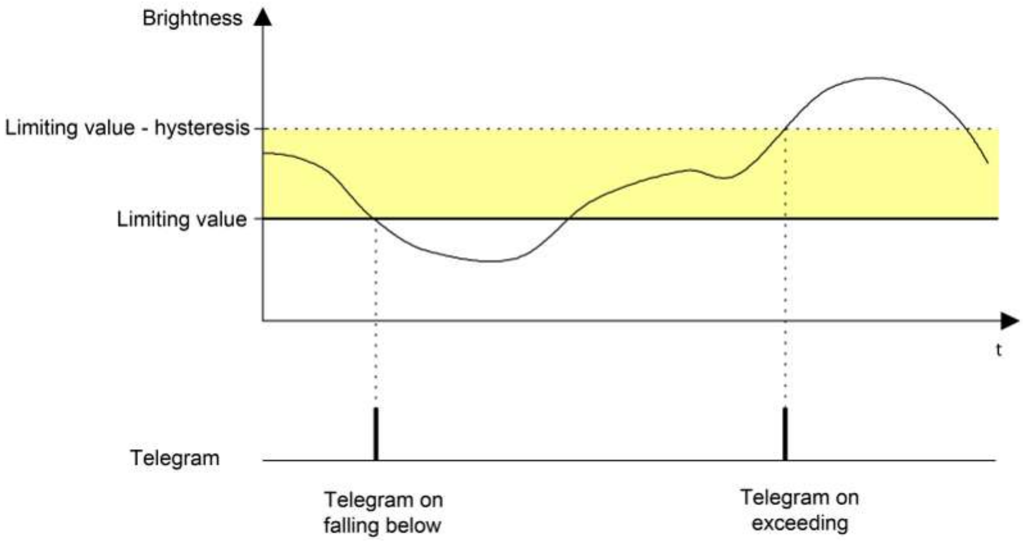


Figure 55: Example 2 of the limit value definition
Limit value is lower threshold

15.2 Limit value specification

During ongoing operation of the device, a brightness limit value can be changed by an external presetting of a 2-byte brightness value by means of the object "Brightness limit value" or by the teach-in function and thus adapted to meet the user requirements.

The 2-byte objects "Brightness limit value status" can be used for the feedback of the limit values evaluated by the device. These objects can be configured with group addresses if the "Status object, brightness limit value" parameter is set to "Active" for

each limit value.
The feedback can optionally take place actively or passively (object is readable). In the function as an active signalling object, the current value is transmitted once automatically to the bus each time the brightness limit value is changed, after ETS programming or after the bus voltage returns (optionally delayed).

External specification of the brightness limit value

The brightness limit value is reset in the device in accordance with DPT 9.004 by transmitting a 2-byte brightness value to the object "Brightness limit value". The relative hysteresis value configured in the ETS results in a new value for both brightness thresholds, depending on the type of limit value definition. The new limit value remains unchanged until a new specification is received (externally by means of an object or the teach-in function). An ETS programming operation resets a limit value automatically to the ETS presettings if this is provided for in the configuration (see below).

A limit value set by means of the 2-byte object will be lost during execution of the teach-in function (see below).

Teach-in function

The teach-in function is another option for the external specification of a limit value. The teach-in function is used to instantly apply the currently measured brightness value by transmitting a corresponding telegram to the 1-bit object "Limit value - Teach-in" as a new limit value. The relative hysteresis value configured in the ETS results in a new value for both brightness thresholds, depending on the type of limit value definition.
The limit value teach-in object can be configured if the "Teach-in function" parameter is set to "Active" on the parameter page "BLV x - General". The polarity of a teach-in telegram can be configured with the "Functionality" 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 limit value previously learned will be lost in the process. If, however, the teach-in function is configured actively to "1" and "0", it will not be possible anymore to reset to the configured limit value by means of this object during ongoing operation of the device! The new limit value set with the teach-in function is maintained until a new specification (externally by object or new teach-in process) is received. An ETS programming operation resets a limit value automatically to the ETS presettings if this is provided for in the configuration (see below).

A limit value previously set by means of the 2-byte object will be lost if the teach-in function is executed. With the "Teach-in inactive" command, the brightness limit value programmed by the ETS is always switched over to.

The brightness limit value is saved each time several telegrams of the same polarity are received in succession at the teach-in object with the "Teach-in active" command.

Limit value specification with ETS programming

The parameter "Overwrite brightness limit value during ETS programming in device" determines whether an active limit value previously set by an external object specification or by the teach-in function is overwritten by the limit value configured in the ETS during ETS programming. 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 limit value specified externally or by the teach-in function still remains active even after ETS programming.

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

A bus voltage failure does not reset limit values specified by the 2-byte object or by the teach-in function. The disabling function has no effect on the external specification of a new limit value.

15.3 "General" parameters

Limit brightness values -> BLV x - General

The following parameters are present for each limit value (1...3) separately.

Designation	Free text Max. 40 characters long text
This parameter assigns a name to the brightness limit value for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Brightness source

Brightness measurement by	**Internal sensor** External value via bus Internal sensor and external value via bus
The "Brightness measurement by" parameter specifies which sensors are used to determine the brightness. "Internal sensor": The sensor integrated in the device is activated. The brightness value is therefore determined only locally on the device. "Internal sensor and external value via bus": In these settings, the selected sources are combined with each other. The "External value via bus" is a telegram by means of the 2-byte object "Brightness value - External" from a connected KNX brightness sensor or device with brightness detection.	

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%
The weighting of the measured brightness value of the internal and external value is defined via the bus here. This results in an overall value, which will be used for the further interpretation of the brightness. This parameter is visible only with "Brightness measurement by = "Internal sensor and external value via bus"!	

Brightness value status object	Active **Inactive**
The determined brightness value is sent to the bus by sending a brightness value to the 2-byte object "Brightness value - Status", which can be enabled by this parameter. The value is output in lux.	

Brightness limit value

Brightness limit value corresponds to	Upper threshold **Lower threshold**
A brightness limit value to be monitored always consists of an upper and lower brightness threshold. The brightness thresholds are assigned by means of a brightness limit value and hysteresis derived relatively from the brightness limit value. The type of brightness limit value (upper or lower threshold) must be specified accordingly here. Example of brightness limit definition: 1. Brightness limit value = Upper threshold -> Lower threshold = Brightness limit value - Hysteresis 2. Brightness limit value = upper threshold -> Lower threshold = brightness limit value + hysteresis	

Lower threshold	10...**1000**...2,000
The limit value (lower threshold) is configured here. This parameter is visible only if the limit value is the lower threshold. The setting is made in lux.	

Upper threshold	+1 %...**+10 %**...+20 % in 1% increments
If the limit value is the lower threshold, the upper threshold is defined by the hysteresis that can be configured here. This parameter is visible only if the limit value is the lower threshold.	

Upper threshold	10...**1000**...2,000
The limit value (upper threshold) is configured here. This parameter is visible only if the limit value is the upper threshold. The setting is made in lux.	

Lower threshold	-1 %...**-10 %**...-20 % in 1% increments
If the limit value is the upper threshold, the lower threshold is defined by the hysteresis that can be configured here. This parameter is visible only if the limit value is the upper threshold.	

Brightness value can be set via object	Active **Inactive**
The brightness limit value is reset in the device by transmitting a brightness value to the 2-byte object "Brightness limit value" in accordance with DPT 9.004, which can be enabled by this parameter. The relative hysteresis value configured in the ETS results in a new value for both brightness thresholds. The new limit value remains unchanged until a new specification is received (externally by means of an object or the teach-in function). An ETS programming operation resets a limit value automatically to the ETS presettings if this is provided for in the configuration.	

Teach-in function	Active **Inactive**
The teach-in function is used to adopt the brightness value currently measured as the new limit value without delay by sending a corresponding telegram to the 1-bit object "Brightness limit value - Teach-in". The relative hysteresis value configured in the ETS results in a new value for both brightness thresholds. The teach-in object can be configured if this parameter is set to "Active".	

Functionality	**0 = inactive / 1 = active** 0 = active / 1 = inactive 0 = active / 1 = active
The polarity of a teach-in telegram can be configured with this parameter. It is possible to switch back to the configured limit value upon receiving the opposite object value (teach-in inactive), depending on the configuration. The limit value previously learned will be lost in the process. If, however, the teach-in function polarity is configured actively to "1" - and "0" - it will not be possible anymore to switch back to the configured limit value by means of this object during ongoing operation of the device! This parameter is visible only if the teach-in function is active.	

Status object, brightness limit value	Active **Inactive**
This parameter enables the 2-byte object "Brightness limit value - Status", which can be used to send the brightness limit value of the device to the bus.	

Overwrite brightness limit value during ETS download in the device	**Active** Inactive
This parameter determines whether an active limit value previously set by an external object specification or teach-in function is overwritten by the limit value configured in the ETS during ETS programming. 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 limit value specified externally or by the teach-in function still remains active even after ETS programming. The device always works with the value configured in the ETS if this parameter is set to "Inactive" and - as provided for in the configuration - no external presetting has been made yet by means of the 2-byte object "Brightness limit value" or by the teach-in function after the initial ETS commissioning. The ETS parameter becomes invalid in the afore-mentioned configuration only after an external presetting or after a teach-in process.	

Commands

Function	**Switching** Dimming value transmitter Scene extension unit
The limit value can be configured to a specific data format by this parameter. "Switching" 1-bit switching telegrams (ON/OFF) are output. "Dimming value transmitter" 1-byte dimming value telegrams (0...100%) are output. "Scene extension unit" 1-byte scene call-ups (0...64) are output.	

A brightness limit value output can transmit a telegram if the brightness value exceeds the upper threshold and/or does not reach the lower threshold, depending on the configuration. The following parameters define when and which telegram the corresponding channel output is to send.

If upper threshold is exceeded (switching)	**No reaction** ON telegram OFF telegram
This parameter defines the switching command, that is transmitted to the bus when the upper brightness limit value is exceeded. The parameter is visible only if the function of the brightness limit value is configured to "Switching" and a telegram is to be sent when it is exceeded and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.	

(If upper switching threshold is exceeded) At day	**No reaction** ON telegram OFF telegram
This parameter is used to define the switching command that is sent to the bus when the upper brightness limit value is exceeded for day mode. The parameter is visible only if the function of the brightness limit value is configured to "Switching", a telegram is to be sent when it is exceeded and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(Switching if upper threshold is exceeded) At night	**No reaction** ON telegram OFF telegram
This parameter is used to define the switching command that is sent to the bus when the upper brightness limit value is exceeded for night mode. The parameter is visible only if the function of the brightness limit value is configured to "Switching", a telegram is to be sent when it is exceeded and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

If value falls below lower threshold (switching)	No reaction ON telegram OFF telegram
This parameter defines the switching command that is transmitted to the bus when the lower threshold is not reached. The parameter is visible only if the brightness limit value function is configured to "Switching", a telegram is to be sent when the value falls below it and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.	

(If value falls below lower switching threshold) At day	No reaction ON telegram OFF telegram
This parameter defines the switching command, that is transmitted to the bus if the lower threshold is not reached for day operation. The parameter is visible only if the function of the brightness limit value is configured to "Switching", a telegram is to be sent when the value falls below it and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If value falls below lower switching threshold) At night	No reaction ON telegram OFF telegram
This parameter defines the switching command, that is transmitted to the bus when the lower threshold is not reached for night operation. The parameter is visible only if the function of the brightness limit value is configured to "Switching", a telegram is to be sent when the value falls below it and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

If upper threshold is exceeded (dimming value transmitter)	No reaction Send dimming value
This parameter is used to define whether a dimming value is to be sent to the bus when the upper brightness limit value is exceeded. The parameter is visible only if the brightness limit value function is configured to "Dimming value transmitter".	

