

Presence Detector Mini FM, Presence Detector Mini Premium FM

User Guide

C4-KNX-MPD-ST
C4-KNX-MPDPRM-ST



Control⁴

This manual describes the function and configuration of the *Presence Detector Mini FM* and *Presence Detector Mini Premium FM*.

Presence Detector Mini FM, SKU: C4-KNX-MPD-ST.
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Presence Detector Mini Premium FM, SKU: C4-KNX-MPDPRM-ST.
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Subject to change.

Exclusion of liability:

Although the contents of this document have been checked to ensure that they are consistent with the hardware and software, deviations cannot be completely excluded. We therefore cannot accept liability. Any necessary corrections will be incorporated in new versions of the manual.

Please inform us of any suggested improvements.

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1 Notes on the instruction manual

Please read through this manual carefully and observe the information it contains. This will assist you in preventing injuries and damage to property and ensure both reliable operation and a long service life for the device.

Please keep this manual in a safe place.

If you transfer this device to another individual, please be sure they receive this manual.

Control4 accepts no liability for any failure to observe the instructions in this manual.

For more information or for questions about the device, please contact Control4 or visit our web site at: www.control4.com

2 Safety

The device has been constructed according to the latest valid regulations governing technology and is operationally reliable. It has been tested and left the factory in a technically safe and reliable state.

However, residual hazards remain. Read and adhere to the safety instructions to prevent hazards of this kind.

Control4 accepts no liability for any failure to observe the safety instructions.

2.1 Symbols used

The following symbols point to particular hazards involved in the use of the device or provide practical instructions.



Danger

Risk of death / serious damage to health

- The respective warning symbol in connection with the signal word "Danger" indicates an imminently threatening danger which leads to death or serious (irreversible) injuries.



Warning

Serious damage to health

- The respective warning symbol in connection with the signal word "Warning" indicates a threatening danger which can lead to death or serious (irreversible) injuries.



Caution

Damage to health

- The respective warning symbol in connection with the signal word "Caution" indicates a danger which can lead to minor (reversible) injuries.



Attention

Damage to property

- This symbol in connection with the signal word "Attention" indicates a situation which could cause damage to the product itself or to objects in its surroundings.



Note

This symbol in connection with the word "Note" indicates useful tips and recommendations for the efficient handling of the product.



This symbol alerts to electric voltage.



This symbol indicates information on the protection of the environment.

2.2 Intended use

The presence/movement detector is designed only for interior areas of buildings. The devices serve for switching and regulating lighting systems and/or HKL (HVAC) systems in dependence of brightness and/or movement.

The devices are not suitable for use as an intrusion or attack alarm.

The device is intended for the following:

- Operation according to the listed technical data
- Installation in dry interior rooms
- Installation into the ceiling in a "flush-mounted" (e.g. in suspended ceilings), or "surface-mounted".
- Use with the connecting options available on the device

The intended use also includes adherence to all specifications in this manual.

2.3 Improper use

Each use not listed in chapter 2.2 is deemed improper use and can lead to personal injury and damage to property.

Control4 is not liable for damages caused by use deemed contrary to the intended use of the device. The associated risk is borne exclusively by the user/operator.

The device is not intended for the following:

- Unauthorized structural changes
- Repairs
- Use outdoors or in bathroom areas
- Use with an additional bus coupler
- Installation into the BS and VDE flush-mounted box

2.4 Target group / Qualifications of personnel

2.4.1 Operation

No special qualifications are needed to operate the device.

2.4.2 Installation, commissioning and maintenance

Installation, commissioning and maintenance of the product must only be carried out by trained and properly qualified electrical installers.

The electrical installer must have read and understood the manual and follow the instructions provided.

The electrical installer must adhere to the valid national regulations in his/her country governing the installation, functional test, repair and maintenance of electrical products.

The electrical installer must be familiar with and correctly apply the "five safety rules" (DIN VDE 0105, EN 50110):

1. Disconnect
2. Secure against being reconnected
3. Ensure there is no voltage
4. Earth and short circuit
5. Cover or barricade adjacent live parts

2.5 Safety instructions



Danger - Electric voltage!

Electric voltage! Risk of death and fire due to electric voltage of 100 to 240 V. Dangerous currents flow through the body when coming into direct or indirect contact with live components. This can result in electric shock, burns or even death.

- Work on the 100 to 240 V mains may only be performed by authorized and qualified electricians.
- Disconnect the mains voltage before mounting or dismantling.
- Never use the device with damaged connecting cables.
- Do not open covers that are firmly bolted to the housing of the device.
- Use the device only if it is in a technically faultless state.
- Do not make changes to or perform repairs on the device, its components or its accessories.
- Keep the device away from water and wet surroundings.



Danger - Electric voltage!

Install the device only if you have the necessary electrical engineering knowledge and experience.

- Incorrect installation endangers your life and that of the user of the electrical system.
- Incorrect installation can cause serious damage to property, e.g. due to fire.

The minimum necessary expert knowledge and requirements for the installation are as follows:

- Apply the "five safety rules" (DIN VDE 0105, EN 50110):
 1. Disconnect
 2. Secure against being reconnected
 3. Ensure there is no voltage
 4. Earth and short circuit
 5. Cover or barricade adjacent live parts.
- Use suitable personal protective equipment.
- Use only suitable tools and measuring devices.
- Check the voltage supply mains type (TN system, IT system, TT system) to guarantee the following connection conditions (classic connection to earth, protective earthing, necessary additional measures, etc.).



Caution! – Risk of damage to the device due to external factors!

Moisture and contamination can damage the device.

- Protect the device against humidity, dirt and damage during transport, storage and operation.

3 Information on protection of the environment



Consider the protection of the environment!

Used electric and electronic devices must not be disposed of with domestic waste.

- The device contains valuable raw materials which can be recycled.
Therefore, dispose of the device at the appropriate collecting depot.

All packaging materials and devices bear the markings and test seals for proper disposal. Always dispose of the packaging material and electric devices and their components via the authorized collecting depots and disposal companies.

The products meet the legal requirements, in particular the laws governing electronic and electrical devices and the REACH ordinance.

(EU Directive 2012/19/EC WEEE and 2011/65/EC RoHS)

(EU REACH ordinance and law for the implementation of the ordinance (EC) No.1907/2006).

4 Product description

4.1 Device overview



Note

The following descriptions apply to all types of the Control4-Presence detector KNX.

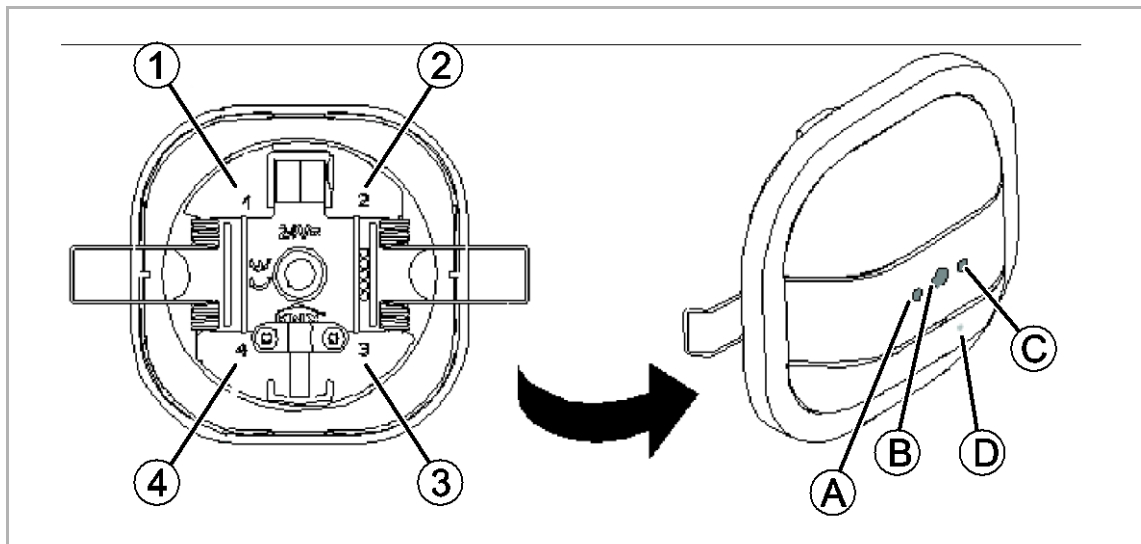


Fig. 1: Product overview

[A] IR receiver (only premium)

[B] Programming button

[C] Sensor for brightness detection

[D] Programming LED

[1-4] Individual sectors with switch-off function (via parameter setting)

For numbering, see the rear of the device

This device is a presence or movement detector which is designed only for interior areas of buildings. The devices serve for switching and regulating lighting systems and/or HKL (HVAC) systems in dependence of brightness and/or movement. It makes possible the specific deactivation and activation of light rows in dependence of the brightness of the room. Also dimming/regulating the brightness to a defined value in a designated detection range with the corresponding device is possible. The premium version additionally contains a room temperature controller object.

The integrated bus coupler makes possible the connection of a KNX bus line.

The device can be mounted either in the ceiling via hollow-wall mounting or on the ceiling. The mounting instructions are enclosed with the surface-mounted housing. The overall function of the device also depends on the mounting height.

The detection range can additionally be adapted through four individual sectors with switch-off function (through parameter settings).



Attention

Damage to property

The device contains highly sensitive sensors and lens systems.

Do not cover or tape lens segments since this will interfere with the function of the device.

- Do not clean the device and the lens system with abrasive or aggressive cleaning agents.

4.2 Overview of types

Article no.	Product name	Detection range	Usage	Mounting height
C4-KNX-MPD-ST	Presence Detector Mini FM	Circular (details under "Technical Data")	For detection range of up to 8 m → individual rooms (e.g. office, living room, etc.). Wherever functionality is not greatly in demand.	2.5 m, 3 m and 4 m
C4-KNX-MPDPRM-ST	Presence Detector Mini Premium FM	Circular (details under "Technical Data")	For detection range of up to 8 m → individual rooms (e.g. office, living room, etc.). Wherever increased functionality is required.	2.5 m, 3 m and 4 m

Table 1: Overview of types

4.3 Function overview

The following tables provide an overview of the possible functions and applications of the devices.

4.3.1 Presence Detector Mini FM

	Standard (C4-KNX-MPD-ST)	Premium (C4-KNX-MPDPRM-ST)
[1]	Detector including surveillance	Detector including surveillance
[2]	Constant light switch	Constant light switch
[3]	Brightness detection	-
[4]	-	HVAC (heating, ventilation, air-conditioning)
[5]	-	Constant light switch
[6]	-	Brightness detection
[7]	-	Room temperature controller object
[8]	-	IR reception (24 free IR channels)
[9]	-	Logics (5 logic functions)

Table 2: Function overview of Presence Detector Mini FM

- [1] Detector application with 2-stage switch-off function or with integrated monitoring function.
- [2] Constant light switch with up to 2 independent channels or with a maximum of 2 outputs for brightness-dependent switching of 2 light rows in the room.
- [3] For the specific switch-on and switch-off of light rows dependent on room brightness.
- [4] HVAC function for activating heating and/or cooling systems as well as ventilation systems in the designated detection range.
- [5] Constant light controller with up to 2 independent channels or with a maximum of 2 outputs for brightness-dependent dimming/regulating of 2 light rows in a room.
- [6] For dimming/regulating the brightness to a defined value in a designated detection range.
- [7] Integrated room temperature controller object with temperature sensor
- [8] 24 freely programmable IR channels (blue and/or white).
- [9] Logic gate, gate, delay and staircase lighting.

4.4 Description of functions



Note

A more detailed description is available in the Description of parameters and objects.

The devices described here can, depending on the device type, be used either as presence and/or movement detector.

4.4.1 The difference between movement detector and presence detector:

The main application of the movement detector is the switching of light when persons are moving toward something. The main application of the presence detector serves for presence monitoring and makes it possible to switch lighting, heating or similar.

In a deactivated state the movement detector also switches without brightness. In an activated state it operates independent of the brightness.

Both movement detector and presence detector are based on the same detection principle. However, the detection segments of the presence detector have a finer mesh and can therefore also detect persons that are seated as being present and respond accordingly. In addition, a presence detector, different to the movement detector, can distinguish between artificial light (which has been activated by it) and natural light; this makes functions such as constant light control possible, for which the amount of artificial light is added to obtain a certain overall brightness.

Main applications:

- Movement detector: Movement, detection range, detection of walking persons.
- Presence detector: Also sitting activities.

4.4.2 Presence Detector Mini FM

The Presence Detector Mini FM is available in two versions:

- The Standard version (C4-KNX-MPD-ST),
- The Premium version (C4-KNX-MPDPRM-ST).

The **Standard version (C4-KNX-MPD-ST)** offers movement detection with 2 channels, as well as constant light switching. Constant light switching adds light when persons move within the detection range and the daylight does not meet the required brightness level in the room. For this the device detects the luminosity of the lamps used. As soon as the natural light is adequate, the connected light sources are deactivated.

The combination of these two functions results in two advantages:

- Energy is being saved since the lamps are deactivated as soon as the natural light has reached sufficient brightness.
- Additional energy is saved since the lights are only switched on when persons are inside the room.

The **Premium version (C4-KNX-MPDPRM-ST)** not only switches lamps, but also dims them. This makes constant light control much more precise and maintains the brightness level in the room at the desired level. The integrated HVAC function makes it possible to control heating, ventilation and air-conditioning in the respective detection range when someone is present. This additionally saves energy. Two channels are available for this function. The device also contains an integrated room temperature controller object with temperature sensor. In addition, the device has numerous general functions (see Description of parameters and objects).

4.4.3 Constant light

Depending on the version, the devices offer various options to ensure that the brightness in the room is maintained at a more pleasant level. There is a difference between the functions of the constant light switch and the constant light controller. Both functions ensure that the brightness does not drop below a certain level when persons are in the room. The use of a presence detector is especially practical for work stations in an office, since even small movements are detected.