If value falls below lower threshold (dimming value transmitter)	No reaction Send dimming value
This parameter defines whether a dimming value is to be sent to the bus when the brightness falls below the lower brightness limit value. The parameter is visible only if the brightness limit value function is configured to "Dimming value transmitter".	

(If upper threshold is exceeded) dimming value	0...100%
This parameter is used to define the dimming value that is sent to the bus when the upper brightness limit value is exceeded. The parameter is visible only if the function of the brightness limit value is set to "Dimming value transmitter", the parameter "When the upper threshold is exceeded" is to be sent a "Dimming value and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.	

(If upper threshold is exceeded) At day	0...100%
This parameter is used to define the dimming value that is sent to the bus when the upper brightness limit value is exceeded for day operation. The parameter is visible only if the function of the brightness limit value is set to "Dimming value transmitter", the parameter "If upper threshold is exceeded" is to be sent a dimming value and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If dimming value upper threshold is exceeded) At night	0...100%
This parameter is used to define the dimming value that is sent to the bus when the upper brightness limit value is exceeded for night operation. The parameter is visible only if the brightness limit value function is configured to "Dimming value transmitter", the "If upper threshold is exceeded" parameter is configured to "Send dimming value" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If value falls below lower threshold) Dimming value	0...100%
This parameter is used to define the dimming value that is sent to the bus when the brightness falls below the lower brightness limit value. The parameter is visible only if the brightness limit value function is configured to "Dimming value transmitter", the parameter "Send dimming value when falling below the lower threshold" is configured to "Send dimming value" and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.	

(If value falls below lower threshold) At day	0...100%
This parameter is used to define the dimming value that is sent to the bus when the brightness falls below the lower brightness limit value for day operation. The parameter is visible only if the brightness limit value function is configured to "Dimming value transmitter" and the parameter "If value falls below lower threshold" is configured to "Send dimming value" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If value falls below lower dimming value threshold) At night	0...**100%**
This parameter is used to define the dimming value that is sent to the bus when the brightness falls below the lower brightness limit value for night operation. The parameter is visible only if the brightness limit value function is configured to "Dimming value transmitter" and the parameter "If value falls below lower threshold" is configured to "Send dimming value" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

If upper threshold is exceeded (scene extension unit)	**No reaction** Send scene number
This parameter defines whether a scene call-up command is transmitted to the bus when the upper threshold is exceeded. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit".	

If value falls below lower threshold (scene extension unit)	**No reaction** Send scene number
This parameter defines whether a scene call-up command is to be transmitted to the bus when falling below the lower threshold. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit".	

(If upper threshold is exceeded) scene number	**1**...64
This parameter defines the scene number for the scene call-up command, which is transmitted to the bus when the upper brightness limit value is exceeded. The parameter is visible only if the function of the brightness limit value is configured to "Scene extension unit", the parameter "If upper threshold is exceeded" is configured to "Send scene number" and the parameter "Day/night switchover" is set to inactive on the "General" parameter page.	

(If upper threshold is exceeded, scene number) At day	**1**...64
This parameter defines the scene number for the scene call-up command, which is transmitted to the bus if the upper brightness limit value is exceeded for day operation. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit", the "If upper threshold is exceeded" parameter is configured to "Send scene number" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If upper threshold is exceeded, scene number) At night	1...64
This parameter defines the scene number for the scene call-up command, which is transmitted to the bus if the upper brightness limit value is exceeded for night operation. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit", the "If upper threshold is exceeded" parameter is configured to "Send scene number" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If value falls below lower threshold) scene number	1...64
This parameter defines the scene number for the scene call-up command, which is transmitted to the bus if the lower threshold is not reached. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit", the parameter "Send scene number if lower brightness limit value is not reached" is configured to "Send scene number" and the "Day/night switchover" parameter is set to inactive on the "General" parameter page.	

(If value falls below lower threshold, scene extension unit) At day	1...64
This parameter defines the scene number for the scene call-up command, which is transmitted to the bus if the lower threshold is not reached for day operation. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit", the parameter "Send scene number if lower brightness limit value is not reached" is configured to "Send scene number" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

(If value falls below lower threshold, scene extension unit) At night	1...64
This parameter defines the scene number for the scene call-up command, which is transmitted to the bus if the lower threshold is not reached for night operation. The parameter is visible only if the brightness limit value function is configured to "Scene extension unit", the parameter "Send scene number if lower brightness limit value is not reached" is configured to "Send scene number" and the "Day/night switchover" parameter is set to active on the "General" parameter page.	

Scenes	Inactive Active
The scene function can be activated or deactivated here.	

Disabling function	Active Inactive
The limit value evaluation can be disabled independently of the other functional units by the disabling function. No telegrams will then be transmitted anymore by means of the output objects. However, the disabling function does not affect the specification of new brightness limit values by an external value via the bus or by the teach-in function. The disabling function can be used if this parameter is configured to "Active". The disabling is then activated and deactivated by means of the object "Disabling function - Activate/Deactivate".	

15.4 "General" objects

The following parameters are present for each limit value (1...3) separately.

BLV x general parameter page

Function	Name	Type	DPT	Flag
Brightness value - External	BLV x – Input	2-byte	9,004	C, -, W, -, U
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 This object is visible only if the "Brightness measurement" parameter is configured to "External value via bus" or "Internal sensor and external value via bus".				

Function	Name	Type	DPT	Flag
Brightness limit value	BLV x – Input	2-byte	9,004	C, -, W, -, U
2-byte object for presetting an external limit value (10...2,000 Lux). The relative hysteresis value configured in the ETS results in a new value for both brightness thresholds, depending on the type of limit value definition. The new limit value is retained until a new specification is made (external value via bus or by means of teach-in function). This object is visible only if the parameter "Brightness value can be set via object" is enabled (active).				

Function	Name	Type	DPT	Flag
Brightness value - Status	BLV x - Output	2-byte	9,004	C, R, -, T, A
2-byte object used to feed back an active brightness value. 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 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 "Status object, brightness value" parameter is enabled (active).				

Function	Name	Type	DPT	Flag
Brightness limit value - Teach-in	BLV x – Input	1-bit	1,017	C, -, W, -, U
1-bit object used to trigger a teach-in process to learn a brightness limit value. With the teach-in function, the effective brightness value is applied instantly by transmitting a corresponding telegram to this object as new brightness limit value. The telegram polarity can be configured. This object is visible only if the "Teach-in function" parameter is enabled (active).				

Function	Name	Type	DPT	Flag
Brightness limit value - Status	BLV x - Output	2-byte	9,004	C, R, -, T, A
2-byte object used to feed back an active brightness limit value. 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 limit value is transmitted once to the bus each time the brightness limit value is changed after an ETS programming operation or after the bus voltage returns (optionally delayed). This object is visible only if the "Status object, brightness value" parameter is enabled (active).				

Function	Name	Type	DPT	Flag
Switching	BLV x - Output	1-bit	1,001	C, R, -, T, A
1-bit object used by the brightness limit value to transmit the switching command if the limit value thresholds are exceeded or not reached. This object is visible only if the function of the brightness limit value is configured to "Switching".				

Function	Name	Type	DPT	Flag
Dimming	BLV x - Output	1-byte	5,001	C, R, -, T, A
1-byte object used to send the dimming value in per cent when the value exceeds or falls below the limit value thresholds. This object is visible only if the brightness limit value function is configured to "Dimming value transmitter".				

Function	Name	Type	DPT	Flag
Scene	BLV x - Output	1-byte	17,001	C, R, -, T, A
1-byte object used to send the scene call-up command if the value exceeds or falls below the brightness limit value thresholds. This object is visible only if the brightness limit value function is configured to "Scene extension unit".				

Function	Name	Type	DPT	Flag
Scene-Scene extension unit	BLV x – Input	1-byte	17,001	C, -, W, -, U
1-byte object that can be used to send a scene call-up command to the brightness limit value. This object is visible only if the scenes of the brightness limit value are set to activated.				

15.5 Scenes

Configuring an extended scene call-up

The extended scene call-up allows up to 64 scenes of a brightness limit value to be called up in sequence. Scene are called up by means of the 1-bit communication object "Extended scene call-up". Each ON telegram received by means of this object

calls up the next of the available scenes in the configuration. Each OFF telegram received calls up the previous scene.
With the extended scene call-up, the controller always calls up the neighbouring scene - starting with the scene most recently called up by the extended call-up. It is irrelevant whether the scene is effective (scene number = "1...64" or scene active) or ineffective (scene number = "0" or scene inactive). If an ineffective scene is called up by the extended scene call-up, the presence detector will not react.
Only the scenes available in the scene configuration can be selected by the extended scene call-up (defined by the parameter "Number of scenes" with "Variable", always all 64 scenes with "Fixed"). An ON or OFF telegram always calls up scene 1 first after a reset (bus voltage return, ETS programming operation).

The scene sequence of the extended scene call-up is not influenced by calling up a scene by means of the 1-byte extension object. The two call-up functions work independently of each other.

- Activate the "Extended scene recall" parameter on the parameter page "BLV x - Scenes".

  The object "Scene - Extended scene recall" is available. Each ON telegram calls up the next scene. Each OFF telegram calls up the previous scene.
- Deactivate the "Extended scene recall" parameter.

  The extended scene call-up is deactivated. A scene can be called up only by means of the 1-byte scene extension object.

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 is reached when counting down and an additional telegram in the last counting direction is received by the actuator. The overflow behaviour is defined in the ETS.

- Activate the "With overflow" parameter.

  After reaching the last scene of the selected configuration, the overflow is executed and scene 1 called up by another ON telegram. Similarly, after reaching scene 1, the overflow is executed by another OFF telegram and the last scene of the selected configuration is called up.
- Deactivate the parameter "With overflow".

  A scene overflow is not possible. After reaching the last scene of the selected configuration, further ON telegrams of the extended scene call-up are ignored. In the same way, the actuator ignores further OFF telegrams if scene 1 was called up last.

Up to 64 scenes can be created and scene values (function) configured for a brightness limit value. 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.
The scene function must be enabled on the parameter page "BLV x - General" so that the "Scenes" parameter page appears 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.

Setting a scene call-up delay

Each scene call-up 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 on the parameter page "BLV x scenes".

■ Activate the "Delay scene recall" parameter on the "BLV x - 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 set for each scene.
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 "BLV x - General" parameter page.

The scene configuration is set to "Variable (1 ... 64 scenes)"

■ Set the "Scene number" parameter for each scene to the number used to address the scenes on the "BLV x - Scenes" parameter page.

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 (brightness limit value specification, activate lock, deactivate lock) is to be set when a scene is called up.

- On the parameter page "BLV x - Scenes", set the "Function" parameter to the desired operating mode for each scene.

  The configured scene command is called up if a scene is called up.

15.5.1 "Scenes" parameter

Brightness limit values -> BLV x - General -> Scenes

Delay scene recall	**Inactive** Active
A scene is called up by means of the scene extension object. 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 duration of the delay before a scene is set after it is 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 a brightness limit value 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
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 is reached when counting down and an additional telegram in the last counting direction is received by the actuator. **Parameter activated:** After reaching the last scene of the selected configuration, another 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. **Parameter deactivated:** A scene overflow is not possible. After reaching the last scene of the selected configuration, further ON telegrams of the extended scene call-up are ignored. In the same way, further OFF telegrams are ignored if scene 1 was called up last. This parameter is visible only if the extended scene call-up is used.	

Scene configuration	**Variable (1...64 scenes)** Fixed (64 scenes)

The scene configuration selected here decides whether the number of scenes is either variable (1 ... 64) or, alternatively, fixed to the maximum (64).

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 for the switching output in the ETS and can therefore be used. It is possible to specify which scene number (1 ... 64) controls each scene.