The constant light switch can switch lamps on and off. The constant light controller can additionally dim lights, to maintain a level that is as constant as possible. Both functions work in dependence of light conditions and movement in the detection range. The devices can operate either in "Automatic" or "Automatic switch-off" mode. If automatic switch-off is selected, for example, the light must be switched on manually via a control element. The light remains on as long as movement is detected, and daylight is not sufficient. If no movement is detected, the switch-off delay expires. Only then is an OFF telegram sent to the bus via the output. In automatic mode the movement sensor also takes over the switch-on function as soon as someone enters the room.

Constant light switch

The constant light switch switches on lamps in the room as soon as movement of a person is detected, and the desired brightness value is not attained by the entering daylight alone. The programmed setpoint minus hysteresis is maintained as long as people are in the detection range. The application detects when the entering daylight is sufficient. The lamps are then switched off again to save energy.

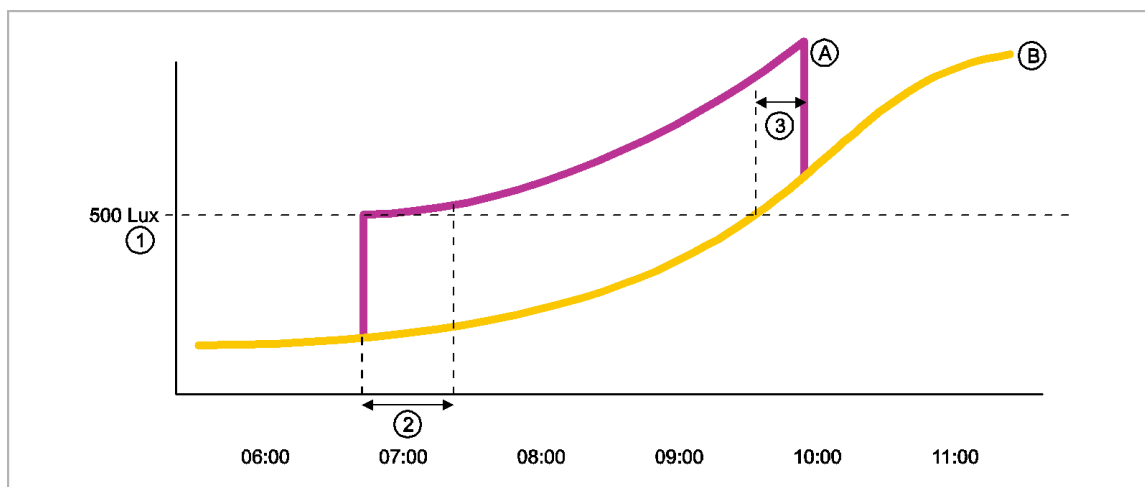


Fig. 2: Control parameters of constant light switch for one light row

[A] Artificial light curve

[B] Sunlight curve

Control parameters:

- [1] Setpoint (lx)
- [2] Lamp used (delay time preset: LED / halogen = short delay time; (compact) fluorescent lamp = delay time of 4 minutes)
- [3] Minimum time above the switch-off threshold (min) -> parameter setting no longer exists (automatically preset by the specification of the lamp to be used: LED / halogen = 1 minute; (compact) fluorescent lamp = 4 minutes)

To set up a constant light switch function certain parameters settings must be made which lead to dependencies. These dependencies are displayed in the above diagram.

A switch-off delay can be set. This time expires when the presence detector no longer senses movement. After expiry, an OFF telegram is sent on the output. Connected lamps are switched off. The switch-off delay should always be higher than the "Delay after switch-on up to measurement of the artificial light component" ([2] lamp used). In the worst case the light sensor would measure the artificial light component when the lamps are switched off. This should be avoided since the entire constant light switch function is based on this value. The "Delay after switch-on up to measurement of the artificial light component" ([2] lamp used) is to be used especially with lamps that take a few seconds to reach their full brightness. Fluorescent lamps require up to around 250 seconds, whereas incandescent lamps reach their full brightness almost immediately. The "Minimum time above the switch-off threshold" (3) ensures that the natural light component attains a stable value before the artificial light is switched off. If this time is too short, this could lead to an unwanted activation and deactivation of the lamps in the room. This parameter is automatically preset by the selection of the lamp to be used.

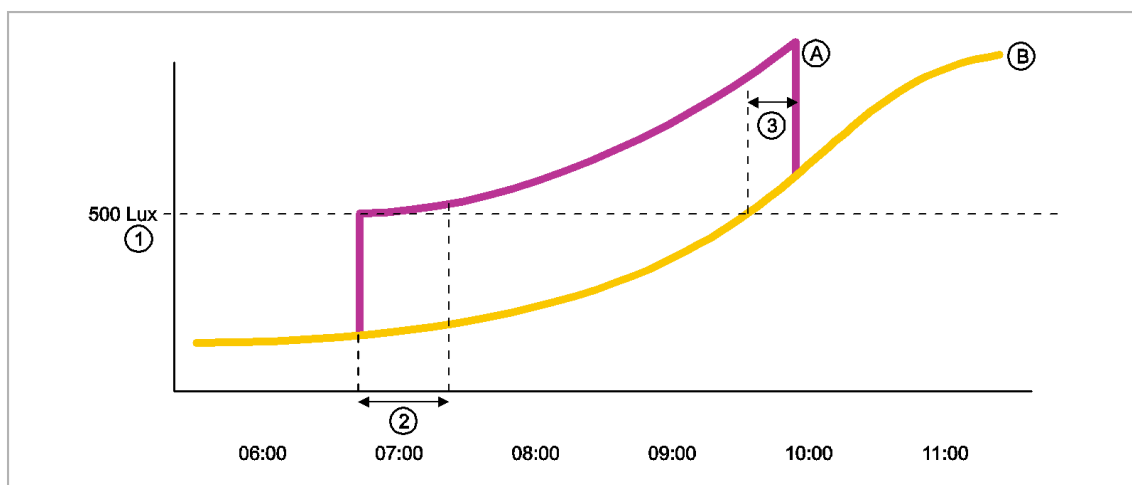


Fig. 3: Control parameters of constant light switch for two light rows

[A] Artificial light curve of light row 1

[B] Artificial light curve of light row 2

[C] Sunlight curve

Control parameters:

- [1] Setpoint (lx)
- [2] Lamp used (delay time preset: LED / halogen = short delay time; (compact) fluorescent lamp = delay time of 4 minutes)
- [3] Minimum time above the switch-off threshold (min) -> parameter setting no longer exists (automatically preset by the specification of the lamp to be used: LED / halogen = 1 minute; (compact) fluorescent lamp = 4 minutes)



Note

The hysteresis must be taken into consideration. However, this is not displayed for reasons of simplicity.

Here the special parameter settings for 2 light rows must be observed.

Constant light switch

In contrast to the constant light switch, there is the possibility of switching in several stages. Both the constant light controller and the constant light switch ensure that the level of brightness in the room does not drop below the desired level. However, the brightness controller is additionally able to send telegrams for dimming lamps to the KNX bus. This enables a constant level to be attained due to the dimming of lights brighter and darker, always in dependence of the natural light in the room. And the accuracy of the control increases with the operating time. The constant light controller remembers the luminosity of the lamps used, it measures this continuously (see also chapter 7.2.6, 'Instructions on the calibration of the internal light controller'). That is why the lights used later must also be used during commissioning of the presence detector with the constant light controller function. The artificial light component relative to daylight is also determined during commissioning. Next to the brightness the constant light controller also responds to the presence of persons in the room. This function can also be operated with 2 light rows.

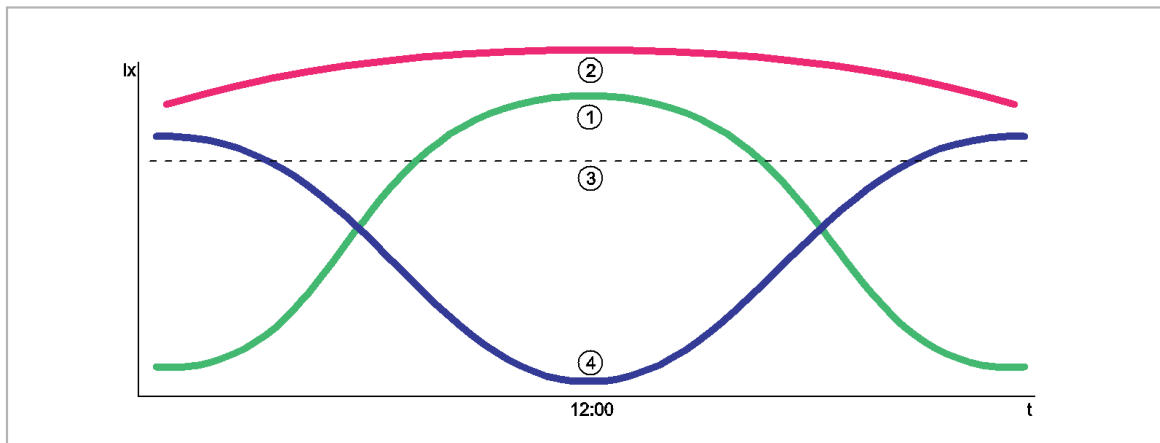


Fig. 4: Constant light controller influences

- [1] Natural light
- [2] Brightness in the room
- [3] Parametrized brightness-value threshold
- [4] Artificial light

4.5 Detection range



Note

For device-specific information regarding the detection ranges, see Chapter 6.1.

The detection range of the KNX presence detector depends on the movement of persons and the mounting height in the room. The movement sensor detects the smallest of movements, e.g. at PC work stations, at desks, etc. Here it must be distinguished between the inner and outer detection range and the mounting height of the presence detector.

4.5.1 Inner detection range (seated persons)

Seated persons must be completely within the detection range. The shorter the distance between the person to be detected and the presence detector, the smaller the movement can be that is still detected. The reference level for the detection of seated activities is approx. 0.8 m. At this height, the detection range, such as for the Presence Detector Mini FM is 6.5 m in diameter (mounting height of the presence detector = 3 m). At a higher mounting height, the detection range becomes larger, but the precision of detection gets smaller.

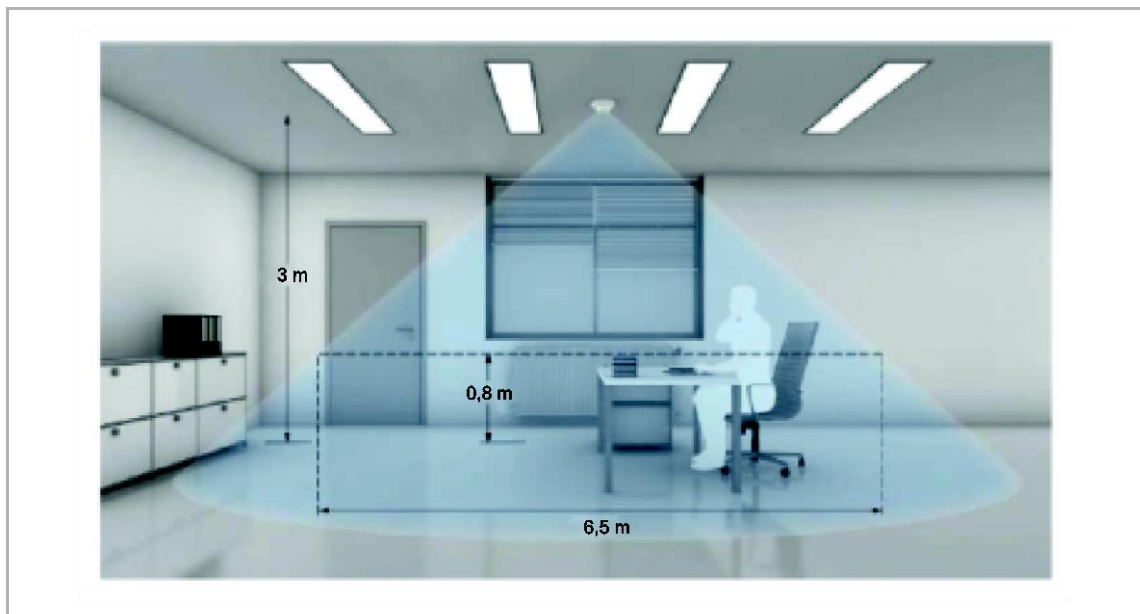


Fig. 5: Inner detection range

4.5.2 Outer detection range (walking persons)

For the detection of walking persons, a larger detection range is available. The reference level for detection is the floor. A mounting height of 3 m results, as example for the Presence Detector Mini FM, in a diameter of approx. 8 m for the detection range.