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. To do this, remove the tick from the corresponding scene.

Number of scenes	1...**10**...64

This parameter defines how many scenes are visible in the ETS for a brightness limit value and can therefore be used.

Scene number	0...**1***...64 *: The predefined scene number depends on the scene (1...64).

It is possible to set which scene number (1 ... 64) actuates each scene.
A setting of "0" deactivates the corresponding scene to prevent it from being called up or stored. If the same scene number (1…64) 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.

Scene active	**Active** Inactive

This parameter can be used to deactivate a scene. To do this, remove the tick from the corresponding scene.

This parameter is visible only if the "Scene configuration" parameter is set permanently to (64 scenes).

Function	**Activate disabling** Deactivate disabling Brightness limit value specification

This parameter is present for each scene separately. The number depends on the setting of the "Number of scenes" parameter.

The scene function executed when the scene is called up is configured here. In addition, the limit value is set in lux in the "Limit value specification" setting (10 ... 2000 lux)

Limit value specification (lux)	10 … 2000 lux
This parameter is present for each scene separately. The number depends on the setting of the "Number of scenes" parameter. The brightness limit value is specified here in lux. The parameter is visible only if the "Function" parameter has been set to "Brightness limit value specification".	

15.5.2 "Scenes" objects

The following parameters are present for each limit value (1...3) separately.

BLV x scenes parameter page

Function	Name	Type	DPT	Flag
Scenes - Scene extension unit	BLV x – Input	1-bit	17,001	C, -, W, -, U
1-bit object used to call up a scene. A value between 1 ... 64 is sent to this object, depending on the number of enabled scenes. This object is visible only if the "Scenes" parameter is enabled (active).				

Function	Name	Type	DPT	Flag
Scenes - Extended scene recall	BLV x – Input	1-bit	1,001	C, -, W, -, U
1-bit object for extended scene call-up. Each ON telegram received calls up the next scene of a brightness limit value 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). This object is visible only if the "Extended scene recall" parameter is enabled (active).				

15.6 Disabling function

The limit value evaluation can be disabled independently of the other functional units by the disabling function. If a limit value evaluation is disabled, it is deactivated. No telegrams will then be transmitted anymore by means of the output objects. However, the specification of new brightness limit values by an external brightness value or by the teach-in function is not influenced by the disabling function.
The disabling function can be used if the "Disabling function" parameter is configured to "Active" on the "BLV... - General" parameter page. The disabling function is then activated and deactivated by means of the object “Disabling function - Activate/Deactivate" in which the ETS telegram polarity can be configured. The disabling function can be activated by force after the bus voltage returns or after ETS programming.

Disabling function after bus voltage returns

The state of the disabling function after the bus voltage returns can be configured to the following settings...

- "Disabling deactivated" setting:
  After the bus voltage returns, the brightness limit values are immediately ready for operation. The thresholds configured for each output are compared with the current brightness value and evaluated. The configured telegrams are transmitted if the brightness value exceeds or does not reach the corresponding thresholds.

- "Disabling activated" setting:
  All brightness limit values are disabled after the bus voltage returns. The configured thresholds are not evaluated with the current brightness value. Thus, no telegram is transmitted by any output.
- "State as before bus voltage failure" setting:
  If the device detects a bus voltage failure, it will save the current state of the disabling function. After the bus voltage returns, the disabling function assumes the saved state again (active or inactive).

Disabling function after ETS programming

The state of the disabling function after ETS programming can also be configured. The state can be configured as follows...

- "Disabling deactivated" setting:
  After ETS programming, the brightness limit values are immediately ready for operation. The thresholds configured for each output are compared with the current brightness value and evaluated. The configured telegrams are transmitted if the brightness value exceeds or does not reach the corresponding thresholds.
- "Disabling activated" setting:
  After ETS programming, all brightness limit values are disabled. The configured thresholds are not evaluated with the current brightness value. Thus, no telegram is transmitted by any output.

The limit value evaluation can be disabled independently of the other functional units by the disabling function. If a limit value evaluation is disabled, it is deactivated. No telegrams will then be transmitted anymore by means of the output objects. However, the specification of new brightness limit values by an external brightness value or by the teach-in function is not influenced by the disabling function.
The disabling function can be used if the "Disabling function" parameter is configured to "Active" on the "BLV - General" parameter page. The disabling function is then activated and deactivated by means of the object “BLV limit value - Input - Disabling function - Activate/Deactivate" in which the ETS telegram polarity can be configured. The disabling function can be activated by force after the bus voltage returns or after ETS programming.

15.6.1 "Disabling function" parameter

Brightness limit values -> BLV x - General -> Disabling function

Object polarity	**0 = enable / 1 = disable** 0 = disable / 1 = enable
This parameter defines the telegram polarity of the disabling object. The parameter is visible only if the disabling function is enabled.	

After the bus voltage returns	**Disabling deactivated** Disabling activated State as before bus voltage failure
The state of the disabling function after the bus voltage returns can be configured here. The parameter is visible only if the disabling function is enabled. **Disabling deactivated:** After the bus voltage returns, the brightness limit values are immediately ready for operation. The thresholds configured for each output are compared with the current brightness value and evaluated. The configured telegrams are transmitted if the brightness value exceeds or does not reach the corresponding thresholds. **Enabling activated:** All brightness limit values are disabled after the bus voltage returns. The configured thresholds are not evaluated with the current brightness value. Thus, no telegram is transmitted by any output. **State as before bus voltage failure**: If the device detects a bus voltage failure, it will save the current state of the disabling function. After the bus voltage returns, the disabling function assumes the saved state again (active or inactive).	

After ETS programming operation	**Disabling deactivated** Disabling activated
The state of the disabling function after ETS programming can be configured here. The parameter is visible only if the disabling function is enabled. **Disabling deactivated**: After ETS programming, the brightness limit values are immediately ready for operation. The thresholds configured for each output are compared with the current brightness value and evaluated. The configured telegrams are transmitted if the brightness value exceeds or does not reach the corresponding thresholds. **Disabling activated:** All brightness limit values are disabled after ETS programming. The configured thresholds are not evaluated with the current brightness value. Thus, no telegram is transmitted by any output.	

15.6.2 "Disabling function" objects

The following parameters are present for each limit value (1...3) separately.

BLV x disabling function parameter page

Function	Name	Type	DPT	Flag
Disabling function - Activate/Deactivate	BLV x – 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
Disabling function - Status	BLV x - Output	1-bit	1,003	C, R, -, T, A
1-bit object used to feed back the state of the disabling function. This object is visible only if the "Disabling function" parameter is active.				

16 Status indication (RGB-LED)

The device has a status LED to indicate various statuses. If status indication is active, only the status of highest priority is indicated. Only when the status indicator of higher priority has been deactivated will the active status indicator of lower priority be displayed. The status with the highest number is of lowest priority. The status with the lowest number is of highest priority.

There are two ways of using a status indicator.

– Internal link with a function block
  In this case, the status of the selected function block is displayed, e.g. lock active.
– External object
  In this case, the status of another KNX device is indicated by a telegram to the "Status" object, e.g. the switching state of an actuator.

The indication is performed by an RGB LED located behind the lens. Individual colours and the light mode (constant or flashing) can be set to improve the differentiation between the various statuses. Furthermore, the brightness of the LED can be set to adapt it to the ambient brightness or day/night operation.
Up to eight status indicators can be used. The corresponding number is set on the "General" parameter page. The further configuration is then carried out on the page "Status indicator (RGB LED) status x".

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.

ℹ If the status LED has been switched on, off or toggled, the sensitivity of the PIR sensors is reduced for a short period of time to prevent faulty switching processes and then gradually increased again to the set value.

16.1 "Status indicator" parameter

Status indicator (RGB-LED) -> Status x

This parameter page is visible only if a number of status indicators has been enabled with the parameter "Number of status indicators (RGB LED)" on the General parameter page.

The following parameters are present for each status indicator separately.

Designation	Free text Max. 40 characters long text
This parameter gives the status indicator a name for identification. The name serves merely as an aid in the ETS and is not programmed into the device.	

Activate status via	**External object** Internal link
This parameter is used to specify whether an internal status of the device or the status of an external device connected via the bus is indicated. **Internal link:** The status of a selected function block is indicated. **External object:** The status of a bus device connected by means of the "Status" object is indicated, e.g. a switch actuator.	

Internal link with	**Function block 1** Function block 2 Function block 3 Function block 4 Function block 5 Light control function block Orientation light function block
This parameter is used to assign a function block to the status indicator (RGB LED). This parameter is visible only if the "Activate status via" parameter is set to internal link.	

Internal link to status	**Disabling active** Disabling inactive Detection active Detection inactive Manual control active Manual control active/inactive
This parameter is used to select the status of a function block that activates the status indicator (RGB LED). This parameter is visible only if the "Activate status via" parameter is set to internal link.	

Object polarity status	**1 = active / 0 = inactive** 0 = active / 1 = inactive
This parameter is used to define the telegram polarity for activating or deactivating the status indicator (RGB LED). This parameter is visible only if the "Activate status via" parameter is set to external object.	

End status	**As soon as status inactive** After specified duration Via external acknowledgement object
This parameter is used to define when the status indicator (RGB LED) is switched off again. As soon as status inactive: The status indicator is switched off as soon as the indicated status is no longer active, e.g. disabling deactivated. After specified duration: The status indicator is automatically switched off after the set indication duration has elapsed. Via external acknowledgement object: The status indicator must be switched off manually by sending a telegram to the status LED - "Acknowledgement" input object."	

Duration of status display	**1** … 59 h 1 … **15** … 59 min **1** … 59 s
This parameter is used to define the time before a status indicator is automatically deactivated. The setting is made in hours, minutes and seconds. This parameter is visible only if the "End status" parameter is set to after the expiry of the indication duration.	

Colour	**Red** Green Blue Yellow Cyan Orange Violet White User-defined
This parameter is used to set a colour for the status indicator. To do this, you can select one of the predefined colours or define a colour with the "Colour selection" parameter in the user-defined setting.	

Colour selection	#000000 … **#FF0000** … #FFFFFF
This parameter is used to define an individual colour for the status indicator. To do this, a colour is selected from a colour field or set using a hexadecimal number. This parameter is visible only if the "Colour" parameter is set to user-defined.	

Light mode	**Constant** Flashing
This parameter is used to define how the status indicator lights up. "Constant" The status indicator will light up continuously as long as the status indicator is active or has not been acknowledged. This setting is suitable for informational messages that do not require a direct response. "Flashing" The status indicator flashes as long as the status indicator is active or has not been acknowledged. This setting is suitable for signals that require increased attention.	

LED brightness level	1 … **6** …10
This parameter is used to set the brightness of the RGB LED. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 6 is set by default. This parameter is visible only if the Day/night switchover parameter is set to inactive on the General parameter page.	

Day/night-dependent use	Only at day Only at night **At day and night**
A separate LED brightness level can be set for the status LED for day and night operation. This parameter can be used to limit the setting option to day or night mode only. This parameter is visible only if the Day/night switchover parameter is set to active on the General parameter page.	

(LED brightness level) At day	1 … **6** …10
This parameter is used to set the brightness of the RGB LED in day mode. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 6 is set by default. This parameter is visible only if the Day/night switchover parameter is set to active on the General parameter page.	

(LED brightness level) At night	1 … **6** …10
This parameter is used to set the brightness of the RGB LED in night mode. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 6 is set by default. This parameter is visible only if the Day/night switchover parameter is set to active on the General parameter page.	

Behaviour with simultaneous orientation light

Display priority	**Status** Orientation light
This parameter is used to define whether the status is indicated when the orientation light is switched on. "Status" The status is indicated in the set colour. The orientation light is off whilst the status is indicatetd. The brightness of the status indicator and the light mode are set separately. "Orientation light" In this setting, the orientation light is on. The status is not indicated.	

Light mode	**Constant** Flashing
This parameter is used to define how the status indicator lights up while the orientation light is active. "Constant" The status indicator will light up continuously as long as the status indicator is active or has not been acknowledged. This setting is suitable for informational messages that do not require a direct response. "Flashing" The status indicator flashes as long as the status indicator is active or has not been acknowledged. This setting is suitable for signals that require increased attention. This parameter is only visible if the Display priority parameter is set to Status.	

LED brightness level	1 … **10**
This parameter is used to set the brightness of the RGB LED while the orientation light is active. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 10 is set by default. This parameter is only visible if the Display priority parameter is set to Status.	

16.2 "Status indicator" objects

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

Function	Name	Type	DPT	Flag
Status	Status x – Input (x = 1 … 8)	1-bit	1,001	C, -, W, -, U
1-bit object used to activate and deactivate the status indicator. A telegram is sent to this object for this purpose. A separate object is available for each status indicator enabled by the "Number of status indicators" parameter. This object is visible only if the "Activate status via" parameter is set to external object.				

Function	Name	Type	DPT	Flag
Acknowledgement	Status LED - Input	1-bit	1,016	C, -, W, -, U
1-bit object used to switch off an active status indicator manually by means of a telegram. If several status indicators are active, they must be switched off one after the other.				

17 Motion status indicator

The device has a walking test function. The walking test function serves as a guide for the project design and setting of the PIR detection field. The walking test indicates the reaction of the device when detecting movements with a blue status LED, which is clearly visible behind the sensor window. The walking test is activated and deactivated by a telegram to the object "Walking test - Activate/Deactivate". In addition, a function block must be assigned to the walking test in the ETS or by sending a telegram to the "Walking test - FB assignment" object. Optionally, the status LED can indicate any detected movements even during normal operation.

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.
– All PIR sectors assigned to the function block are active with their set sensitivities.
– When motion is detected, a blue status LED in the sensor window is activated for the duration of the motion pulse. The motion signals from the PIR sensors assigned to the function block are combined.
– No run-on time is started at the end of a detected motion.
– Function blocks 1-5 and the function block switch-over 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.

Activating and deactivating

To use the walking test, the "Motion status indicator (blue LED)" parameter must first be set to activated on the "General" parameter page. Set the "Use walking test" parameter to "Activated" on the "Movement status - indicator (blue LED)" parameter page that then appears. To start the walking test, send a telegram to the "Activate/Deactivate walking test" object. The walking test can be assigned only to one function block at a time. If several function blocks have been created for the device, perform the walking test for each function block in turn. If activated in the ETS, the assignment can be changed by means of the "Walk test - FB assignment" object.

The walking test may be deactivated also by a bus voltage failure (device reset).

Indication of motion pulses

The blue status LED is activated by the walking 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.
Example application: Used outdoors to detect the failure of a light bulb.

The status LED indicates detected movements of all PIR sectors brightness independently. It should be noted that not all PIR sectors always have to be assigned to a function block. Consequently, a signalled movement cannot necessarily be assigned to a function block and thus explicitly to a lighting.

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.

17.1 "Motion status indicator and walking test" parameter

This parameter page is visible only if the "Motion status indicator (blue LED)" parameter is set to active on the "General" parameter page.

Motion status indicator (blue LED)

Use walking test	Active **Inactive**
This parameter is used to activate the "Activate/Deactivate 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 sensitivities set for the PIR sensors are active.	

Use motion pulse meter	**Active** Inactive
This parameter is used to activate or deactivate the motion pulse meter for the walking test. The motion pulse meter indicates how many movements were detected within a defined time window. The detected motion pulses are useful when it comes to defining the number of motion pulses before a reaction is to take place, for example in "Presence detector - Monitoring" operation. "Active" The detected movements are counted The parameter "Duration of monitoring time window visible" appears. "Inactive" No motion pulses are counted. The detection field is monitored only with the blue status LED. This parameter is visible only if the "Use walking test" parameter is set to active.	

Duration of monitoring time window	0 … 59 min 1 … **3** …59 s
This parameter is used to set the length of the monitoring time window. The setting is made in minutes and seconds. The motion pulse meter is restarted after the time has elapsed. This parameter is visible only if the "Use motion pulse meter" parameter is set to active.	

Assigned function block	**Function block 1** Function block 2 Function block 3 Function block 4 Function block 5 Light control function block
This parameter is used to assign a function block to the walking test. This makes it possible to check the individual sensitivity settings of the individual function blocks. This parameter is visible only if the "Use walking test" parameter is set to active.	

Assignment can be changed via object	Active **Inactive**
The assignment can be switched from one function block to another for the walking test by sending a telegram to the 1-byte object "Walk test - FB assignment". This allows the sensitivity setting of all function blocks to be checked one after the other. Function block 1 is assigned by default to the walking test. This parameter enables this function. This parameter is visible only if the "Use walking test" parameter is set to active.	

LED function in normal operation

LED function in normal operation	Active **Inactive**
This parameter is used to activate or deactivate the indication of motion pulses by the blue status LED in normal operation. "Inactive" The blue status LED does not indicate any motion pulses during normal operation. Application example in presence detector operation at the office to avoid distractions. "Active" The signalling enables the start and duration of motion detection to be visualised by the device at any time. Example application: Used outdoors to detect the failure of a light bulb.	

Can be activated via object	Active **Inactive**
The indication of motion pulses in normal operation can be activated by sending a telegram to the 1-bit object "Indication of motion pulses in normal operation - Activate/Deactivate", which can be enabled by this parameter. This parameter is visible only if the "LED function" parameter is set to indication of motion pulses in normal operation.	

Assignment	**Function block 1** Function block 2 Function block 3 Function block 4 Function block 5 Light control function block

This parameter is used to assign one or more function blocks to the blue status LED. If one of the assigned function blocks detects motion, this is indicated by the blue status LED, even in normal operation.

The number of function blocks that can be selected depends on the setting of the "Function blocks" parameter on the General parameter page.
This parameter is visible only if the "LED function in normal operation" parameter is set to active.

Day/night-dependent reaction	**At day and night** Only at night Only at day

This parameter is used to define when the blue status LED indicates motion pulses.

"At day and night"
Detected movements are indicated in day and night mode.

"At night"
Detected movements are indicated in night mode.

"At day"
Detected movements are indicated in day mode.

This parameter is visible only if the "Day/night switchover" parameter is set to active on the General parameter page.

LED brightness	1 … **5** … 10

This parameter is used to set the brightness of the blue status LED. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 5 is set by default.

This parameter is visible only if
The "LED function" parameter is set to indication of motion pulses in normal operation and the Day/night switchover parameter is set to inactive on the General parameter page, or
The "LED function" parameter is set to indication of motion pulses in normal operation, the "Day/night-dependent reaction" parameter is set to only at day or only at night and the Day/night switchover parameter is set to active on the General parameter page.

(LED brightness) At day	1 … **5** … 10
This parameter is used to set the brightness of the blue status LED in day mode. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 5 is set by default. This parameter is visible only if the "LED function" parameter is set to indication of motion pulses in normal operation and the "Day/night-dependent reaction" parameter is set to day and night.	

(LED brightness) At night	1 … **5** … 10
This parameter is used to set the brightness of the blue status LED in night mode. The setting is made in 10 levels from 1 (dark) to 10 (light). Level 5 is set by default. This parameter is visible only if the "LED function" parameter is set to indication of motion pulses in normal operation and the "Day/night-dependent reaction" parameter is set to at day and night.	

17.2 "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.				

Function	Name	Type	DPT	Flag
Walking test - Assignment FB	Motion status indication - Input	1-byte	5,010	C, -, W, -, U
1-byte object used to assign a function block to the walking test. Only one function block can be assigned to the walking test at a time. This object is visible only if the "Use walking test" parameter is set to active.				

Function	Name	Type	DPT	Flag
Walking test - FB assignment - Status	Motion status indication - Output	1-byte	5,010	C, R, -, T, A
1-byte object used to output which function block is assigned to the walking test. This object is visible only if the "Use walking test" parameter is set to active.				

Function	Name	Type	DPT	Flag
Motion pulse meter - Count value - Status	Motion status indication - Output	2-byte	7,001	C, R, -, T, A
2-byte object used to output the movements (pulses) detected by the internal PIR sensors in the defined monitoring time window.				

Function	Name	Type	DPT	Flag
Motion pulse indication in normal operation - Activate/Deactivate	Motion status indication - Input	1-bit	1,003	C, -, W, -, U
1-bit object used to activate and deactivate the indication of motion pulses by the blue status LED in normal operation. The status LED then lights up each time motion is detected in day, night or day and night mode, depending on the configuration.				

Function	Name	Type	DPT	Flag
Motion pulse indication in normal operation - Status	Motion status indication - Output	1-bit	1,001	C, R, -, T, A
1-byte object used to output whether the indication of motion pulses is activated or deactivated in normal operation.				

18 Logic functions

The device contains up to 8 logic functions. These functions can be used to perform simple logical operations in a KNX installation. Logic functions can be networked, enabling the execution of complex operations, by linking input and output objects.

18.1 Logic functions parameters

General

Number of logic functions	0 ... 8
The number of required logic functions is defined here. If 0 is selected, no logic function is present. The Logic functions parameter node appears when 1 ... 8 is selected, whereby each logic function contains its own parameter page on which the logic function can be configured.	

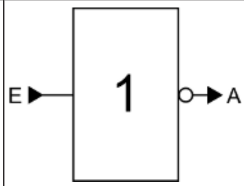
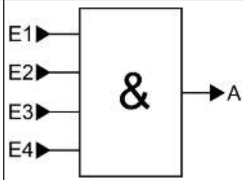
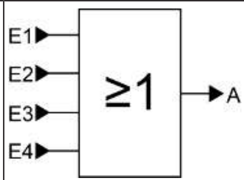
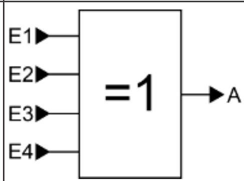
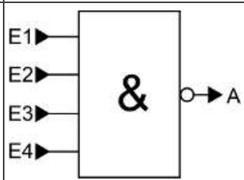
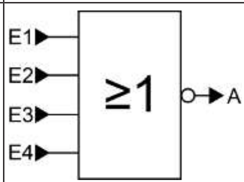
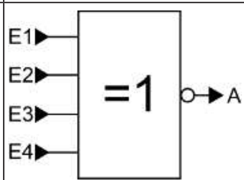
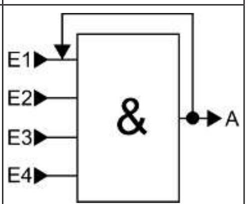
Logic functions -> Logic function ...

Name of logic function	Free text
The text entered in this parameter is applied to the name of the communication objects and is used for labelling the logic function in the ETS parameter window to provide a better overview. The text is not programmed in the device.	

Type of logic function	**Logic gate** Converter (1-bit -> 1-byte) Disabling element (filtering/time) Comparator Limit value switch with hysteresis
It is possible to be define which logical operation is to be executed for each logic function. This parameter is visible only if the number of logic functions is greater than 0 on the "General" parameter page. Logic gate: The logic function works as a boolean logic gate with optionally 1 ... 4 inputs and one output. Converter (1-bit -> 1-byte): The logic function is configured as a converter. The converter has a 1-bit input and 1-byte output and also a disabling object. ON/ OFF telegrams can be converted to pre-configured values. The disabling object can deactivate the converter. Disabling element (filtering/time): The logic function is configured as a disabling element. The disabling element has a 1-bit input and a 1-bit output. This logic function can delay input signals depending on the state (ON or OFF) and output them filtered at the output. A disabling object is also available, which can be used to deactivate the disabling element. Comparator: The logic function works as a comparator with an input whose data format can be configured, and with a 1-bit output used to output the result of the comparison operation. The reference function and the reference value are configured in the ETS. Limit value switch with hysteresis: The logic function works like a limit switch with hysteresis. An input with a configurable data format and a 1-bit output are available. The hysteresis is determined by an upper and lower threshold. The threshold values can be configured in the ETS. The input value is compared to the threshold values. The command issued at the output (ON/OFF) when the value exceeds or falls below the configured threshold values can be configured.	