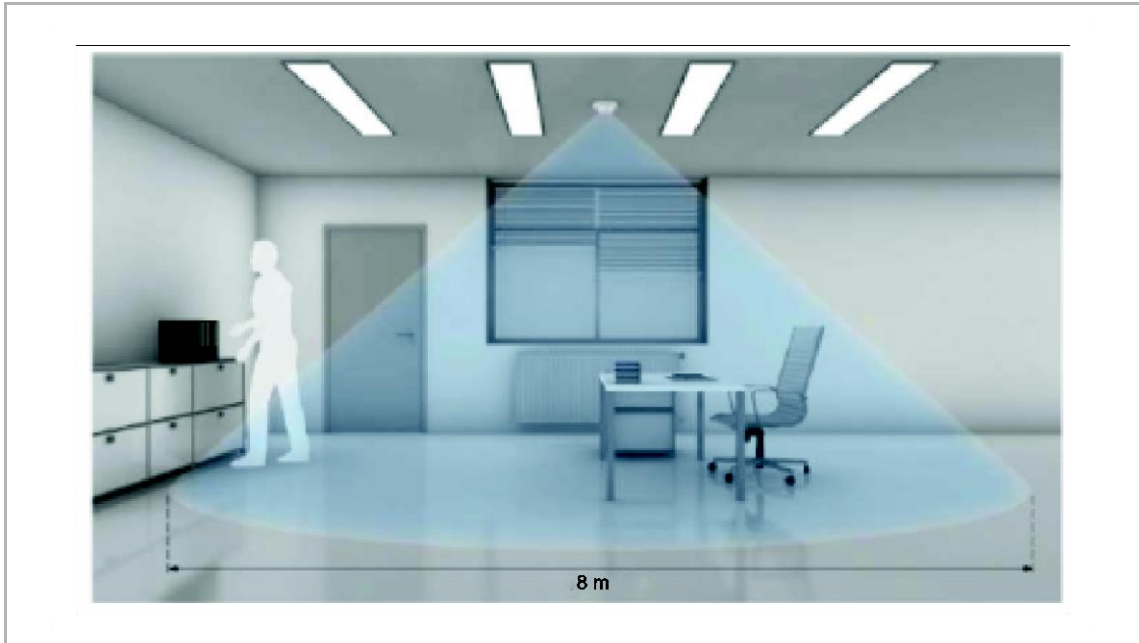


Fig. 6: Outer detection range (using Presence Detector Mini FM as an example)



Note - Limited detection

The detection range of the presence detector can be restricted. The device does not need to be covered mechanically for this. Individual sectors can be deactivated in the application.

5 Technical data

5.1 Overview

- Presence Detector Mini FM (C4-KNX-MPD-ST) / Presence Detector Mini Premium FM (C4-KNX-MPDPRM-ST)

Parameters	Value
Supply voltage	24 V
Max. current consumption	< 12 mA
KNX connection	Bus connection terminal,
Switch-on time after	Screwless
Switch-off (programmable)	Approx. 1 second
Adjustable brightness range	Approx. 1 - 1000 lux
Opening angle for brightness measurement	Approx. 20°
Mounting height	16 mm
Temperature range	-5°C - +45°C
Storage temperature	-20°C - +70°C
Protection	IP 20

Table 3: Technical data

5.2 Dimensions



Note

All dimensions are in mm.

5.2.1 Presence Detector Mini FM (C4-KNX-MPD-ST) / Presence Detector Mini Premium FM (C4-KNX-MPDPRM-ST)

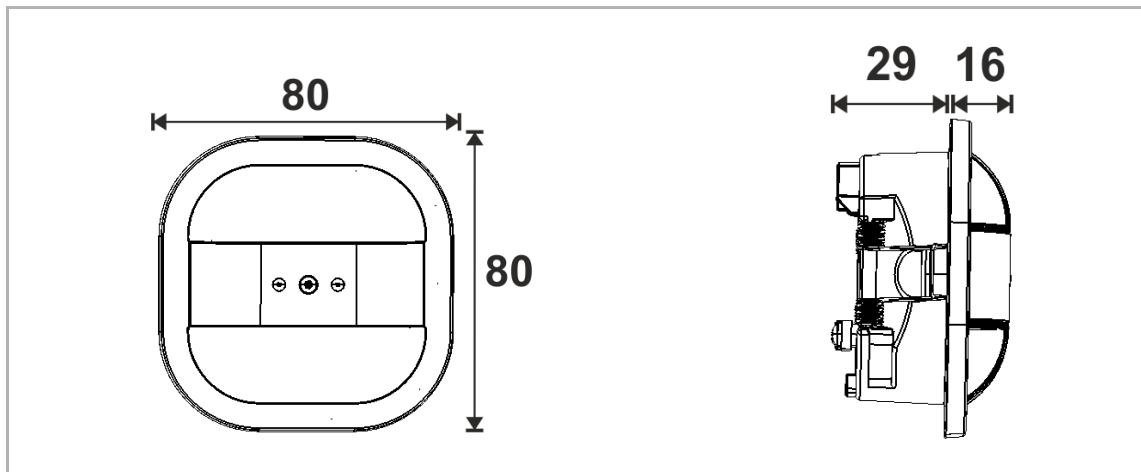


Fig. 7: Dimensions of Presence Detector Mini FM / Presence Detector Mini Premium FM

5.3 Electrical connection

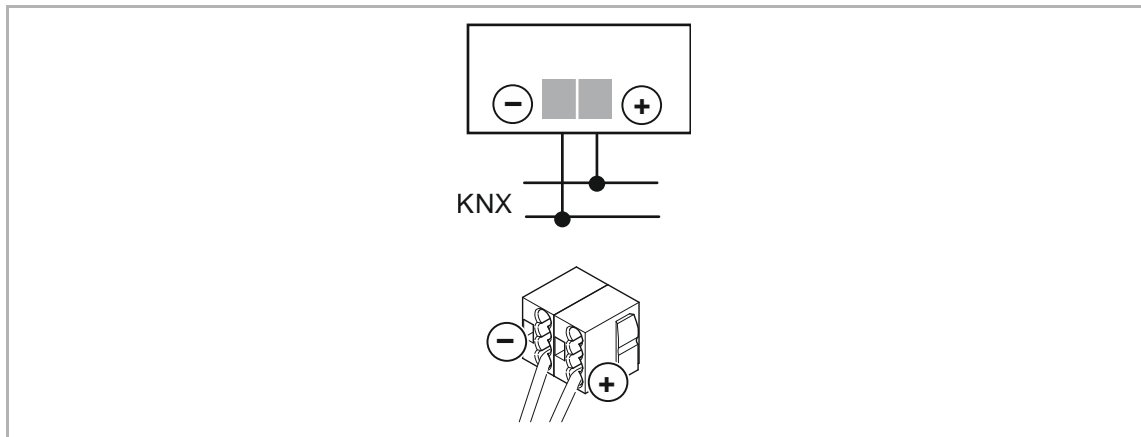


Fig. 8: Electrical connection

6 Mounting

6.1 Detection range



Note

If the height of installation is greater than 2.5 m, the detection range is extended while the precision of detection and the sensitivity are reduced.

6.1.1 5.2.1 Presence Detector Mini FM (C4-KNX-MPD-ST) / Presence Detector Mini Premium FM (C4-KNX-MPDPRM-ST)

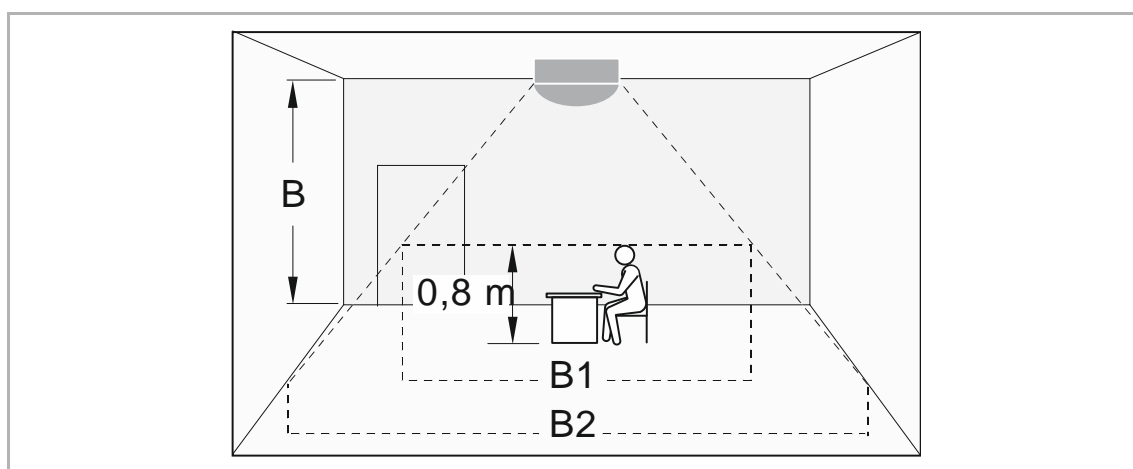


Fig. 9: Detection ranges of Presence Detector Mini FM / Presence Detector Mini Premium FM

[B] Mounting height

[B1] Wide inner detection range (seated person)

[B2] Wide outer detection range (walking person)

Mounting height (B)	Wide inner detection range (B1) (seated person)	Wide outer detection range
2.5 m	5 m max.	6.5 m max.
3 m	max. 6.5 m	8 m max.
4 m	9 m max.	10.5 m max.

Table 4: Detection ranges of Presence Detector Mini FM / Presence Detector Mini Premium FM

6.2 Sources of interference

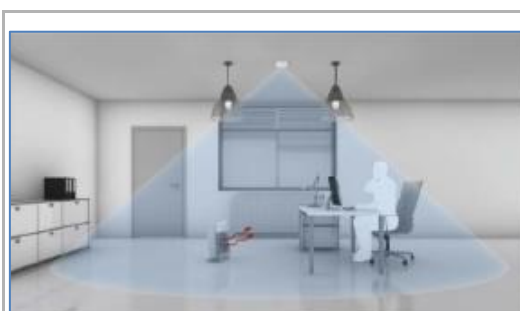
The presence detector detects the movement of heat sources. If a foreign heat source is in close proximity, this can cause false triggering. Here a distinction must be made between foreign heat sources and limited visibility as a source of interference.



Limited view of the device

The detection range of the device may be obstructed by various objects, e.g.:

- Lamp strip that have been installed lower than the device
- Large plants
- Partitions
- Glass panes



Foreign heat sources

Rapid changes in temperature surrounding the device can also trigger unwanted switching, e.g.:

- Additional fan
- Switching on/off of lamps in the direct vicinity (< 1.5 m) of the device, in particular incandescent lamps and halogen lamps
- Moving machines, printers, etc.



Heat sources without interference effect

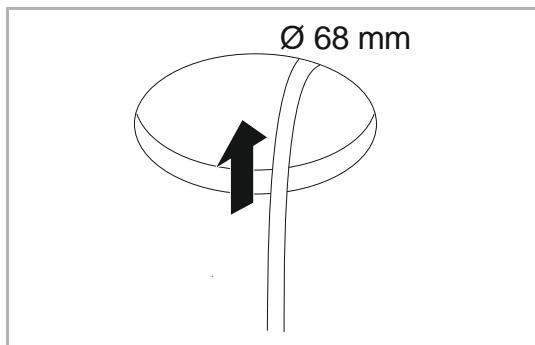
If the temperature changes only slowly, this will not affect the switching behavior of the device, e.g. on:

- Radiators (distance > 1.5 m)
- Surfaces heated by the sun
- EDP systems (computers, monitors)
- Ventilation systems, when warm air does not flow directly into the device

6.3 Installation

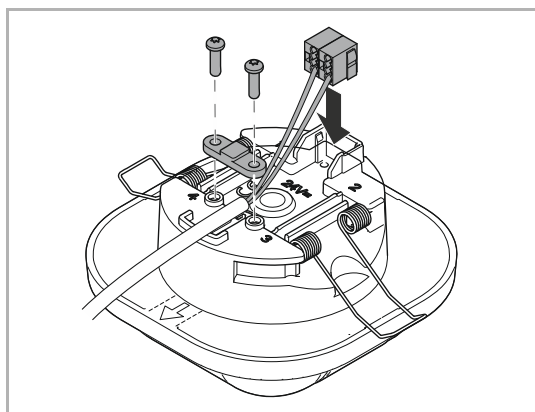
The device is designed for mounting on ceilings. The overall function of the device also depends on the mounting height (see chapter 6.2).

6.3.1 "Flush-mounted" ceiling mounting (e.g. suspended ceilings)



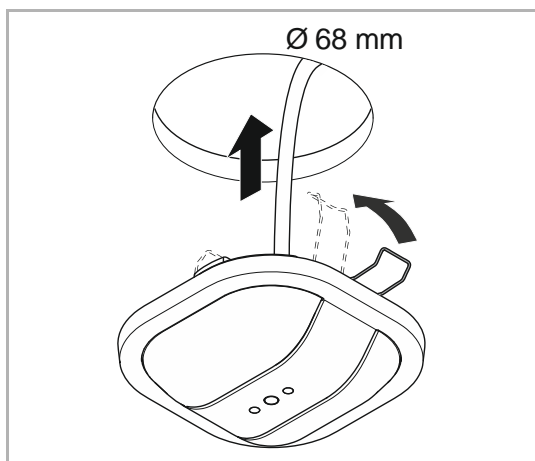
Preparation:

- First a recess with a diameter of approx. 68 mm must be drilled into the ceiling.
- A sufficient length of KNX bus line must project from the hole.

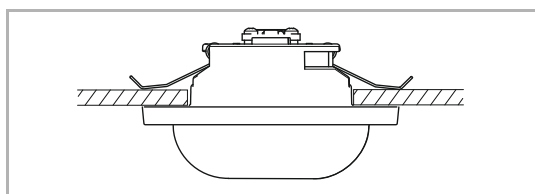


Connection of the integrated KNX bus coupler (rear of the device):

- Connect the KNX bus line with the enclosed 2-pole bus connection terminal (see connection diagram in Chapter 5.3). The connection is reverse polarity protected!
- Slide the bus connection terminal into the push-on fixture provided. Screw on the enclosed strain relief as an option.

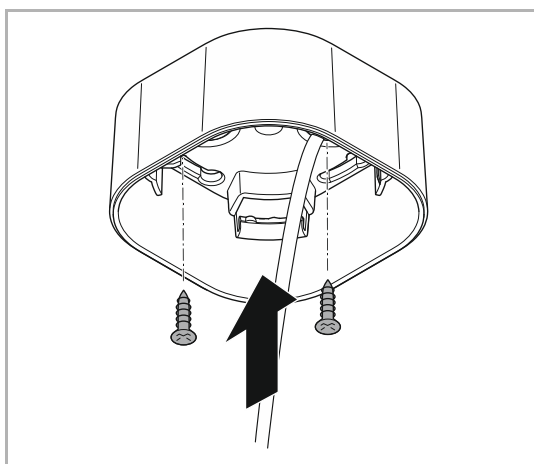


- Carefully slide the connected device into the recess. The clamps must be pressed toward the top.

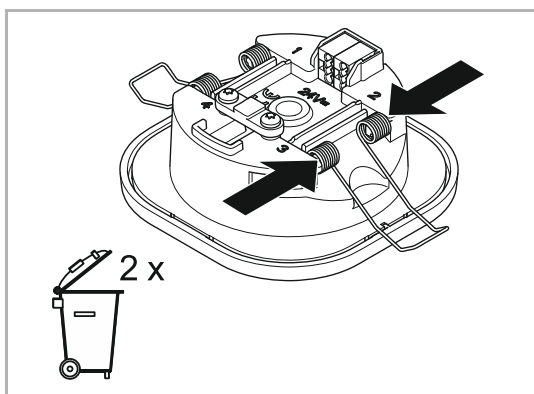


- After the insertion, the clamps fold down automatically and hold the device in the correct position.
- A subsequent alignment is still possible!

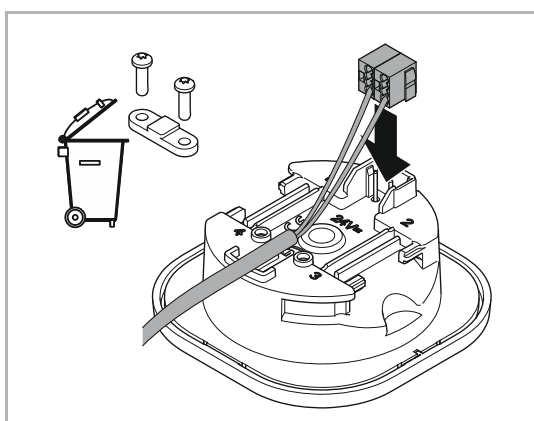
6.3.2 "Surface-mounted" ceiling mounting with surface -mounted housing



- Slide the KNX bus line into the surface-mounted housing through one of the specified openings. A sufficient length of KNX bus line must project from the hole.
- Fasten the surface-mounting housing with screws.

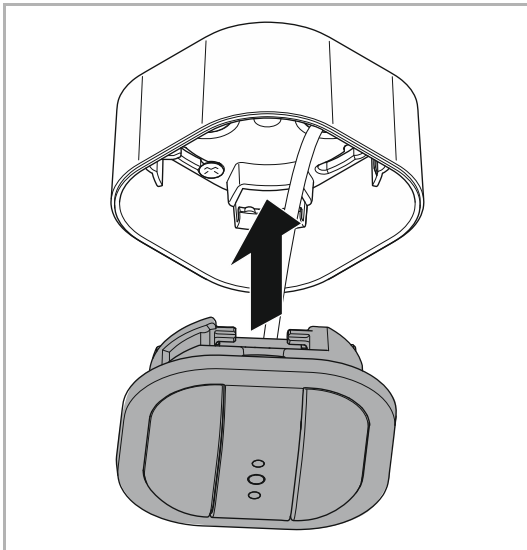


- Remove the two clamps on the device with the aid of a screwdriver and dispose of them.

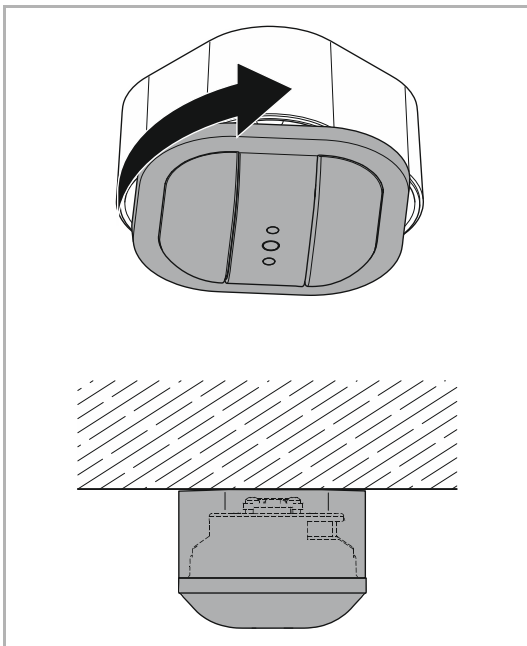


Connection of the integrated KNX bus coupler (rear of the device):

- Connect the KNX bus line with the enclosed 2-pole bus connection terminal (see connection diagram in Chapter 5.3). The connection is reverse polarity protected!
- Slide the bus connection terminal into the push-on fixture provided.



- Now slide the connected device into the surface mounted housing according to the illustration shown opposite. Take note of the guide rails. This is the only way the device can be inserted!



- Now turn the device in a clock-wise direction until it is aligned with the surface-mounted housing.

7 Commissioning



Note

The devices are a product of the KNX system and meet KNX guidelines. Detailed expert knowledge by means of KNX training sessions for a better understanding is assumed.

7.1 Hardware



Note

Please observe the mounting instructions in Chapter 6.

The detection range can additionally be adapted through individual sectors with switch-off function (through parameter settings).



Note

The device contains highly sensitive sensors and lens systems.

- Do not cover or mask lens segments since this will interfere with the function of the device.

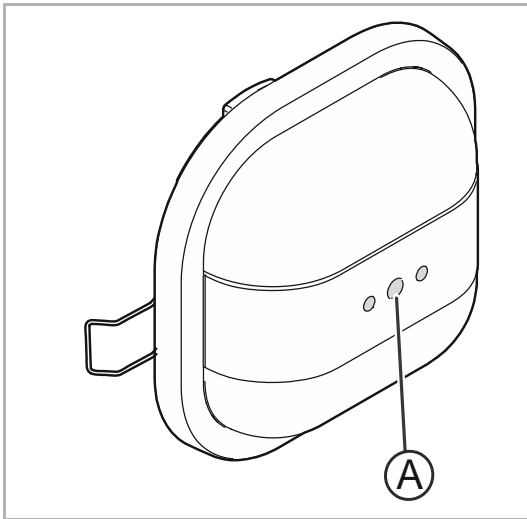
7.2 Software

To start the device a physical address must be assigned first. The assignment of a physical address and setting of parameters is carried out with the ETS commissioning software (use ETS 5.6.6 or higher).

7.2.1 Preparatory steps

1. Connect a PC via the KNX interface, e.g. the commissioning interface / adapter 6149/21, to the KNX bus line. The ETS commissioning software (5.6.6 or higher) must have been installed.
2. Switch on the bus voltage.

7.2.2 Assigning a physical address



1. Press the programming button (A).
 - The red (programming) LED goes on.
 - After the physical address has been programmed, the red (programming) LED goes off.

7.2.3 Assigning the group address(es)

The group addresses are assigned in connection with the ETS.

7.2.4 Selection of software application

The application programs are available for download at the links below.

- Presence Detector Mini FM, SKU: C4-KNX-MPD-ST.
KNXPROD filename: PM/A 1.8.1.41, download: <https://ctrl4.co/knx-mpd>
- Presence Detector Mini Premium FM, SKU: C4-KNX-MPDPRM-ST.
KNXPROD filename: PM/A 2.8.1.41, download: <https://ctrl4.co/knx-mpdprm>

7.2.5 Description of software applications

Various functions can be implemented via the ETS commissioning software (use 5.6.6 or higher). The function of the device is dependent on the parameters selected in the respective software application.

7.2.6 Instructions on the calibration of the internal light controller

To commission the presence detector with a constant light function you have various parameters available in the ETS (use ETS 5.6.6 or higher). These parameters allow numerous options for setting, in order to adapt the working mode of the device to individual requirements and circumstances. Therefore, the type of furniture, floor coverings or sources of interference in the room is of significance. The value to be set in a room with dark furniture will be less than in a room with a light-colored floor and light-colored furniture. Also, the effect of the size of the interference, such as heat sources or short-term changes in brightness, such as passing clouds, can be taken into consideration.

For an optimum function of the constant light control a calibration of the sensor for the brightness detection is required. The following needs to be observed:

- The detection range of the sensor for brightness detection (see the following graphics).
- Reflection characteristics of the ground material within the detection range.

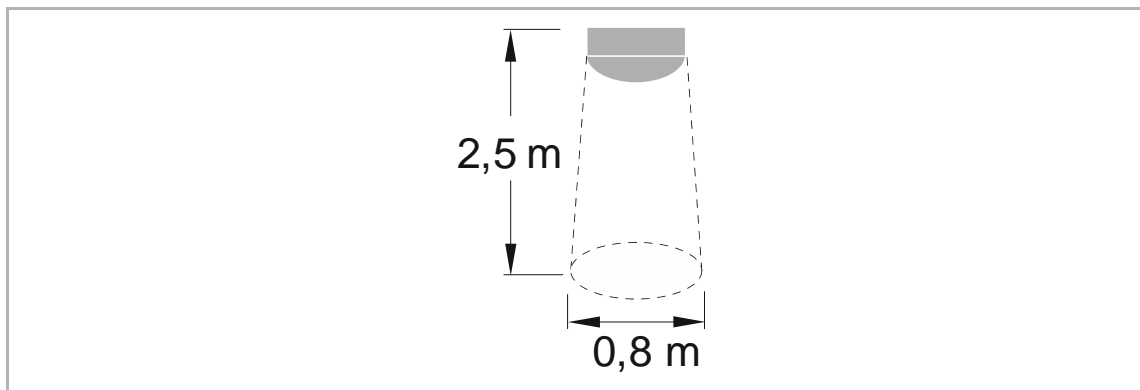


Fig. 10: Detection range of the sensor for brightness detection

The sensor is calibrated via the respective software application. Observe the following applicable explanations.

There are two options for adjusting the brightness via the brightness detection application (see parameter "Correcting process of internal brightness" page 87).

Use objects for brightness adjustment

There is the option of carrying out a brightness adjustment for daylight and artificial light via the brightness detection application with the aid of the following three objects:

- (a) Brightness adjustment (daylight)
- (b) Brightness adjustment (output 1)
- (c) Brightness adjustment (output 2)

In the event that artificial light and daylight are perceived similarly by the sensor, or the movement detector application is used exclusively, only the absolute brightness value need be corrected. For this the brightness value can be sent via the brightness adjustment object (daylight), which is to be displayed by the actual brightness measured by the device. This is then used to internally calculate a correcting factor, which will then be used for scaling / adjusting the internally measured brightness. This adjustment is sufficient for the movement detector application. For constant light controller and switch further step may be necessary, which are described in the following.

For the event that daylight and artificial light must be corrected separately, the following procedure is recommended:

- (a) Daylight adjustment
 - Perform the measurement during sufficient daylight ($> 1/2 \cdot \text{setpoint}$)
 - Switch off the artificial light
 - Carry out the measurement of brightness at a defined location with a luxmeter - for example, lying down at the workplace with a view toward the ceiling - and wait until the light is close to being constant. Send the value to the device using the brightness adjustment (daylight) object. As little time as possible should pass between measuring and sending, to keep the probability of a change in light conditions at a minimum.
- (b) Adjustment for channel 1
 - Darken the room
 - Switch on channel 1 (max. brightness) and wait until the brightness is virtually constant.
 - Measure the brightness with the luxmeter as previously. Send the value to the device via the "Brightness adjustment" object (output 1).
- (c) Adjustment for channel 2
 - Repeat M-measurement (b) for channel 2. Switch off channel 1.

To complete the adjustment for the constant light controller, a further step is required during which the characteristic of the connected lamp is automatically measured in dependence of the output value of the controller.

To be able to carry out the brightness calibration, the device must have been already programmed in such a way that aside from the "Start brightness calibration" object, also the output object(s) is/are connected with the corresponding actuators. Also, the actuators should be programmed in such a way that the values received are set immediately, to ensure that the calibration process runs properly.

Here too, as in item (b), the room is to be darkened, to minimize the effect of changing daylight conditions during the measurement. If this is not possible, the adjustment should be carried out in the dark or at night. To obtain excellent results, the lamps should be turned on prior to the calibration. The calibration can start when the measured brightness is constant, i.e. the heat-up of the lamps has been completed.

The process of calibration now proceeds as follows:

1. Brightness calibration is started by sending a "1" to the Brightness calibration object (in the constant light application under extended parameters).
2. The lamps are switched on at 100%. Then comes a waiting period of 60 seconds for the lamps to warm up and reach their full brightness. Then the brightness is checked to see how much it has changed since the last measurement. If the change drops below a certain percentage in comparison to the measured value, it is assumed that the brightness is stable, and the actual calibration can begin. Otherwise a new measurement is carried out after a certain time to again determine the percentage of change. This process is repeated until a stable brightness value has been reached. However, only up to a maximum of ten times.
3. Then the output values are reduced separately into steps of 10% and the corresponding brightness is determined for each value; and here, too, a waiting period is necessary until the brightness values have become stable:
 - A1: 100% A2: 100%
 - A1: 100% A2: 90%
 - A1: 90% A2: 90%
 -
 - A1: 0% A2: 0%
4. After completion of the measurement the output characteristics are calculated and stored in the device. Then a successful measurement is confirmed in form of a "1" on the Start brightness calibration object.
5. If the calibration cannot be completed within a period of 6 minutes due to unfavorable light conditions (extremely fluctuating brightness values), the measurement is interrupted and a "0" is sent via the "Start brightness calibration" object.



Note

The calibration can be terminated by sending a "0" via the "Start brightness calibration" object. The calibration is similar if only one output is used, but only with the A1 output values.

7.2.7 Additional comments

Setpoint



Note

The following information is relevant only if no adjustment of brightness has been carried out.

Please note that the lux value to be set in the parameters does not correspond to the value required at the height of the desk. The light sensor is installed on the ceiling and can only measure the luminosity that is reflected from the opposite surfaces. The setpoint to be entered is therefore lower than the light value at the height of the work station. Dim the lights to the desired intensity. Then save the measured light value via the memory object of the presence detector. The stored value can also be read via the object for the setpoint.