18.2 Logic gate

A logic gate has up to 4 (1-bit) boolean inputs and one (1-bit) logic output. In consequence, a logic operation only supports the 1-bit data format. The following table shows configurable logic gates and explains their function.

Logic gate	Description	Icon
Invert (NOT)	The logic gate has only one input. The input is forwarded inverted to the gate output.	
And (AND)	The logic gate has 4 inputs. The output is "1" if all inputs are "1". Otherwise the output is "0".	
OR (OR)	The logic gate has 4 inputs. The output is "0" if all inputs are "0". Otherwise the output is "1".	
Exclusive OR (XOR)	The logic gate has 4 inputs. The output is "1" if only one input is "1". Otherwise the output is "0".	
Inverted And (NAND)	The logic gate has 4 inputs. The output is "0" if all inputs are "1". Otherwise the output is "1".	
Inverted Or (NOR)	The logic gate has 4 inputs. The output is "1" if all inputs are "0". Otherwise the output is "0".	
Inverted Exclusive OR (NXOR)	The logic gate has 4 inputs. The output is "0" if only one input is "1". Otherwise the output is "1".	
AND with feedback (ANDR)	The logic gate has 4 inputs. The output is fed back to the first input of the gate. The output is "1" if all inputs are "1". Otherwise the output is "0". If input 1 is set to "1" and the output is still "0", the feedback of input 1 will also be reset to "0". Only if	

Logic gate	Description	Icon
	inputs 2 ... 4 are "1" will a newly received "1" at input 1 cause the output to assume the logical state "1". Application: switching the light manually only at twilight -> Switch at input 1, twilight sensor at input 2 -> The manual switching signal is ignored as long as the twilight sensor has not issued an enabling signal. The manual switching signal is executed only at twilight.	

Inputs of a logic gate can be activated or deactivated separately. This allows gates with an individual number of inputs (1 ... 4) to be implemented. As an option, it is possible to invert inputs.

The transmission behaviour of the gate output can be configured.

18.2.1 Logic gate parameters

Logic functions -> Logic function...

Logic gate selection	Invert (NOT) **And (AND)** OR (OR) Exclusive OR (XOR) Inverted And (NAND) Inverted Or (NOR) Inverted Exclusive OR (NXOR) AND with feedback (ANDR)

This parameter defines the function of the logic gate and is visible only if "Type of logic function = logic gate".

Invert (NOT): The inverter is configured. The gate has one input and one output. The boolean data value of the input is forwarded inverted to the output.

And (AND): An AND gate is configured. The gate has 1...4 inputs and one output. The inputs are logically AND-linked. The result is forwarded to the output.

OR (OR): An OR gate is configured. The gate has 1...4 inputs and one output. The inputs are logically OR-linked. The result is forwarded to the output.

Exclusive-OR (XOR): An exclusive-OR gate is configured. The gate has 1...4 inputs and one output. The inputs are logically Exclusive-OR-linked. The result is forwarded to the output.

Inverted AND (NAND): An inverted AND gate is configured. The gate has 1...4 inputs and one output. The inputs are logically AND-linked. The result is forwarded inverted to the output.

Inverted OR (NOR): An OR gate is configured. The gate has 1...4 inputs and one output. The inputs are logically OR-linked. The result is forwarded inverted to the output.

Inverted Exclusive OR (NXOR): An inverted Exclusive OR gate is configured. The gate has 1...4 inputs and one output. The inputs are logically Exclusive-OR-linked. The result is forwarded inverted to the output.

AND with feedback (ANDR): An AND gate with feedback is configured. The gate has 1...4 inputs and one output. The output is fed back to the first input of the gate.

Input 1	Deactivated **Input object**

Inputs of a logic gate can be activated or deactivated separately. This allows gates with an individual number of inputs (1 ... 4) to be implemented. This parameter defines whether the first input of the gate is to be used.

This parameter is visible only if "Type of logic function = logic gate".

Input 2	Deactivated **Input object**
Inputs of a logic gate can be activated or deactivated separately. This allows gates with an individual number of inputs (1 ... 4) to be implemented. This parameter defines whether the second input of the gate is to be used. This parameter is visible only if "Type of logic function = logic gate".	

Input 3	**Deactivated** Input object
Inputs of a logic gate can be activated or deactivated separately. This allows gates with an individual number of inputs (1 ... 4) to be implemented. This parameter defines whether the third input of the gate is to be used. This parameter is visible only if "Type of logic function = logic gate".	

Input 4	**Deactivated** Input object
Inputs of a logic gate can be activated or deactivated separately. This allows gates with an individual number of inputs (1 ... 4) to be implemented. This parameter defines whether the fourth input of the gate is to be used. This parameter is visible only if "Type of logic function = logic gate".	

Invert input	Checkbox (yes/**no**)
It is possible to invert inputs of the logic gate as an option. This parameter is available for each input of the gate and defines whether the respective input is to be evaluated unchanged or inverted. This parameter is visible only if "Type of logic function = logic gate".	

Transmission criteria	**Always transmit when the inputs are updated** Transmit only if the output changes Transmit cyclically
The transmission behaviour of the output can be configured here. Always transmit when input is updated: The output transmits the current object value to the KNX each time a telegram is received at the input. Transmit only if the output changes: The output transmits the current object value only if the object value has changed compared to the last transmission process. The output always transmits when the first telegram is received at an input after the bus voltage returns or after an ETS programming operation. Transmit cyclically: In this setting, the output transmits the current object value cyclically to the KNX. After the bus voltage returns or after an ETS programming operation, the cyclical transmission is not started until the first telegram has been received at the input. The output also transmits as soon as a new telegram is received at the input. At the same time, the cycle time for cyclical transmission is restarted!	

Delay for transmission of result	**0**...99 h **0**...59 min **0**…59 s
Optionally, a delay before the result is transmitted (telegram at output) can be configured. In the setting "Always transmit when input is updated", telegrams at the output are transmitted only once the delay has elapsed. The delay time is restarted by each telegram at the input. In the setting "Only transmit if the output changes", telegrams are sent only if the object value changes at the output once the delay has expired. If the logic function is reprocessed by a new telegram at the input within the delay time and the object value changes again, the delay will restart. If the object value of the output does not change due to new input telegrams, the delay will not restart.	

Cycle time	**0**...99 h 0 … **5** ...59 min **0**…59 s
This parameter defines the cycle time for the cyclical transmission of the output. If the cycle time is configured with "0h, 0min, 0s", no cyclical transmission takes place.	

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18.2.2 Object list for logic gate

Function	Name	Type	DPT	Flag
Logic gate (…) Input 1	Logic .. - Input	1-bit	1.002	C, -, W, -, U
1-bit object as input 1 of a logic gate (1...8). The input state can be inverted optionally. This object is available only if the type of logic function is configured to "logic gate" and input 1 is used.				

Function	Name	Type	DPT	Flag
Logic gate (…). Input 2	Logic .. - Input	1-bit	1.002	C, -, W, -, U
1-bit object as input 2 of a logic gate (1...8). The input state can be inverted optionally. This object is available only if the type of logic function is configured to "logic gate" and input 2 is used.				

Function	Name	Type	DPT	Flag
Logic gate (…) Input 3	Logic .. - Input	1-bit	1.002	C, -, W, -, U
1-bit object as input 3 of a logic gate (1...8). The input state can be inverted optionally. This object is available only if the type of logic function is configured to "logic gate" and input 3 is used.				

Function	Name	Type	DPT	Flag
Logic gate (…) Input 4	Logic .. - Input	1-bit	1.002	C, -, W, -, U
1-bit object as input 4 of a logic gate (1...8). The input state can be inverted optionally. This object is available only if the type of logic function is configured to "logic gate" and input 4 is used.				

Function	Name	Type	DPT	Flag
Logic gate output	Logic... - Output	1-bit	1.002	C, R, -, T, A
1-bit object as output of a logic gate (1...8). This object is available only if the type of logic function is configured to "logic gate".				

18.3 Converter (1-bit -> 1-byte)

The converter has a 1-bit input and a 1-byte output and also a disabling object. ON / OFF telegrams can be converted to preconfigured values. The disabling object is able to deactivate the converter.

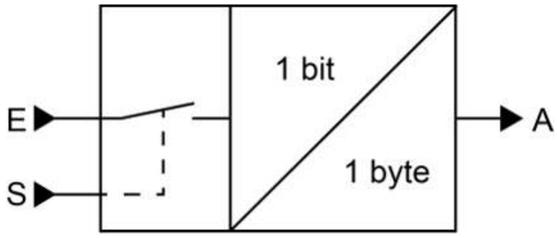

Figure 56: Converter (1-bit -> 1-byte)

The converter can react differently to input states. The parameter "Reaction at input to" defines whether the converter responds to ON and OFF commands or alternatively only processes ON or OFF telegrams.
A concrete 1-byte output value can be assigned to each 1-bit input status. The two output values can be configured anywhere in the range 0 ... 255 as required. The data format of the converter output object is set to DPT 5.001 (0...100%).

The disabling object can be deactivated via the converter. A deactivated converter no longer processes input states and consequently does not convert any new output values (the last value is retained and transmitted cyclically, if necessary). At the end of a disabling function, the converter is enabled again. The converter then waits for the next telegram at the input.
The telegram polarity of the disabling object can be configured.

The transmission behaviour of the converter output can be configured.

18.3.1 Converter parameters

Logic functions -> Logic function ...

Reaction at input to	**ON and OFF telegrams** ON telegrams OFF telegrams
The converter can react differently to input states. It is defined here whether the converter reacts to ON and OFF commands or alternatively only processes ON or OFF telegrams.	

Disabling object polarity	**0 = enabled / 1 = disabled** 1 = enabled / 0 = disabled
This parameter defines the polarity of the disabling object.	

Output value for ON (0...255)	0 ... **255**
A concrete 1-byte output value can be assigned to each 1-bit input state. This parameter defines the output value for ON telegrams. This parameter is visible only if the input is to react to ON telegrams.	

Output value for OFF (0...255)	**0** ... 255
A concrete 1-byte output value can be assigned to each 1-bit input state. This parameter defines the output value for OFF telegrams. This parameter is visible only if the input is to react to OFF telegrams.	

Transmission criteria	**Always transmit when input is updated** Transmit only if the output changes Transmit cyclically
The transmission behaviour of the output can be configured here. Always transmit when input is updated: The output transmits the current object value to the KNX each time a telegram is received at the input. Transmit only if the output changes: The output transmits the current object value only if the object value has changed compared to the last transmission process. The output always transmits when the first telegram is received at an input after the bus voltage returns or after an ETS programming operation. Transmit cyclically: In this setting, the output transmits the current object value cyclically to the KNX. After the bus voltage returns or after an ETS programming operation, the cyclical transmission is not started until the first telegram has been received at the input. The output also transmits as soon as a new telegram is received at the input. At the same time, the cycle time for cyclical transmission is restarted!	