Outputs

The presence detector can also regulate two independent light circuits per channel via the two outputs. The value of output 2 results from the value of output 1 and the respective proportionality factor. If the required setpoint is not reached, control continues beyond the factor.

For example:

An office is fitted with two light rows. Output 1 controls the light row in the darker part of the room. Light row 2 in the front window area is connected to output 2. For the maximum brightness during the day a proportional factor of 70% is sufficient for output 2. During the night the full brightness in the room is not sufficient for output 1 and output 2. Output 2 would now control beyond the proportional factor until the setpoint or the full brightness of the lamp has been reached.

Light-on time

The presence detector will switch off or dim the lamps in the room if no movement is detected. A switch-off delay can be set to prevent the lamp from being switched off immediately. This time starts as soon as movement is no longer detected. If movement is detected again within this period, the switch-off delay is reset.

Hysteresis

The hysteresis is a percentage value (+/-) that is related to the setpoint in lux. The hysteresis is a tolerance for maintaining the setpoint. The preset point is sufficient for most applications.

8 Updating options

Always use the latest firmware. The latest download files for the firmware update are available for download at the links below.

- Presence Detector Mini FM, SKU: C4-KNX-MPD-ST
KNXPROD filename: PM/A 1.8.1.41, download: <https://ctrl4.co/knx-mpd>
- Presence Detector Mini Premium FM, SKU: C4-KNX-MPDPRM-ST
KNXPROD filename: PM/A 2.8.1.41, download: <https://ctrl4.co/knx-mpdprm>

The application is loaded into the device via the ETS. They are also available via the KNX online shop. A firmware update is carried out by means of an ETS application via the bus.

Use ETS 5.6.6 (or higher).



Note

Please adhere to the current information about the download files. These also contain instructions for the installation of the firmware update.

9 Maintenance

The device is maintenance-free. In case of damage (e.g., during transport or storage), do not perform repairs. Once the device is opened, the warranty is void!

Access to the device must be guaranteed for operation, testing, inspection, maintenance and repairs (according to DIN VDE 0100-520).

9.1 Cleaning

Dirty devices can be cleaned with a dry cloth. If this is not sufficient, a cloth slightly moistened with a soap solution can be used. Caustic / aggressive or scouring cleaning agents or solvents must not be used.

10 Description of application and parameters

10.1 Application program

The following application program is available: Presence detector xxx KNX TP/1.

Download information

- *Presence Detector Mini FM*, SKU: C4-KNX-MPD-ST, KNXPROD filename: PM/A 1.8.1.41, Download: <https://ctrl4.co/knx-mpd>
- *Presence Detector Mini Premium FM*, SKU: C4-KNX-MPDPRM-ST, KNXPROD filename: PM/A 2.8.1.41 Download: <https://ctrl4.co/knx-mpdprm>

10.2 Overview of applications

The application program for the devices contains the KNX applications listed in the following:

- Detector
- Constant light switch
- Constant light controller
- Heating, air conditioning, ventilation
- Brightness detection
- Object RTC
- IR functions (white)
- IR functions (blue)
- Logic functions



Note

The availability of some applications depends on the channel selection:

Presence 1:

- Detector
- Constant light switch
- Constant light switch
- Inactive

Presence 2:

- Detector
- Constant light switch
- Constant light switch
- Inactive

Presence 3:

- Detector
- Constant light switch
- Heating, air conditioning, ventilation
- Inactive

Presence 4:

- Detector
- Constant light switch
- Inactive

10.3 "Detector" application

10.3.1 General parameters — Type of output

Options:	Master
	Slave

- Master: In master mode On and Off telegrams are sent (to an actuator) dependent on movement.
- Slave: In slave mode On telegrams are sent cyclically (to the extension unit input of a master detector) when movement is detected.

10.3.2 General parameters — Slave input

Options:	No
	Yes

- No: The option of receiving telegrams from a slave is not available.
- Yes: A 1-bit "slave" communication object (input) is being enabled. Via this input the master detector receives the (On) telegrams of the connected slaves or of a push-button. The On telegram from a slave is comparable with a detected movement.

10.3.3 General parameters — Output is of type

Options:	1 bit
	1 byte 0 - 100%
	1 byte 0 - 255
	Light scene number 1 - 64
	RTC operating mode switchover (1 byte)

- 1 Bit: Intended for switch actuators.
- 1 Byte 0 - 100%: For activating dimmers.
- 1 Byte 0 - 255: For actuators, which are activated with a value of between 0 and 255.
- Light scene number 1 - 64: For activating light scenes.
- RTC operating mode switchover (1 Byte): To directly switch room temperature controllers into a specific operating mode.
 - Auto
 - Comfort
 - Standby
 - ECO
 - Frost/heat protection



Note

If the type of output is changed, also the options for setting the parameters change.

- Value for switch-on
- Value for switch-off

In this manual only values for the 1-bit setting are described.

10.3.4 General parameters — Output object sends at

Options:	Switch-on / switch-off
	Switch-on
	Switch-off

- Switch-on/switch-off: Sends a telegram at the start of movement and at the end of switch-off delay.
- Switch-on: Only sends a telegram at the start of movement.
- Switch-off: Only sends a telegram at the end of switch-off delay.



Note

If switch-on or switch-off has been selected, the following parameters are not displayed:

- Value for switch-on
- Cyclic sending of value for switch-on
- Value for switch-off
- Cyclic sending of value for switch-off

10.3.5 General parameters — Value for switch-on

Options:	On
	Off

- On: When the detector detects movement, value 1 is sent via the bus.
- Off: When the detector detects movement, value 0 is sent via the bus.

10.3.6 General parameters — Cyclic sending of value for switch-on

Options:	No
	Yes

- No: The setpoint is sent only once via the bus.
- Yes: The setpoint is sent cyclic via the bus.
- Parameter "cyclic repeat time" is also displayed.

10.3.7 General parameters — Cyclic repeat time (hh:mm:ss)

Options:	00:00:10 ... 00:00:30 ... 18:12:15
----------	------------------------------------

- Here the time which lies between the sending of two telegrams (no change in value) is set.

10.3.8 General parameters — Value for switch-off

Options:	On
	Off

- Off: If movement is no longer detected and the switch-off delay has expired, value 0 is sent via the bus.
- On: If movement is no longer detected and the switch-off delay has expired, value 1 is sent via the bus.

10.3.9 General parameters — Cyclic sending of value for switch-off

Options:	No
	Yes

- No: The setpoint is sent only once via the bus.
- Yes: The setpoint is sent cyclic via the bus.
- Parameter "cyclic repeat time" is also displayed.

10.3.10 General parameters — Cyclic repeat time (hh:mm:ss)

Options:	00:00:10 ... 00:00:30 ... 18:12:15
----------	------------------------------------

- Here the time which lies between the sending of two telegrams is set.

10.3.11 General parameters — Switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:05:00 .. 18:12:15
----------	----------------------------------

- The switch-off delay is the time period between the last movement detected and the sending of the telegram "Value for switch-off". If movement is detected again within this period, the switch-off delay timer is started again.

10.3.12 General parameters — Brightness-value threshold internal (lux)

Options:	1 .. 400 .. 1000
----------	------------------

- The brightness-value threshold is used to specify the lux value at which the detector is to start to respond. If the detector does not switch on and the measured brightness lies above the set threshold, no telegram is sent during movement.

10.3.13 General parameters — Sensitivity

Options:	High
	Medium
	Low
	Maximum

- High: Standard - intended for indoor use.
- Medium: To be used when there are small interfering heat sources within the detection range.
- Low: To be used when there are large interfering heat sources within the detection range.
- Maximum: To be used when there are no interfering heat sources within the detection range.



Note

The transmission range can NOT be changed via the sensitivity.
The sensitivity refers to sensors 1, 2, 3, 4.

10.3.14 General parameters — Fade in extended parameters

Options:	No
	Yes

- No: Only the most important parameters for setting the detector are displayed.
- Yes: All parameters are displayed, also those that are not required in most cases.

Examples:

- Extended parameter settings
- Status display parameter
- Brightness parameter
- External button parameter

10.3.15 Extended parameter settings — Operating mode

Options:	Automatic mode
	Automatic switch-off
	Automatic switch-on
	Survey

- Automatic = automatic switch-on and switch-off.
In the "Automatic" mode, the detector switches on automatically when detecting a movement. The switch-off is effected after the set switch-off delay beginning from the most recent detection.
- Automatic switch-off = manual switch-on and automatic switch-off.
In "Automatic switch-off" mode the detector must be switched on manually using the "External push-button (input)" object. The switch-off is effected automatically under consideration of the switch-off delay.
- Automatic switch-on = automatic switch-on and manual switch-off.
In "Automatic switch-on" mode, the detector switches on automatically when detecting a movement. The switch-off is effected by the receipt of an Off telegram on the "External push-button (input)" object. Note: The detector switches off automatically after 6 hours.
- Monitoring = automatic switch-on when there is sufficient movement within a specific time period and automatic switch-off after a fixed switch-off delay of 2 seconds.
In "Monitoring" mode, the detector switches on brightness-dependent if an adjustable component of movement has been recorded within the time period set. The switch-off occurs 2 seconds after switch-on and the last detection of movement.



Note

Manual switch-on and switch-off is possible in operating modes "automatic", "automatic switch-on" and "automatic switch-off" via the "external push-button (input)". This external push-button is activated under the "External push-button" parameter. During manual switch-off the detection of movement is suppressed for the pause time. The purpose of pause time is to prevent an immediate re-activation.

Example: The person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.

10.3.16 Extended parameter settings — Use of a two-stage switch-off



Note

This parameter is only displayed when "Output is of type" is set on 1 byte 0 - 100% or 1 byte 0 - 255.

Options:	No
	Yes

- No: The detector has a switch-off delay and, following the switch-off delay, transmits what has been set under the "Value for switch-off" parameter.
- Yes: After the switch-off delay the detector first switches to the set reduced brightness and only then sends the value set under the "Value for switch-off" parameter after brightness reduced according to switch-off delay.

Example: Switch-off delay = 5 minutes

- Value for switch-off = 0%
- Value for reduced brightness = 20%
- Brightness reduced according to switch-off delay = 3 minutes

If movement is now no longer detected, the light is dimmed to 20% after 5 minutes and then to 0% after a further 3 minutes (switch-off).

10.3.17 Extended parameter settings — Value for reduced brightness (%)

Options:	0 .. 20 .. 100
----------	----------------

- Here the value for the reduced brightness is set. After the switch-off delay has expired the detector is to dim the light to this value.

10.3.18 Extended parameter settings — Brightness reduced according to switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:05:00 .. 18:12:15
----------	----------------------------------

- Here the value for the switch-off delay of the reduced brightness is set. The total switch-off delay then consists of the switch-off delay + brightness reduced according to switch-off delay.

10.3.19 Extended parameter settings — Use of forced switch-off

Options:	No
	Yes

- No: The detector does not switch off after a specific time to carry out a new brightness measurement.
- Yes: The detector switches off once after 3x switch-off delay or at a minimum of 90 minutes or a maximum of 24 hours to carry out a new brightness measurement.

If the presence detector is switched on, it operates independent of brightness. Problem: When movement is detected the light remains on even though the brightness may be sufficient. This effect can be prevented by activating this parameter.

10.3.20 Extended parameter settings — Use of object for switch-off delay

Options:	No
	Yes

- No: The only option available is to change the switch-off delay via the "switch-off delay" parameter setting.
- Yes: There is a separate 2-byte "switch-off delay" object (input) for changing the switch-off delay of the detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.



Note

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> value = 10
- Value > 65535 -> value = 65535

10.3.21 Extended parameter settings — Use of object for brightness reduced according to switch-off delay

Options:	No
	Yes

- No: The only option available is to change the switch-off delay via the "Brightness reduced according to switch-off delay" parameter setting.
- Yes: There is a separate 2-byte "brightness reduced according to switch-off delay" object (input) for changing the switch-off delay for the reduced brightness of the detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.



Note

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> value = 10
- Value > 65535 -> value = 65535

10.3.22 Extended parameter settings — Use of object for test mode

Options:	No
	Yes

- No: There is no possibility to set the detector to test mode to test the detection range.
- Yes: There is a separate 1-bit “test mode activation” object (input) for activating the test mode with a 1. The function is reset again with the receipt of a 0 on this object or automatically after 10 minutes. During the test mode the LED functions as movement detection indicator.

10.3.23 Extended parameter settings — Use of the actuator status object

Options:	No
	Yes

- No: There is no separate actuator status object for connecting with the status of an actuator.
- Yes: A 1-bit actuator “status” communication object (input) is being enabled. This is connected with the status of a switch actuator, for example. When this actuator is switched off via a central command, the detector is informed and is ready again for switch-on after the pause time.

10.3.24 Extended parameter settings — Use of the status manually on/off object



Note

This parameter is displayed only when automatic switch-on/switch-off has been activated and/or when the external push-button has been activated.

Options:	No
	Yes

- No: There is no separate “status manual on/off” object for monitoring the status of the control.
- Yes: A 1-bit “status manual on/off” communication object (output) is being enabled. This object sends an On telegram when the movement detector is deactivated and only one manual operation is possible via the external push-button input. If this object sends an Off telegram, the movement detector switches back to automatic mode.

10.3.25 Extended parameter settings — Pause time (ss.fff)

Options:	00.100 .. 01,250 .. 59,999
----------	----------------------------

- The set pause time is started after the detector has been switched off due to expiry of the switch-off delay or when a switch-off telegram is received on objects external push-button or actuator status.

If movement is detected during this time, the detector is not switched on immediately. The pause time is first extended by 7 seconds. If there is still movement after these 7 seconds, the detector switches back on.

If no movement is detected during the pause time, the detector is ready for activation again after the pause time.

This behavior can, for example, be important when the lamp cools down drastically and is located within the detection range of the detector. Without a blockage there would be an unintentional switch-on. The purpose of pause time is to prevent an immediate re-activation.

Example: The person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.



Note

- The “external push-button” object is activated under the "External push-button" parameter.
- The “actuator status” object is activated under the “status display” parameter.

10.3.26 Extended parameter settings — Overwriting settings during a download

Options:	Yes
	No

- Yes: When the application is reloaded into the detector, the values changed via the bus are overwritten with the parameterized values of the ETS application.
- No: When the application is reloaded into the detector, the values changed via the bus are not overwritten with the parameterized values of the ETS application.

Values:

- Switch-off delays
- External/internal brightness threshold
- Brightness correction (daylight), see "Brightness detection" application

10.3.27 Brightness parameter — Use of object for detection independent of brightness

Options:	No
	Yes

- No: There is no separate object for detection independent of brightness.
- Yes: A 1-bit communication object for brightness-independent detection (input) is being enabled. This object allows the detector to be switched independent of brightness.

10.3.28 Brightness parameter — Activating detection independent of brightness with

Options:	On telegram
	Off telegram

- On telegram: Detection independent of brightness is activated with a 1 telegram and deactivated with a 0 telegram.
- On telegram: Detection independent of brightness is activated with a 0 telegram and deactivated with a 1 telegram

10.3.29 Brightness parameter — Detection independent of brightness after bus voltage recovery

Options:	No
	Yes

- No: Detection independent of brightness is deactivated after a bus voltage recovery, reprogramming or a reset.
- Yes: Detection independent of brightness is activated after a bus voltage recovery, reprogramming or a reset.

10.3.30 Brightness parameter — Input Slave takes the brightness into consideration

Options:	No
	Yes

- No: Every ON telegram to the input slave object ensures that the detector is switched on or the switch-off delay is reset. This is independent of whether the actual brightness is below or above the brightness-value threshold.
- Yes: The detector is switched on or the switch-off delay is reset only when the actual brightness is below the brightness-value threshold.

10.3.31 Brightness parameter — Used brightness

Options:	Brightness-independent
	Internal only
	External only
	internal or external

- Brightness-independent: The detector functions independent of brightness and will switch during each movement.
- Only internal: The detector uses its own measured brightness and brightness-value threshold internally to decide whether to switch on during movement.
- Only external: A 2-byte "external brightness" (input) communication object is enabled. The detector uses this externally measured brightness (e.g., through an external brightness sensor) and the "external brightness-value threshold" parameter (lux) to decide whether to switch on during movement.
- Internal or external: The detector is activated only when the internally measured brightness drops below the internal brightness-value threshold or the externally measured brightness drops below the external brightness-value threshold.

10.3.32 Brightness parameter — Use object for internal brightness-value threshold

Options:	No
	Yes

- No: There is no separate "internal brightness-value threshold" object.
- Yes: A 2-byte "internal brightness-value threshold" communication object (input) is being enabled. This can be used to change the switching threshold at which the detector is activated. The value is sent to this object in lux.



Note

The range of values lies between 0.5 – 1100 lux.

10.3.33 Brightness parameter — Use object for external brightness-value threshold

Options:	No
	Yes

- No: There is no separate “external brightness-value threshold” object.
- Yes: A 2-byte “external brightness-value threshold” communication object (input) is being enabled. This can be used to change the switching threshold at which the detector is activated. The value is sent to this object in lux.



Note

The range of values lies between 0.5 – 1100 lux.

10.3.34 Brightness parameters — Brightness-value threshold external (lux)

Options:	1 .. 500 .. 1000
----------	------------------

- The brightness-value threshold is used to specify the lux value at which the detector is to start to respond. If the detector does not switch on and the measured brightness lies above the set threshold, no telegram is sent during movement. The threshold applies only to the external brightness.

10.3.35 External push-button parameter — Use of external push-button object

Options:	No
	Yes

- No: There is no separate "external push-button" object.
- Yes: A 1-bit "external push-button" communication object (input) is being enabled. Via this object it is possible to manually change the (output) status of the detector with the aid of a 1-bit telegram. It is used especially in the "Automatic switch-on" mode for switch-off and in "Automatic switch-off" mode for switch-on.

10.3.36 External push-button parameter — Use of external push-button switches on with

Options:	On telegram
	Off telegram

- On telegram: The detector is activated with a 1 telegram and deactivated with a 0 telegram.
- Off telegram: The detector is activated with a 0 telegram and deactivated with a 1 telegram.

10.3.37 External push-button parameter — Use of switchover to manual mode object

Options:	No
	Yes

- No: There is no separate "switchover to manual mode" object.
- Yes: A 1-bit "switchover to manual mode" communication object (input) is being enabled. If an ON telegram is received on this input, the detector is deactivated. In this case only manual operation is possible via the "External push-button" object. The receipt of an Off telegram resets the detector to detector mode.

10.3.38 External push-button parameter — Manual mode is activated with

Options:	On telegram
	Off telegram

- On telegram: The detector is deactivated with a 1 telegram and activated with a 0 telegram.
- Off telegram: The detector is deactivated with a 0 telegram and activated with a 1 telegram.

10.3.39 Sensor selection — Use of sensors 1 - 4

Options:	Yes
	No

- Yes: This sensor is active and detects movement.
- No: This sensor is switched off and movement is no longer detected in this area.

10.3.40 Sensitivity of sensor 1/2 and/or 3/4

Options:	Maximum
	High
	Medium
	Low
	Off

- Maximum: To be used when there are no interfering heat sources within the detection range.
- High: Standard - intended for indoor use.
- Medium: To be used when there are small interfering heat sources within the detection range.
- Low: To be used when there are large interfering heat sources within the detection range.
- Off: The sensor group is deactivated.

10.3.41 Enable — Use of enable detector object

Options:	No
	Yes

- No: There is no object with which the detector can be blocked or enabled.
- Yes: A 1-bit “enable movement” communication object (input) is being enabled. This object allows the detector to be enabled or blocked. No telegrams are sent by the detector during blockage.

10.3.42 Enable — Enable with

Options:	On telegram
	Off telegram

- On telegram: With the receipt of value 1 on the enable movement (input) object, the detector is enabled and blocked with value 0.
- Off telegram: With the receipt of value 0 on the enable movement (input) object, the detector is enabled and blocked with value 1.

10.3.43 Enable — After bus voltage recovery detector is

Options:	Enabled
	Blocked

- Enabled: The device is enabled and functions normally when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.
- Blocked: The device is blocked and must be enabled for normal function when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.

10.3.44 Enable — Output sends at enable

Options:	No telegram
	Current status
	Single value for switching on
	Single value for switching off

- No telegram: No telegram is sent during enable.
- Current status: During enable, the detector checks whether a movement has occurred, and the brightness is below the brightness-value threshold. If yes, the single value for switch-on is sent. Otherwise the single value for switch-off is sent.
- Single value for switch-on: During enable the single value which has been parameterized under the “value for switch-on” parameter is sent.
- Single value for switch-off: During enable the single value which has been parameterized under the “value for switch-off” parameter is sent.

10.3.45 Enable — Output sends at blockage

Options:	No telegram
	OFF after expiration of the light-on time
	Single value for switching off
	Single value for switching on

- No telegram: No telegram is sent during blockage.
- Off after expiry of switch-off delay: During blockage the switch-off delay is started anew, and the detector sends the value that is parameterized under the “value for switch-off” parameter only after this time has expired.
- Single value for switch-off: During enable the single value which has been parameterized under the “value for switch-off” parameter is sent.
- Single value for switch-on: During blocking, the single value which has been parameterized under the “value for switch-on” parameter was sent.

10.3.46 Extended parameter settings (monitoring) — Monitoring time window

Options: 00:00:01 .. 00:00:30 .. 00:10:00 hh:mm:ss

- The monitoring time window correlates with minimum activity in the monitoring time window. The telegram is only sent when a movement is detected within the monitoring time window, e.g. 50% minimum activity.

Example:

- Monitoring time window = 30 seconds
- Minimum activity in the monitoring time window = 50%

If someone now moves for 15 seconds within the 30 seconds, the value for switch-on is sent to the bus. Attention: Depending on the strength of the signal, the sensor will post-oscillate more or less.

10.3.47 Extended parameter settings (monitoring) — Minimum activity in the monitoring time window

Options: 10% .. 50% .. 100%

- See the "Monitoring time window" parameter.

10.3.48 Extended parameter settings (monitoring) — Pause time (ss.fff)

Options: 00.100 .. 01.250 .. 59.999

- The set pause time is started after the detector has been switched off due to expiry of the switch-off delay or when a switch-off telegram is received on objects "external push-button" or "actuator status".

If movement is detected during this time, the detector is not switched on immediately. The pause time is first extended by 7 seconds. If there is still movement after these 7 seconds, the detector switches back on.

If no movement is detected during the pause time, the detector is ready for activation again after the pause time.

This behavior can, for example, be important when the lamp cools down drastically and is located within the detection range of the detector. Without a blockage there would be an unintentional switch-on. The purpose of pause time is to prevent an immediate re-activation. Example: The person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.



Note

- The "external push-button" object is activated under the "External push-button" parameter.
- The "actuator status" object is activated under the "status display" parameter.

10.3.49 Extended parameter settings (monitoring) — Overwriting settings during a download

Options:	Yes
	No

- Yes: When the application is reloaded into the detector, the values changed via the bus are overwritten with the parameterized values of the ETS application.
- No: When the application is reloaded into the detector, the values changed via the bus are not overwritten with the parameterized values of the ETS application.

Values:

- Switch-off delays
- External/internal brightness threshold
- Brightness correction (daylight), see "Brightness detection" application

10.4 Constant light switch application

10.4.1 General parameters - Output is of type

Options:	1 bit 1 byte 0 - 100% 1 byte 0 - 255 Light scene number (1-64) RTC operating mode switchover (1 byte) 2-byte float
----------	---

- 1 Bit: Intended for switch actuators.
- 1 Byte 0 - 100%: For activating dimmers.
- 1 Byte 0 - 255: For actuators, which are activated with a value of between 0 and 255.
- Light scene number 1 - 64: For activating light scenes.
- RTC operating mode switchover (1 Byte): To directly switch room temperature controllers into a specific operating mode.
 - Auto
 - Comfort
 - Standby
 - ECO
 - Frost/heat protection
- 2-byte float: To send a specific temperature for example.



Note

If the type of output is changed, also the options for setting the parameters change.

- Value for switch-on at output 1
 - Value for switch-off at output 1
- and when they are activated also for:
- Value for switch-on at output 2
 - Value for switch-off at output 2

In this manual only values for the 1-bit setting are described.

10.4.2 General parameters — Cyclic sending of value for switch-on

Options:	No Yes
----------	-----------

- No: The setpoint is sent only once via the bus.
- Yes: The setpoint is sent cyclic via the bus.
- Parameter "cyclic repeat time" is also displayed.

10.4.3 General parameters — Cyclic repeat time (hh:mm:ss)

Options:	00:00:10 .. 00:00:30 .. 18:12:15
----------	----------------------------------

- Here the time which lies between the sending of two telegrams is set.

10.4.4 General parameters — Value for switching on output 1

Options:	On Off
----------	-----------

- On: When the presence detector detects movement, value 1 is sent via the bus.
- Off: When the presence detector detects movement, value 0 is sent via the bus.

10.4.5 General parameters — Value for switching off output 1

Options:	On Off
----------	-----------

- Off: If movement is no longer detected and the switch-off delay has expired, value 0 is sent via the bus.
- On: If movement is no longer detected and the switch-off delay has expired, value 1 is sent via the bus.

10.4.6 General parameters — Brightness-value threshold (lux)

Options:	1 .. 20 .. 1000
----------	-----------------

- This is used to set the desired brightness of the room. Below this threshold - hysteresis the presence detector switched at movement. The presence detector switches off again when the measured brightness - artificial light component = brightness-value threshold + hysteresis.



Note

The value entered here is smaller than the control value set in the room via the luxmeter. This depends on the calibration of the brightness sensor for brightness detection settings. When the brightness adjustment is used there, the desired brightness must be set here for the working area.

Example:

The brightness at the top of the desk is to be 500 lux. The presence detector, however, measures the required brightness at the position it is mounted(e.g. on the ceiling it only measures 20 lux). This means that there is a difference between the brightness of light at the desk and the ceiling.

If the object is now used for “brightness adjustment” (daylight) or the objects “brightness adjustment (output 1 / 2)”, one can enter 500 lux here (after calibration of the brightness sensor).

10.4.7 General parameters — Hysteresis (%)

Options:	10 .. 12 .. 100
----------	-----------------

- Switching threshold = brightness threshold \pm hysteresis

The hysteresis prevents excessive switching when the current ambient brightness is close to the brightness threshold.

10.4.8 General parameters — Switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:03:00 .. 18:12:15
----------	----------------------------------

- The switch-off delay is slightly different here than for the movement detector. Here the switch-off delay is started when the sensors no longer detect movement. When the presence detector detects movement after the switch-off delay, the switch-off delay timer is triggered.

10.4.9 General parameters — Lamp used

Options:	(Compact) fluorescent lamp LED / halogen
----------	---

Selecting the lamp used sets the time when the constant light switch starts to calculate the artificial light share. Some lamps require a lot of time to reach maximum brightness, e.g. fluorescent lamps. Measuring..switching..time..measuring; artificial light = Δ brightness

- (Compact) fluorescent lamp: delay time 4 minutes
- LED / halogen: no delay time

10.4.10 General parameters — Sensitivity

Options:	High Medium Low Maximum
----------	----------------------------------

- High: Standard - intended for indoor use.
- Medium: To be used when there are small interfering heat sources within the detection range.
- Low: To be used when there are large interfering heat sources within the detection range.
- Maximum: To be used when there are no interfering heat sources within the detection range.