Delay for transmission of result	**0** ... 99 h, **0** ... 59 min, **0** ... 59 s
Optionally, a delay before the result is transmitted (telegram at output) can be configured. In the setting "Always transmit when input is updated", telegrams at the output are transmitted only once the delay has elapsed. The delay time is restarted by each telegram at the input. In the setting "Only transmit if the output changes", telegrams are sent only if the object value changes at the output once the delay has expired. If the logic function is reprocessed by a new telegram at the input within the delay time and the object value changes again, the delay will restart. If the object value of the output does not change due to new input telegrams, the delay will not restart.	

Cycle time	**0** ... 99 h, 0 ... **5** ... 59 min, **0** ... 59 s
This parameter defines the cycle time for the cyclical transmission of the output. The parameters for the cycle time are visible only if "Transmission criteria" = "Transmit cyclically".	

18.3.2 Converter object list

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr>
<tr><td>Converter input</td><td>Logic ... - Input</td><td>1-bit</td><td>1.002</td><td>C, -, W, -, U</td></tr>
<tr><td colspan="5">1-bit object as input of a converter. It is possible to configure whether the converter responds to ON and OFF commands or alternatively processes only ON or only OFF telegrams.
This object is available only if the type of logic function is configured to "Converter".</td></tr>
</table>

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr>
<tr><td>Converter disabling function</td><td>Logic ... - Input</td><td>1-bit</td><td>1.002</td><td>C, -, W, -, U</td></tr>
<tr><td colspan="5">1-bit object as disabling input of a converter. A disabled converter will no longer process input states and will consequently not convert any new output values (the last value is retained and transmitted cyclically, if necessary).
The telegram polarity can be configured.
This object is available only if the type of logic function is configured to "Converter".</td></tr>
</table>

<table>
<tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr>
<tr><td>Converter output</td><td>Logic ... - Output</td><td>1-byte</td><td>5.001</td><td>C, R, -, T, A</td></tr>
<tr><td colspan="5">1-byte object as value output of a converter.
This object is available only if the type of logic function is configured to "Converter".</td></tr>
</table>

18.4 Disabling element (filtering/time)

The disabling element has a 1-bit input and a 1-bit output as well as a disabling object. Input states (ON/OFF) can be delayed independently of one another and filtered at the output before output. The filter makes it possible to invert the states of the output (e. g. ON -> OFF) or to suppress it completely
(e. g. OFF -> ---, OFF is not transmitted). If the filter is not used, the disabling element only works with the time functions if required. Alternatively, it is possible to use only the filter (without delays).
The disabling object is able to deactivate the disabling element.

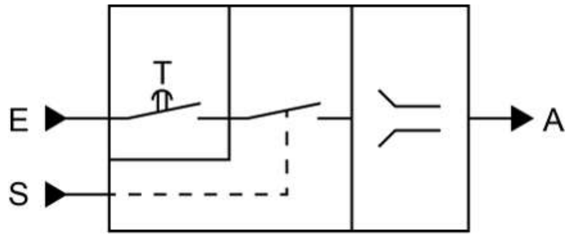

Figure 57: Disabling element (filtering/time)

The parameter "Time function" defines whether ON or OFF telegrams or both states are evaluated with a delay after reception at the input. If a delay is provided, the delay time can be configured separately for ON and OFF telegrams. A delay is only effective if the delay time is set to greater than "0". Each telegram received at the input re-triggers the receptive delay time.
If no delay is configured, the input telegrams go directly into the filter.

i Special feature when using the delays: If no telegram is received at the input, a configured delay time (time > 0) acts like an automatic cyclic trigger of the filter. The most recently received input status is then forwarded to the filter automatically and repeatedly after the delay has elapsed. This then works according to its configuration and forwards the result to the output of the disabling element. Consequently, the output then also transmits telegrams depending on the transmission criteria set. If the cyclical transmission of the output is not desired due to the automatic triggering of the filter, the transmission criterion should be set to "only transmit if the output changes".
If no delay is provided, the filter is only triggered automatically via the received telegrams and thus not automatically.

i After the bus voltage returns or after an ETS programming operation, the delays are triggered automatically.

The filter is set by the parameter "Filter function" according to the following table.

Filter function	Result
ON -> ON / OFF -> OFF	Input telegrams are forwarded to the output unchanged. Filter deactivated.
ON -> --- / OFF -> OFF	ON telegrams are filtered and not forwarded to the output. OFF telegrams are forwarded to the output unchanged.

Filter function	Result
ON -> ON / OFF -> ---	OFF telegrams are filtered and not forwarded to the output. ON telegrams are forwarded to the output unchanged.
ON -> OFF / OFF -> ON	ON telegrams are converted to OFF telegrams and OFF telegrams are converted to ON telegrams and are forwarded to the output.
ON -> --- / OFF -> ON	ON telegrams are filtered and not forwarded to the output. OFF telegrams are converted to ON telegrams and forwarded to the output.
ON -> OFF / OFF -> ---	OFF telegrams are filtered and not forwarded to the output. ON telegrams are converted to OFF telegrams and forwarded to the output.

The disabling element can be deactivated by the disabling object. A deactivated disabling element no longer forwards any input states to the filter and consequently does not convert any new output values (the last value is retained and transmitted cyclically, if necessary). However, the input states are still evaluated (even with effective delays). At the end of a disabling function, the disabling element is enabled again. The disabling element waits for the next telegram at the input or for the next cycle of the configured delay times.
The telegram polarity of the disabling object can be configured.

The transmission behaviour of the disabling element output can be configured.

18.4.1 Disabling element parameters

Logic functions -> Logic function...

Time function	**No delay** Delay only ON telegrams Delay only OFF telegrams Delay ON and OFF telegrams

This parameter is used to define whether ON or OFF telegrams or both states are evaluated with a delay after being received at the input. If a delay is intended, the delay time can be configured separately for ON and OFF telegrams. If no delay is configured, the input telegrams go directly into the filter.

Delay for ON telegrams	**0** ... 59 min, 0 ... **10** ... 59 s

The delay for ON telegrams is configured here. The delay will be effective only if the delay time is set to greater than "0". Each ON telegram received at the input re-triggers the delay time.

Special feature when using delays: If no telegram is received at the input, a configured delay time (time > 0) will act like an automatic cyclical trigger of the filter. The most recently received input state will then be forwarded automatically and repeatedly to the filter after the delay has elapsed. It will then work according to its configuration and forward the result to the output of the disabling element. Consequently, the output will then also transmit telegrams depending on the transmission criteria set. If cyclical transmission of the output is not desired due to the automatic triggering of the filter, the transmission criterion must be set to "Only transmit if the output changes".
After the bus voltage returns or after an ETS programming operation, the delays are triggered automatically.

The parameters for the ON delay are available only if the parameter "Time function" is set to "Only delay ON telegrams" or "Delay ON and OFF telegrams".

Delay for OFF telegrams	**0** ... 59 min, 0 ... **10** ... 59 s

The delay for OFF telegrams is configured here. The delay will be effective only if the delay time is set to greater than "0". Each OFF telegram received at the input retriggers the delay time.

Special feature when using delays: If no telegram is received at the input, a configured delay time (time > 0) will act like an automatic cyclical trigger of the filter. The most recently received input state will then be forwarded automatically and repeatedly to the filter after the delay has elapsed. It will then work according to its configuration and forward the result to the output of the disabling element. Consequently, the output will then also transmit telegrams depending on the transmission criteria set. If cyclical transmission of the output is not desired due to the automatic triggering of the filter, the transmission criterion must be set to "Only transmit if the output changes".
After the bus voltage returns or after an ETS programming operation, the delays are triggered automatically.

The parameters for the OFF delay are available only if the "Time function" parameter is set to "Only delay OFF telegrams" or "Delay ON and OFF telegrams".

Disabling object polarity	**0 = enabled / 1 = disabled** 1 = enabled / 0 = disabled

This parameter defines the polarity of the disabling object.

Filter function	ON -> ON / OFF -> OFF ON -> --- / OFF -> OFF ON -> ON / OFF -> --- ON -> OFF / OFF -> ON ON -> --- / OFF -> ON ON -> OFF / OFF -> ---

This parameter defines the function of the filter.

ON -> ON / OFF -> OFF: Input telegrams are forwarded unchanged to the output. Filter deactivated.

ON -> --- / OFF -> OFF: ON telegrams are filtered and not forwarded to the output. OFF telegrams are forwarded unchanged to the output.

ON -> ON / OFF -> ---: OFF telegrams are filtered and not forwarded to the output. ON telegrams are forwarded unchanged to the output.

ON -> OFF / OFF -> ON: ON telegrams are converted to OFF telegrams and OFF telegrams are converted to ON telegrams and forwarded to the output.

ON -> --- / OFF -> ON: ON telegrams are filtered and not forwarded to the output. OFF telegrams are converted to ON telegrams and forwarded to the output.

ON -> OFF / OFF -> ---: OFF telegrams are filtered and not forwarded to the output. ON telegrams are converted to OFF telegrams and forwarded to the output.

Transmission criteria	**Always transmit when input is updated** Transmit only if the output changes Transmit cyclically

The transmission behaviour of the output can be configured here.

Always transmit when input is updated: The output transmits the current object value to the KNX each time a telegram is received at the input. In addition, transmission at the output is repeated if no telegram was received at the input using the delay times and the configured time has expired.

Transmit only if the output changes: The output transmits the current object value only if the object value has changed compared to the last transmission process. After the bus voltage returns or an ETS programming operation, the output always transmits.

Transmit cyclically: In this setting, the output transmits the current object value cyclically to the KNX. After the bus voltage returns or after an ETS programming operation, the cyclical transmission is not started until the first telegram has been received at the input. If the ON/OFF delay is used, the cyclical transmission starts automatically once the delay time has expired after the bus voltage returns or after an ETS programming operation. The output also transmits as soon as a new telegram is received at the input. At the same time, the cycle time for cyclical transmission is restarted!

Cycle time	**0** ... 99 h, 0 ... **5** ... 59 min, **0** ... 59 s

This parameter defines the cycle time for the cyclical transmission of the output.

The parameters for the cycle time are visible only if "Transmission criteria" = "Transmit cyclically".

18.4.2 Object list for disabling element

Function	Name	Type	DPT	Flag
Disabling element input	Logic .. - Input	1-bit	1.002	C, -, W, -, U
1-bit object as input of a disabling element. This object is available only if the type of logic function is configured to "Disabling element".				

Function	Name	Type	DPT	Flag
Disabling element disabling function	Logic .. - Input	1-bit	1.002	C, -, W, -, U
1-bit object as disabling input of a disabling element. A disabled disabling element will no longer forward any input states to the filter and will consequently not convert any new output values (the last value is retained and transmitted cyclically, if necessary). The telegram polarity can be configured. This object is available only if the type of logic function is configured to "Disabling element".				

Function	Name	Type	DPT	Flag
Disabling element output	Logic... - Output	1-bit	1.002	C, R, -, T, A
1-bit object as output of a disabling element. This object is available only if the type of logic function is configured to "Disabling element".				

18.5 Limit value switch

The limit value switch works with an input whose data format can be configured, and with a 1-bit output to output the result of the threshold evaluation. The limit value switch compares the value received at the input with two configurable hysteresis threshold values. Once the upper threshold value (H2) is reached or exceeded, the output can transmit a switching telegram (e. g. ON = true). If the value falls below the lower threshold value (H1), the output can transmit another switching telegram (e. g. OFF = false).
The switching telegrams can always be configured in the ETS when the threshold values are exceeded and undershot.

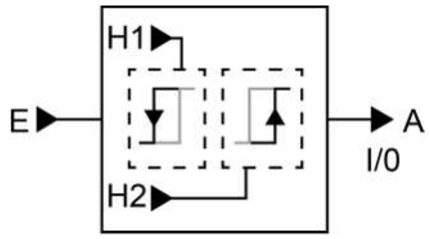

Figure 58: Limit value switch

The two threshold values define a hysteresis. The hysteresis prevents frequent switching back and forth of the output, provided that the input value changes continuously in small intervals. Only when the change in value at the input exceeds the hysteresis as a whole, does the output switch the status.