Note

The transmission range can NOT be changed via the sensitivity.
The sensitivity refers to sensors 1, 2, 3, 4.

10.4.11 General parameters — Fade in extended parameters

Options:	No Yes
----------	-----------

- No: One only sees the most important parameters for setting the presence detector.
- Yes: All parameters are displayed, also those that are not required in most cases.

Examples:

- Extended parameters
- Sensor selection
- Enable
 - No: Only the most important parameters for setting the presence detector are displayed.
 - Yes: All parameters are displayed, also those that are not required in most cases.

Examples:

- Extended parameters
- Sensor configuration
- Enable

10.4.12 Extended parameters — Operating mode

Options:	Automatic mode Automatic switch-off Movement-dependent operation
----------	--

- Automatic = automatic switch-on and switch-off.
In "Automatic" mode, in case it is too dark, the presence detector switches on automatically when detecting a movement. The switch-off is effected after the set switch-off delay beginning from the most recent detection.
- Automatic switch-off = manual switch-on and automatic switch-off.
In "Automatic switch-off" mode, the presence detector must be switched on manually using the "automatic/manual" object. The switch-off is effected automatically under consideration of the switch-off delay.
- Operation independent of movement = switch-on and switch-off independent of brightness.
In the "Operation independent of movement" mode, the presence detector switches on and off only on the basis of brightness \pm hysteresis. Activation / deactivation via object „automatic/manual off“.

10.4.13 Extended parameters — Used movement detection

Options:	Internal only External only Internal and external
----------	---

- Only internal: The presence detector responds only to movement measured internally.
- Only external: The presence detector responds only to telegrams that are received via the slave object (input).
- Internal and external: The presence detector responds to movements measured internally and to external telegrams that are received via the slave object (input).

10.4.14 Extended parameters — Slave sent

Options:	Cyclic On telegram On/off telegram
----------	---------------------------------------

- Cyclic On telegram: The presence detector, which is connected to the master as slave, sends only On telegrams cyclically.
- On/Off telegram: The presence detector, which is connected to the master as slave, sends only On/Off telegrams.

10.4.15 Extended parameters — Use of output 2

Options:

No

Yes

- No: There is only output 1, which sends its telegrams to an actuator.
- Yes: An “output 2” communication object (output) is being enabled. The lighting can be now switched on and off in two stages. First, “output 1” is switched on, and when the artificial light is then not sufficient, also “output 2” is switched on. When the outside brightness increases, “output 2” is switched off, and when the outside light is sufficient, also “output 1” is switched off.

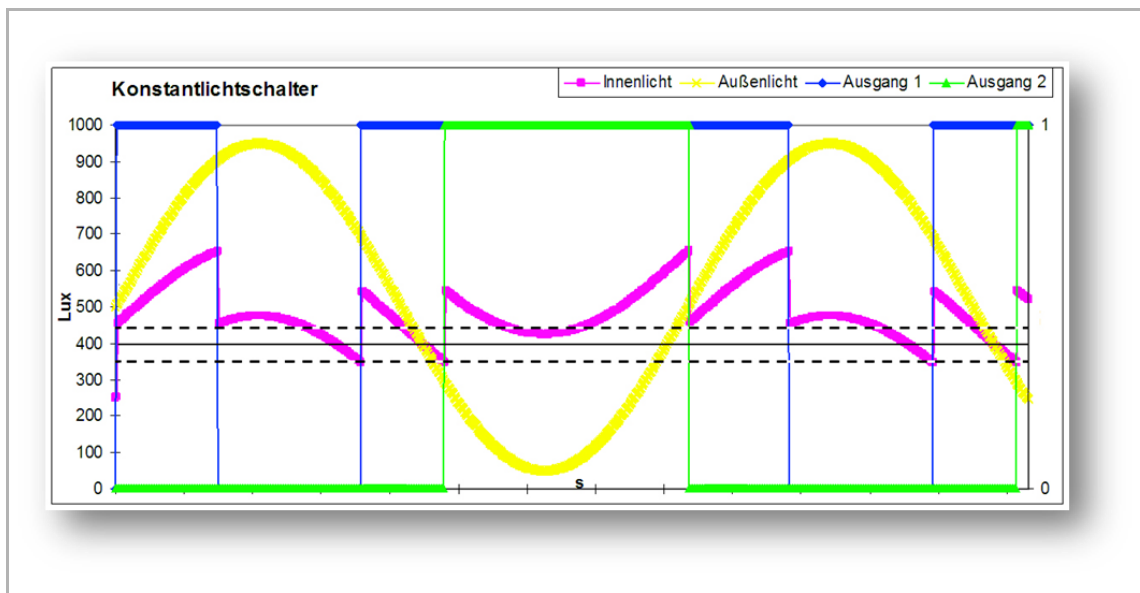


Fig. 11: Time sequence of the constant light switch.

[The outside light (here yellow)] in this situation has a sinusoidal path with an amplitude of 1000 lux. The magenta-coloured curve is the resulting inside light in lux. The brightness-value threshold is 400 lux with a hysteresis of 10%.

10.4.16 Extended parameters — Value for switch-on at output 2

Options:

On

Off

- On: When the presence detector detects movement, value 1 is sent through the bus.
- Off: When the presence detector detects movement, value 0 is sent through the bus.

10.4.17 Extended parameters — Value for switch-off at output 2

Options:	Off On
----------	-----------

- Off: If movement is no longer detected and the switch-off delay has expired, value 0 is sent through the bus.
- On: If movement is no longer detected and the switch-off delay has expired, value 1 is sent through the bus.

10.4.18 Extended parameters — Used brightness

Options:	Internal External
----------	----------------------

- Internal: The presence detector uses its own measured brightness and brightness-value threshold to decide whether the presence detector is to be activated or deactivated.
- External: A 2-byte “external brightness” (input) communication object is enabled. The presence detector uses this external measured brightness and the “brightness-value threshold” (lux) parameter to decide whether the presence detector is to be activated or deactivated.

10.4.19 Extended parameters — Use of object for switch-off delay

Options:	No Yes
----------	-----------

- No: The only option available is to change the switch-off delay via the “switch-off delay” parameter setting.
- Yes: There is a separate 2-byte “switch-off delay” object (input) for changing the switch-off delay of the presence detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.



Note

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> value = 10
- Value > 65535 -> value = 65535

10.4.20 Extended parameters — Use of object for brightness-value threshold

Options:	No
	Yes

- No: There is no separate “external brightness-value threshold” object.
- Yes: A 2-byte “brightness-value threshold” communication object (input/output) is being enabled. This can be used to change the switching threshold, while the presence detector is activated or deactivated. The value is sent to this object in lux.

10.4.21 Extended parameters — Use of object for saving brightness-value threshold

Options:	No
	Yes

- No: There is no extra “saving brightness-value threshold” object.
- Yes: A 1-byte “saving brightness-value threshold” communication object (input) is being enabled. This can be used to save the current measured brightness with a 1 telegram as new switching threshold.

10.4.22 Extended parameters — Use of actual brightness object

Options:	No
	Yes

- No: There is no extra “actual brightness” object.
- Yes: A 2-byte “actual brightness” (output) communication object is being enabled. This object outputs the corrected measured brightness (corrected daylight + corrected artificial light) which is used by the constant light switch.

10.4.23 Extended parameters — Cyclic sending of actual brightness

Options:	No
	Yes

- No: The actual brightness is only made available for reading. The value is not sent automatically.
- Yes: The actual brightness is sent each time to the "Actual brightness is sent every (hh:mm:ss)" parameter. The value can also be read.

10.4.24 Extended parameters — Actual brightness is sent every (hh:mm:ss)

Options:	00:00:10 .. 00:05:00 .. 00:30:00
----------	----------------------------------

- Here the time which lies between the sending of two telegrams is set.

10.4.25 Extended parameters — Use of object for automatic / manual off

Options:	No Yes
----------	-----------

- No: There is no separate “automatic/manual off” object.
- Yes: A 1-bit “automatic/manual off” communication object (input) is being enabled. With this object one has the option of manually switching off the constant light switch with a 0 telegram for the time "Exiting manual off mode after (hh:mm)". The constant light switch will function again automatically after this time period. The constant light switch can be set on automatic again with a 1 telegram. This also important for regulating and automatic switch-off independent of movement.

10.4.26 Extended parameters — Exiting manual off mode after (hh:mm)

Options:	00:05 .. 01:00 .. 12:00
----------	-------------------------

- Here the time is set for when the constant light switch switches again to automatic mode after a manual switch-off.

10.4.27 Extended parameters — Pause time (ss.fff)

Options:	00.100 .. 01.250 .. 59.999
----------	----------------------------

- The set pause time is started after the detector has been switched off due to expiry of the switch-off delay or when a switch-off telegram is received on objects “external push-button” or “actuator status”.

If movement is detected during this time, the detector is not switched on immediately. The pause time is first extended by 7 seconds. If there is still movement after these 7 seconds, the detector switches back on.

If no movement is detected during the pause time, the detector is ready for activation again after the pause time.

This behaviour can, for example, be important when the lamp cools down drastically and is located within the detection range of the detector. Without a blockage there would be an unintentional switch-on. The purpose of pause time is to prevent an immediate re-activation. Example: The person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.



Note

The “external push-button” object is activated under the "External push-button" parameter.

The “actuator status object” is activated under the “status display” parameter.

10.4.28 Extended parameters — Use of status of control object

Options:	No
	Yes

- No: There is no separate “status of control” object.
- Yes: A 1-bit “status of control” communication object (output) is being enabled. This object sends a 1 telegram when the constant light switch functions automatically. The object sends a 0 telegram when manual action takes place, e.g. if a manual switch-off has taken place.

10.4.29 Extended parameters — Overwriting settings during a download

Options:	Yes
	No

- Yes: When the application is reloaded into the detector, the values changed through the bus are overwritten with the parameterized values in the ETS application.
- No: When the application is reloaded into the detector, the values changed through the bus are not overwritten with the parameterized values in the ETS application.

Values:

- Setpoint
- Switch-off delay
- Determined brightness of the luminous rows/lamps
- Brightness correcting factors

10.4.30 Sensor selection — Use of sensors 1 - 4

Options:	Yes
	No

- Yes: This sensor is active and detects movement.
- No: This sensor is switched off and movement is no longer detected in this area.

10.4.31 Sensitivity of sensor 1/2 and/or 3/4

Options:	Maximum
	High
	Medium
	Low
	Off

- Maximum: To be used when there are no interfering heat sources within the detection range.
- High: Standard - intended for indoor use.
- Medium: To be used when there are small interfering heat sources within the detection range.
- Low: To be used when there are large interfering heat sources within the detection range.
- Off: The sensor group is deactivated.

10.4.32 Enable — Use of presence detector enable object

Options:	No Yes
----------	-----------

- No: There is no object with which the constant light switch can be blocked or enabled.
- Yes: A 1-bit “enable presence” communication object (input) is being enabled. This object allows the constant light switch to be enabled or blocked. No telegrams are sent by the detector during blockage.

10.4.33 Enable — Enable with

Options:	ON telegram OFF telegram
----------	-----------------------------

- On telegram: With the receipt of value 1 on the “enable movement” (input) object, the detector is enabled and blocked with value 0.
- Off telegram: With the receipt of value 0 on the “enable movement” (input) object, the detector is enabled and blocked with value 1.

10.4.34 Enable — After bus voltage recovery the device is

Options:	Enabled Blocked
----------	--------------------

- Enabled: The device is enabled and functions normally when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.
- Blocked: The device is blocked and must be enabled for normal function when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.

10.4.35 Enable — Behaviour of output during enable

Options:

Control starts at current output value
Control starts at switch-off value

- Control starts with the current output value: during enable it is checked whether a movement has taken place. If yes, the lighting is switched on. If no, the lighting is switched off.
- Control starts with switch-off value: during enable the single value which has been parameterized under the value for switch-off parameter is sent.

10.4.36 Enable — Output sends at blockage

Options:

No telegram
OFF after expiration of the light-on time
Single value for switching off
Single value for switching on

- No telegram: No telegram is sent during blockage.
- Off after expiry of switch-off delay: During blockage the switch-off delay is started anew, and the detector sends the value that is parameterized under the “value for switch-off” parameter only after this time has expired.
- Single value for switch-off: During enable the single value which has been parameterized under the “value for switch-off” parameter is sent.
- Single value for switch-on: During blocking, the single value which has been parameterized under the “value for switch-on” parameter was sent.

10.5 "Constant light controller" application

10.5.1 General parameters — Output is of type

Options:	1 byte 0 - 100%
	1 byte 0 - 255

- 1 Byte 0 - 100%: For activating dimmers.
- 1 Byte 0 - 255: For actuators, which are activated with a value of between 0 and 255.



Note

If the type of output is changed, also the options for setting the parameters change:

- Bottom limit output 1
- Upper limit output 1
- Control starts at
- Value for switch-off

In this manual only values for the 1-byte 0 - 100% setting are described.

10.5.2 General parameters — Bottom limit output 1 (%)

Options:	0 .. 100
----------	----------

- Here the bottom control limit is specified and up to which minimum value a dimmer is controlled.

10.5.3 General parameters — Upper limit output 1 (%)

Options:	0 .. 100
----------	----------

- Here the upper control limit is specified and up to which maximum value a dimmer is controlled.

10.5.4 General parameters — Control starts at (%)

Options:	1 .. 50 .. 100
----------	----------------

- Here the value is specified at which the control starts, and the lighting is switched on.

10.5.5 General parameters — Control speed (mm:ss)

Options:	02:30 .. 10:00 .. 20:00
----------	-------------------------

- Here the time is specified which the control requires to get from 0 to the upper limit output value. Example: If the control speed is on 10:00 and the lighting is switched on with 50% and the upper limit is 100%, the control requires 5 minutes to get from 50% to 100%. Vice versa, the control requires 10 minutes to regulate from 100% to 0%.