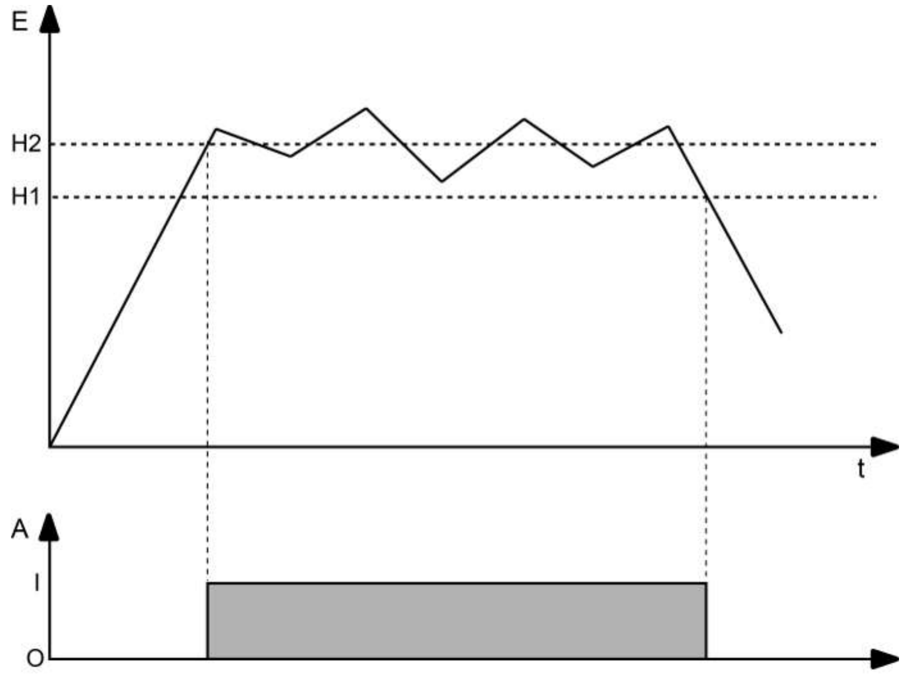

Figure 59: Example of a hysteresis evaluation by upper and lower threshold value

The two threshold values can be freely configured in the ETS. Make sure that the upper threshold value is greater than the lower one!

i After the bus voltage returns or after an ETS programming operation, the output always transmits a telegram when the first value has been received at the input. The telegram depends on whether the value reaches or exceeds the upper threshold (H2) or not. If the value is less than the upper threshold, a telegram is transmitted in accordance with "Telegram upon not reaching the lower threshold". Otherwise the output transmits the "telegram on exceeding the upper threshold value".

The parameter "data format" defines the size and format of input object according to the following table. The output object is preset to 1-bit (DPT 1.002) and outputs the result of the threshold evaluation (ON = true / OFF = false). The threshold values that can be set in the ETS adapt to the input data format.

Data format	KNX DPT
4-bit dimming	3,007
1-byte operating mode switchover	20,102
1-byte scene extension unit	18,001
1-byte value 0...255	5,010
1-byte brightness value 0...100%	5,001
2-byte value 0...655535	7,001
2-byte value -32768...32767	8,001
2-byte floating-point number	9.0xx
4-byte value -2147483648...2147483647	13,001

The transmission behaviour of the limit value switch can be configured.

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18.5.1 Limit value switch parameters

Logic functions -> Logic function ...

Data format	4-bit dimming (DPT 3.007) 1-byte operating mode switchover (DPT 20.102) 1-byte scene extension unit (DPT 18.001) **1-byte value 0...255 (DPT 5.010)** 1-byte brightness value 0...100% (DPT 5.001) 2-byte value 0...655,535 (DPT 7.001) 2-byte value -32,768...32,767 (DPT 8.001) 2-byte floating-point number (DPT 9.0xx) 4-byte value -2147483648...2147483647 (DPT 13.001)
This parameter defines the size and format of input object. The output object is permanently set to 1-bit (DPT 1.002) and outputs the result of the threshold value evaluation (ON = true / OFF = false).	

Input selection (H1)	**Constant** Input object
This parameter defines whether a constant value is set as the threshold value with the following parameter or whether the threshold value can be set during operation by means of an object.	

Lower threshold value (H1)	**Dimming darker, stop (0)** Dimming darker, 100% (1) Dimming darker, 50% (2) Dimming darker, 25% (3) Dimming darker, 12.5% (4) Dimming darker, 6% (5) Dimming darker, 3% (6) Dimming darker, 1.5% (7) Dimming brighter, stop (8) Dimming brighter, 100% (9) Dimming brighter, 50% (10) Dimming brighter, 25% (11) Dimming brighter, 12.5% (12) Dimming brighter, 6% (13) Dimming brighter, 3% (14) Dimming brighter, 1.5% (15)
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "4-bit dimming (DPT 3.007)".	

Lower threshold value (H1)	**Automatic (0)** Comfort mode (1) Standby mode (2) Night mode (3) Frost/heat protection (4)
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte operating mode switchover (DPT 20.102)".	

Lower threshold value (H1)	**Call up scene 1 (0)** Call up scene 2 (1) ... Call up scene 64 (63) Save scene 1 (128) Save scene 2 (129) ... Save scene 64 (191)
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte scene extension unit (DPT 18.001)".	

Lower threshold value (H1) (0...255)	**0** ... 255
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte value -0...255 (DPT 5.010)".	

Lower threshold value (H1) (0...100%)	**0** ... 100
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte brightness value 0...100% (DPT 5.001)".	

Lower threshold value (H1) (0...65535)	**0** ... 65535
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "2-byte value 0...65535 (DPT 7.001)".	

Lower threshold value (H1) (-32768...32767)	-32768 ... **0** ... 32767
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "2-byte value -32768...32767 (DPT 8.001)".	

Lower threshold value (H1) (-671088...670760)	-671088 ... **0** ... 670760
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "2-byte floating point value (DPT 9.0xx)".	

Lower threshold value (H1) (-2147483648...2147483647)	-2147483648 ... **0** ... 2147483647
This parameter defines the lower threshold value (H1) of the limit value switch. This parameter is available only if the "Data format" is set to "4-byte value -2147483648...2147483647 (DPT 13.001)".	

Input selection (H2)	**Constant** Input object
This parameter defines whether a constant value is set as the threshold value with the following parameter or whether the threshold value can be set during operation by means of an object.	

Upper threshold value (H2)	**Dimming darker, stop (0)** Dimming darker, 100% (1) Dimming darker, 50% (2) Dimming darker, 25% (3) Dimming darker, 12.5% (4) Dimming darker, 6% (5) Dimming darker, 3% (6) Dimming darker, 1.5% (7) Dimming brighter, stop (8) Dimming brighter, 100% (9) Dimming brighter, 50% (10) Dimming brighter, 25% (11) Dimming brighter, 12.5% (12) Dimming brighter, 6% (13) Dimming brighter, 3% (14) Dimming brighter, 1.5% (15)
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "4-bit dimming (DPT 3.007)".	

Upper threshold value (H2)	**Automatic (0)** Comfort mode (1) Standby mode (2) Night mode (3) Frost/heat protection (4)
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte operating mode switchover (DPT 20.102)".	

Upper threshold value (H2)	**Call up scene 1 (0)** Call up scene 2 (1) ... Call up scene 64 (63) Save scene 1 (128) Save scene 2 (129) ... Save scene 64 (191)
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte scene extension unit (DPT 18.001)".	

Upper threshold value (H2) (0...255)	**0** ... 255
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte value -0...255 (DPT 5.010)".	

Upper threshold value (H2) (0...100%)	**0** ... 100
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "1-byte brightness value 0...100% (DPT 5.001)".	

Upper threshold value (H2) (0...65535)	**0** ... 65535
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "2-byte value 0...65535 (DPT 7.001)".	

Upper threshold value (H2) (-32768...32767)	-32768 ... **0** ... 32767
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "2-byte value -32768...32767 (DPT 8.001)".	

Upper threshold value (H2) (-671088...670760)	-671088 ... **0** ... 670760
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "2-byte floating point value (DPT 9.0xx)".	

Upper threshold value (H2) (-2147483648...2147483647)	-2147483648 ... **0** ... 2147483647
This parameter defines the upper threshold value (H2) of the limit value switch. This parameter is available only if the "Data format" is set to "4-byte value -2147483648...2147483647 (DPT 13.001)".	

Telegram on reaching or exceeding the upper threshold value	**ON telegram** OFF telegram
The telegram of the output when reaching or exceeding the upper threshold can be configured here.	

Telegram when falling below the lower threshold value	ON telegram **OFF telegram**
The telegram of the output when not reaching the lower threshold can be configured here.	

Transmission criteria	**Always transmit when input is updated** Transmit only if the output changes Transmit cyclically
The transmission behaviour of the output can be configured here. Always transmit when input is updated: The output transmits the current object value to the KNX each time a telegram is received at the input. Transmit only if the output changes: The output transmits the current object value only if the object value has changed compared to the last transmission process. The output always transmits when the first telegram is received at an input after the bus voltage returns or after an ETS programming operation. Transmit cyclically: In this setting, the output transmits the current object value cyclically to the KNX. After the bus voltage returns or after an ETS programming operation, the cyclical transmission is not started until the first telegram has been received at the input. The output also transmits as soon as a new telegram is received at the input. At the same time, the cycle time for cyclical transmission is restarted!	

Delay for transmission of result	**0** ... 99 h, **0** ... 59 min, **0** ... 59 s
Optionally, a delay before the result is transmitted (telegram at output) can be configured. In the setting "Always transmit when input is updated", telegrams at the output are transmitted only once the delay has elapsed. The delay time is restarted by each telegram at the input. In the setting "Only transmit if the output changes", telegrams are sent only if the object value changes at the output once the delay has expired. If the logic function is reprocessed by a new telegram at the input within the delay time and the object value changes again, the delay will restart. If the object value of the output does not change due to new input telegrams, the delay will not restart.	

Cycle time	**0** ... 99 h, 0 ... **5** ... 59 min, **0** ... 59 s
This parameter defines the cycle time for the cyclical transmission of the output. The parameters for the cycle time are visible only if "Transmission criteria" = "Transmit cyclically".	

18.5.2 Object list for limit value switch

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	4-bit	3.007	C, -, W, -, U
4-bit object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "4-bit dimming (DPT 3.007)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	1-byte	20.102	C, -, W, -, U
1-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "1-byte operating mode switchover (DPT 20.102)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	1-byte	18.001	C, -, W, -, U
1-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "1-byte scene extension unit (DPT 18.001)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	1-byte	5.010	C, -, W, -, U
1-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "1-byte value 0...255 (DPT 5.010)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	1-byte	5.001	C, -, W, -, U
1-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "1-byte brightness value 0...100% (DPT 5.001)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	2-byte	7.001	C, -, W, -, U
2-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "2-byte value 0...65535 (DPT 7.001)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	2-byte	8.001	C, -, W, -, U
2-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "2-byte value -32768...32767 (DPT 8.001)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	2-byte	9.0xx	C, -, W, -, U
2-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "2-byte floating point value (DPT 9.0xx)".				

Function	Name	Type	DPT	Flag
Limit value switch input	Logic... - Input	4-byte	13.001	C, -, W, -, U
4-byte object as input of a limit value switch. This object is available only if the type of logic function is configured to "Limit value switch" and the data format is configured to "4-byte value -2147483648...2147483647 (DPT 13.001)".				

Function	Name	Type	DPT	Flag
Limit value switch output	Logic .. - Output	1-bit	1.002	C, R, -, T, A
1-bit object as output of a limit value switch. The output object is permanently set to 1-bit (DPT 1.002) and outputs the result of the threshold value evaluation (ON = true / OFF = false). This object is available only if the type of logic function is configured to "Limit value switch".				

18.6 Comparator

The comparator works with an input whose data format can be parameterised, and with a 1-bit output to output the result of the comparison operation. The comparator compares the value received at the input with a configured reference value and evaluates whether the reference is correct (result = true) or not (result = false) according to the specified reference function.
The reference function and the reference value are configured in the ETS.

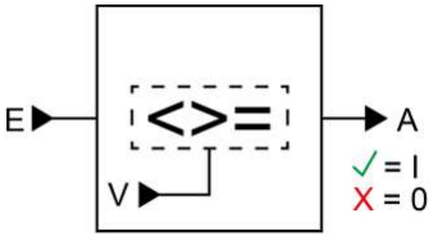

Figure 60: Comparator

The parameter "data format" defines the size and format of input object according to the following table. The output object is preset to 1-bit (DPT 1.002) and outputs the result of the comparison operation (ON = true / OFF = false). The reference value that can be set in the ETS adapts to the input data format.

Data format	KNX DPT
4-bit dimming	3,007
1-byte operating mode switchover	20,102
1-byte scene extension unit	18,001
1-byte value 0...255	5,010
1-byte brightness value 0...100%	5,001
2-byte value 0...655535	7,001
2-byte value -32768...32767	8,001
2-byte floating-point number	9.0xx
4-byte value -2147483648...2147483647	13,001

The following table shows the possible reference functions (I = input value, R = reference value).

Reference function	Function
equal (I = R)	The comparator output is "ON" (true) if the input is equal to the reference value. Otherwise the output is "OFF" (false).
not equal (I ≠ R)	The comparator output is "ON" (true) if the input is unequal to the reference value. If the input value is equal to the reference value, the output is "OFF" (false).
greater than (I > R)	The comparator output is "ON" (true) if the input is greater than the reference value. If the input value is less than or equal to the reference value, the output will switch "OFF" (false).

Reference function	Function
greater than or equal (I ≥ R)	The comparator output is "ON" (true) if the input is greater than the reference value or equal to the reference value. If the input value is smaller than the reference value, the output will switch "OFF" (false).
smaller than (I < R)	The comparator output is "ON" (true) if the input is less than the reference value. If the input value is greater than or equal the reference value, the output will switch "OFF" (false).
smaller than or equal (I ≤ R)	The comparator output is "ON" (true) if the input is less than the reference value or equal to the reference value. If the input value is greater than the reference value, the output will switch "OFF" (false).
Range testing less than (R1 < I < R2)	There are two reference values. The comparator output is "ON" (true) if the input is greater than the first reference value or less than the second reference value. If the input value is less than the first reference value or equal the first reference value or greater than the second reference value or equal the second reference value, the output will switch "OFF" (false).
Range testing less than or equal to (R1 ≤ I ≤ R2)	There are two reference values. The comparator output is "ON" (true) if the input is greater than or equal the first reference value and smaller than or equal the second reference value. If the input value is smaller than the first reference value or greater than the second reference value, the output will switch "OFF" (false).

The transmission behaviour of the comparator output can be configured.

18.6.1 Comparator parameters

Logic functions -> Logic function ...

Data format	4-bit dimming (DPT 3.007) 1-byte operating mode switchover (DPT 20.102) 1-byte scene extension unit (DPT 18.001) **1-byte value 0...255 (DPT 5.010)** 1-byte brightness value 0...100% (DPT 5.001) 2-byte value 0...655,535 (DPT 7.001) 2-byte value -32,768...32,767 (DPT 8.001) 2-byte floating-point number (DPT 9.0xx) 4-byte value -2147483648...2147483647 (DPT 13.001)
This parameter defines the size and format of input object. The output object is permanently set to 1-bit (DPT 1.002) and outputs the result of the comparison operation (ON = true / OFF = false).	

<table>
<tr><td>Reference function</td><td>Equal (I = R)
Not equal (I ≠ R)
Greater than (I > R)
Greater than or equal (I ≥ R)
Smaller than (I < R)
Smaller than or equal (I ≤ R)
Range testing less than (R1 < I < R2)
Range testing less than or equal to (R1 ≤ I ≤ R2)</td></tr>
<tr><td colspan="2">The comparator compares the value received at the input (I) with a configured reference value (R) and evaluates whether the comparison is correct (result = true) or not (result = false) according to the specified reference function here.

Equal (I = R): The comparator output is "ON" (true) if the input is equal the reference value. Otherwise the output is "OFF" (false).

Not equal (I ≠ R): The comparator output is "ON" (true) if the input is unequal to the reference value. If the input value is equal to the reference value, the output is "OFF" (false).

Greater than (I > R): The comparator output is "ON" (true) if the input is greater than the reference value. If the input value is less than or equal to the reference value, the output will switch "OFF" (false).

Greater than or equal (I ≥ R): The comparator output is "ON" (true) if the input is greater than the reference value or equal to the reference value. If the input value is smaller than the reference value, the output will switch "OFF" (false).

Smaller than (I < R): The comparator output is "ON" (true) if the input is less than the reference value. If the input value is greater than or equal the reference value, the output will switch "OFF" (false).

Smaller than or equal (I ≤ R): The comparator output is "ON" (true) if the input is smaller than the reference value or equal to the reference value. If the input value is greater than the reference value, the output will switch "OFF" (false).

Range testing less than (R1 < I < R2): There are two reference values. The comparator output is "ON" (true) if the input is greater than the first reference value or less than the second reference value. If the input value is less than the first reference value or equal the first reference value or greater than the second reference value or equal the second reference value, the output will switch "OFF" (false).

Range testing less than or equal to (R1 ≤ I ≤ R2): There are two reference values. The comparator output is "ON" (true) if the input is greater than or equal the first reference value and smaller than or equal the second reference value. If the input value is smaller than the first reference value or greater than the second reference value, the output will switch "OFF" (false).</td></tr>
</table>

Reference value (R)	**Dimming darker, stop (0)** Dimming darker, 100% (1) Dimming darker, 50% (2) Dimming darker, 25% (3) Dimming darker, 12.5% (4) Dimming darker, 6% (5) Dimming darker, 3% (6) Dimming darker, 1.5% (7) Dimming brighter, stop (8) Dimming brighter, 100% (9) Dimming brighter, 50% (10) Dimming brighter, 25% (11) Dimming brighter, 12.5% (12) Dimming brighter, 6% (13) Dimming brighter, 3% (14) Dimming brighter, 1.5% (15)
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "4-bit dimming (DPT 3.007)".	

Reference value (R)	**Automatic (0)** Comfort mode (1) Standby mode (2) Night mode (3) Frost/heat protection (4)
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "1-byte operating mode switchover (DPT 20.102)".	

Reference value (R)	**Call up scene 1 (0)** Call up scene 2 (1) ... Call up scene 64 (63) Save scene 1 (128) Save scene 2 (129) ... Save scene 64 (191)
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "1-byte scene extension unit (DPT 18.001)".	

Reference value (R) (0...255)	**0** ... 255
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "1-byte value -0...255 (DPT 5.010)".	

Reference value (R) (0...100%)	**0** ... 100
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "1-byte brightness value 0...100% (DPT 5.001)".	

Reference value (R) (0...65535)	**0** ... 65535
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "2-byte value 0...65535 (DPT 7.001)".	

Reference value (R) (-32768...32767)	-32768 ... **0** ... 32767
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "2-byte value -32768...32767 (DPT 8.001)".	

Reference value (R) (-671088...670760)	-671088 ... **0** ... 670760
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "2-byte floating point value (DPT 9.0xx)".	

Reference value (R)	-2147483648 ... **0** ... 2147483647
This parameter is used to define the internal reference value (R) for the reference function. This parameter is available only if the "Data format" is set to "4-byte value -2147483648...2147483647 (DPT 13.001)".	

Two reference values (R1 & R2) can be configured if the range testing is configured as "Reference function". In this case, the setting options are identical.

Transmission criteria	**Always transmit when input is updated** Transmit only if the output changes Transmit cyclically
The transmission behaviour of the output can be configured here. Always transmit when input is updated: The output transmits the current object value to the KNX each time a telegram is received at the input. Transmit only if the output changes: The output transmits the current object value only if the object value has changed compared to the last transmission process. The output always transmits when the first telegram is received at an input after the bus voltage returns or after an ETS programming operation. Transmit cyclically: In this setting, the output transmits the current object value cyclically to the KNX. After the bus voltage returns or after an ETS programming operation, the cyclical transmission is not started until the first telegram has been received at the input. The output also transmits as soon as a new telegram is received at the input. At the same time, the cycle time for cyclical transmission is restarted!	

Delay for transmission of result	**0** ... 99 h, **0** ... 59 min, **0** ... 59 s
Optionally, a delay before the result is transmitted (telegram at output) can be configured. In the setting "Always transmit when input is updated", telegrams at the output are transmitted only once the delay has elapsed. The delay time is restarted by each telegram at the input. In the setting "Only transmit if the output changes", telegrams are sent only if the object value changes at the output once the delay has expired. If the logic function is reprocessed by a new telegram at the input within the delay time and the object value changes again, the delay will restart. If the object value of the output does not change due to new input telegrams, the delay will not restart.	

Cycle time	**0** ... 99 h, 0 ... **5** ... 59 min, **0** ... 59 s
This parameter defines the cycle time for the cyclical transmission of the output. The parameters for the cycle time are visible only if "Transmission criteria" = "Transmit cyclically".	

18.6.2 Object list for comparator

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>4-bit</td><td>3.007</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">4-bit object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "4-bit dimming (DPT 3.007)".</td></tr></table>

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>1-byte</td><td>20.102</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">1-byte object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "1-byte operating mode switchover (DPT 20.102)".</td></tr></table>

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>1-byte</td><td>18.001</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">1-byte object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "1-byte scene extension unit (DPT 18.001)".</td></tr></table>

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>1-byte</td><td>5.010</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">1-byte object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "1-byte value 0...255 (DPT 5.010)".</td></tr></table>

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>1-byte</td><td>5.001</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">1-byte object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "1-byte brightness value 0...100% (DPT 5.001)".</td></tr></table>

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>2-byte</td><td>7.001</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">2-byte object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "2-byte value 0...65535 (DPT 7.001)".</td></tr></table>

<table><tr><th>Function</th><th>Name</th><th>Type</th><th>DPT</th><th>Flag</th></tr><tr><td>Comparator input</td><td>Logic .. - Input</td><td>2-byte</td><td>8.001</td><td>C, -, W, -, U</td></tr><tr><td colspan="5">2-byte object as input of a comparator.
This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "2-byte value -32768...32767 (DPT 8.001)".</td></tr></table>

Function	Name	Type	DPT	Flag
Comparator input	Logic .. - Input	2-byte	9.0xx	C, -, W, -, U
2-byte object as input of a comparator. This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "2-byte floating point value (DPT 9.0xx)".				

Function	Name	Type	DPT	Flag
Comparator input	Logic .. - Input	4-byte	13.001	C, -, W, -, U
4-byte object as input of a comparator. This object is available only if the type of logic function is configured to "Comparator" and the data format is configured to "4-byte value -2147483648...2147483647 (DPT 13.001)".				

Function	Name	Type	DPT	Flag
Comparator output	Logic .. - Output	1-bit	1.002	C, R, -, T, A
1-bit object as output of a comparator. The output object is permanently set to 1-bit (DPT 1.002) and outputs the result of the comparison operation (ON = true / OFF = false). This object is available only if the type of logic function is configured to "Comparator".				

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