10.5.6 General parameters — Setpoint brightness (lux)

Options:	1 .. 400 .. 1000
----------	------------------

- Here the desired brightness of the room is to be set. Below this threshold - hysteresis the presence detector starts the control and starts to adjust the light until the setpoint has been reached again. The presence detector will not switch off but regulate against the bottom control limit. A switch-off takes place only when the limit = 0 or the switch-off delay has expired.



Note

For a well-functioning constant light controller it is absolutely essential to calibrate the brightness sensors. The calibration is carried out via the brightness detection parameter. Here it is to be noted that the presence detector does not measure the brightness of the luxmeter on the working area (table), but the reflected brightness, which can, depending on the reflecting area, can be lower.

Procedure:

- Switch of the artificial light/"shield out" the daylight
- Send the value measured with the luxmeter through the object
- Similar procedure for daylight

Example:

The brightness at the top of the desk is to be 500 lux. The presence detector, however, measures the required brightness at the position it is mounted(e.g. on the ceiling it only measures 20 lux). This means that there is a difference between the brightness of light at the desk and the ceiling. If the object is now used for brightness adjustment, one can (after calibration of the brightness sensor) enter 500 lux here.

10.5.7 General parameters — Hysteresis (%)

Options:	10 .. 12 .. 100
----------	-----------------

- Switching threshold = setpoint \pm hysteresis

The hysteresis prevents excessive switching when the current ambient brightness is close to the brightness threshold.

10.5.8 General parameters — Switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:05:00 .. 18:12:15
----------	----------------------------------

- The switch-off delay is the time period between the last movement detected and the sending of the telegram "Value for switch-off". If movement is detected again within this period, the switch-off delay is reset to the setpoint.

10.5.9 General parameters — Value for switch-off (%)

Options:	0 .. 100
----------	----------

- If movement is now no longer detected and the switch-off delay has expired, the value is sent via the bus.

10.5.10 General parameters — Sensitivity

Options:	High Medium Low Maximum
----------	----------------------------------

- High: Standard - intended for indoor use.
- Medium: To be used when there are small interfering heat sources within the detection range.
- Low: To be used when there are large interfering heat sources within the detection range.
- Maximum: To be used when there are no interfering heat sources within the detection range.



Note

The transmission range can NOT be changed via the sensitivity.
The sensitivity refers to sensors 1, 2, 3, 4.

10.5.11 General parameters — Fade in extended parameters

Options:	No Yes
----------	-----------

- No: Only the most important parameters for setting the presence detector are displayed.
- Yes: All parameters are displayed, also those that are not required in most cases.

Examples:

- Extended parameters
- Sensor selection
- Enable

10.5.12 Extended parameters — Operating mode

Options:	Automatic mode Automatic switch-off Light controller (independent of movement)
----------	--

- Automatic = automatic switch-on and switch-off.
In the "Automatic" mode, the presence detector switches on automatically when detecting a movement. The switch-off is effected after the set switch-off delay beginning from the most recent detection.
- Automatic switch-off = manual switch-on and automatic switch-off.
In "Automatic switch-off" mode, the presence detector must be switched on manually using the "automatic/manual" object. The switch-off is effected automatically under consideration of the switch-off delay.
- Light controller (independent of movement) = control dependent on brightness.
In the "Light controller" mode, the presence detector switches on and off only on the basis of brightness \pm hysteresis. Activation / deactivation through the „automatic/manual off“ object.

10.5.13 Extended parameters — Use of a two-stage switch-off

Options:	No Yes
----------	-----------

- No: The detector has a switch-off delay and, following the switch-off delay, transmits what has been set under the "Value for switch-off" parameter.
- Yes: After the switch-off delay the detector first switches to the set reduced brightness and only then sends the value set under the "Value for switch-off" parameter after brightness reduced according to switch-off delay.

Example: Switch-off delay = 5 minutes

- Value for switch-off = 0%
- Value for reduced brightness = 20%
- Brightness reduced according to switch-off delay = 3 minutes

If movement is now no longer detected, the light is dimmed to 20% after 5 minutes and then to 0% after a further 3 minutes (switch-off).

10.5.14 Extended parameters — Value for reduced brightness (%)

Options:	0 .. 20 .. 100 Yes
----------	-----------------------

Here the value for the reduced brightness is set. After the switch-off delay has expired the detector is to dim the light to this value.

Switch-off value \leq bottom control limit \leq reduced brightness $<$ upper control or dimming limit.

10.5.15 Extended parameters — Brightness reduced according to switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:05:00 .. 18:12:15
----------	----------------------------------

- Here the value for the switch-off delay of the reduced brightness is set. The total switch-off delay then consists of the switch-off delay + brightness reduced according to switch-off delay.

Used movement detection

Options:	Internal only External only Internal and external
----------	---

- Only internal: The presence detector responds only to movement measured internally.
- Only external: The presence detector responds only to telegrams that are received via the “slave” object (input).
- Internal and external: The presence detector responds to movements measured internally and to external telegrams that are received via the “slave” object (input).

10.5.16 Extended parameters — Slave sent

Options:	Cyclic On telegram On/off telegram
----------	---------------------------------------

- Cyclic On telegram: The presence detector, which is connected to the master as slave, sends only On telegrams cyclically.
- On/Off telegram: The presence detector, which is connected to the master as slave, sends only On/Off telegrams.

10.5.17 Extended parameters — Used brightness

Options:	Internal External
----------	----------------------

- Internal: The presence detector uses its own measured brightness and brightness-value threshold to decide whether the presence detector is to be activated or deactivated.
- External: A 2-byte “external brightness” (input) communication object is enabled. The presence detector uses this external measured brightness and the “brightness-value threshold” (lux) parameter to decide whether the presence detector is to be activated or deactivated.

10.5.18 Extended parameters — Dimming step size brighter (1 to 15)

Options:	1 .. 2 .. 15
----------	--------------

- Here the step size for increasing the dimming value during dimming brighter is specified. The step size is relative to the value range of 1 - 255.

10.5.19 Extended parameters — Dimming step size darker (1 to 15)

Options:	1 .. 2 .. 15
----------	--------------

- Here the step size for reducing the dimming value during dimming darker is specified.



Note

If the dimming step size is set too high, the dimming steps will be clearly visible in the lighting.

10.5.20 Extended parameters — Use of output 2

Options:	No Yes
----------	-----------

- No: There is only output 1, which sends its telegrams to an actuator.
- Yes: An “output 2” communication object (output) is being enabled. The constant light controller now regulates the brightness with two outputs (while the second output is used proportional to the first out) in dependence of brightness. If the measured brightness is less than the setpoint, the value of the first output is increased up to the upper limit of output 1. During this control phase the second output is controlled proportional. If the setpoint still has not been reached, the value of the second output is increased up to the upper limit of output 2.

If the measured brightness is higher than the setpoint, the value of the second output is reduced first up the upper limit of “output 1 x proportional factor”. If the setpoint still has not been reached, output 1 is lowered up to reaching the lower limit of output 1. During this control phase the second output is controlled proportional. The bottom value of the second output is limited by the lower limit output 2 parameter. When appropriately parameterized the constant light controller can also switch off the associated dimming actuator.

10.5.21 Extended parameters — Bottom limit output 2 (%)

Options:	0 .. 100
----------	----------

- Here the bottom control limit is specified and up to which minimum value a dimmer is controlled.

10.5.22 Extended parameters — Upper limit output 2 (%)

Options:	0 .. 100
----------	----------

- Here the upper control limit is specified and up to which maximum value a dimmer is controlled.

10.5.23 Extended parameters — Proportionality factor output 2 to output 1 (%)

Options:	0 .. 100
----------	----------

- Here it is specified how output 2 behaves proportional in comparison to output 1, i.e., what percentage output 2 has in relation to output 1.

For example:

If a factor of 80% is set here, output 2 will always be 20% behind output 1 or when output 1 is dimmed to 30%, output 2 will be dimmed to 24%. Only when output 1 is on its maximum value and the setpoint has not been reached, output 2 will leave this factor and dim higher until output 2 has also reached its maximum value.

10.5.24 Extended parameters — Use of object for switch-off delay

Options:	No Yes
----------	-----------

- No: The only option available is to change the switch-off delay via the “switch-off delay” parameter setting.
- Yes: There is a separate 2-byte “switch-off delay” object (input) for changing the switch-off delay of the presence detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds. This applies to switch-off delay and reduced switch-off delay.



Note

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> value = 10
- Value > 65535 -> value = 65535

10.5.25 Extended parameters — Use of object for setpoint brightness

Options:	No
	Yes

- No: There is no separate “brightness” object.
- Yes: A 2-byte “brightness setpoint” (input/output) object is being enabled. This can be used to change the switching threshold, while the presence detector is activated or deactivated. The value is sent to this object in lux.



Note

The value which can be sent lie between 1 and 1000 lux. If a value is sent that is too small or too large, this value is adjusted to the limit value automatically:

- Value < 1 -> value = 1
- Value > 1000 -> value = 1000

10.5.26 Extended parameters — Use of object for saving setpoint brightness

Options:	No
	Yes

- No: There is no separate “save setpoint brightness” object.
- Yes: A 1-bit “save setpoint brightness” (input) communication object is being enabled. This can be used to save the current measured brightness with a 1 telegram as new control threshold.

10.5.27 Extended parameters — Use of actual brightness object

Options:	No
	Yes

- No: There is no separate “actual brightness” object.
- Yes: A 2-byte “actual brightness” (output) communication object is being enabled. This object outputs the corrected measured brightness which is used by the constant light controller.

10.5.28 Extended parameters — Cyclic sending of actual brightness

Options:	No
	Yes

- No: The actual brightness is only made available for reading. The value is not sent automatically.
- Yes: The actual brightness is sent each time to the "Actual brightness is sent every (hh:mm:ss)" parameter. The value can also be read.

10.5.29 Extended parameters — Sending of actual brightness every (hh:mm:ss)

Options:	00:00:05 .. 00:05:00 .. 00:30:00
----------	----------------------------------

- Here the time which lies between the sending of two telegrams is set.

10.5.30 Extended parameters — Use of brightness calibration object

Options:	No Yes
----------	-----------

- No: There is no separate "brightness calibration" object.
- Yes: A 1-byte "brightness calibration" communication object (input/output) is being enabled. If a 1 telegram is sent to this object, the calibration of artificial light starts. This means that the constant light controller sends the maximum value to output 1 and 2 and then the light is measured slightly each time to record the measured values for a reference table.

10.5.31 Extended parameters — Control speed adjustment through blind inputs

Options:	No Yes
----------	-----------

- No: There are no separate settings for adjusting the control speed when a venetian blind control unit is available.
- Yes: There are separate settings: control parameters for the movement of blinds. If a blind now moves up or down, the control speed is adjusted by the constant light controller during the travel time.

10.5.32 Extended parameters — Total movement time of blind / roller blind (hh:mm:ss)

Options:	00:00:01 .. 00:03:00 .. 01:40:00
----------	----------------------------------

- Here the time is specified how long it takes until the shading has been carried out completely (blind/roller blind closed).

10.5.33 Extended parameters — Dimming step size brighter (1 to 15)

Options:	1 .. 15
----------	---------

- Here the step size for increasing the dimming value during blind movement is specified.



Note

If the dimming step size is set too high, the dimming steps will be clearly visible in the lighting.

10.5.34 Extended parameters — Dimming step size darker (1 to 15)

Options: 1 .. 4 .. 15

- Here the step size for reducing the dimming value during blind movement is specified.



Note

If the dimming step size is set too high, the dimming steps will be clearly visible in the lighting.

10.5.35 Extended parameters — Control speed (mm:ss)

Options: 00:45 .. 02:30 .. 20:00

- Here the time is specified which the control requires to get from 0 to the upper limit output value. Example: If the control speed is on 10:00 and the lighting is switched on with 50% and the upper limit is 100%, the control requires 5 minutes to get from 50% to 100%. Vice versa, the control requires 10 minutes to regulate from 100% to 0%.

10.5.36 Extended parameters — Actual brightness filter

Options: quick, approx. 15s
normal, approx. 40s
slow, approx. 75s

- The application reacts to brightness fluctuations (e.g. clouds). The more inactive the filter is set, the slower the lighting will respond to such fluctuations.

10.5.37 Extended parameters — Exiting manual off dimming mode after (hh:mm)

Options: 00:05 .. 01:00 .. 12:00

- When the presence detector receives a value via the “relative dimming” (dimmer) object or a value > 0 via the “value” (dimmer) object, the presence detector will no longer function automatically. The presence detector is switched back to automatic mode only after the movement detected last and the expiry of the set time.

10.5.38 Extended parameters — Exiting manual off mode after (hh:mm)

Options: 00:05 .. 01:00 .. 12:00

- When the presence detector receives a switch-off value through the “automatic/manual off” object or a value = 0 through the “value” (dimmer) object, the presence detector is switched off and will no longer switch on automatically. The presence detector will function again automatically only after the receipt of value 1 on the “automatic/manual off” object or after the movement detected last and the expiry of the set time.

10.5.39 Extended parameters — Pause time (ss.fff)

Options:	00.100 .. 01,250 .. 59,999
----------	----------------------------

- The set pause time is started after the detector has been switched off due to expiry of the switch-off delay or when a switch-off telegram is received on objects "external push-button" or "actuator status".

If movement is detected during this time, the detector is not switched on immediately. The pause time is first extended by 7 seconds. If there is still movement after these 7 seconds, the detector switches back on.

If no movement is detected during the pause time, the detector is ready for activation again after the pause time.

This behaviour can, for example, be important when the lamp cools down drastically and is located within the detection range of the detector. Without a blockage there would be an unintentional switch-on. The purpose of pause time is to prevent an immediate re-activation. Example: The person switches the light off manually when leaving the room. Without the pause time the detected movement would cause a renewed switch-on during exiting.



Note

The "external push-button" object is activated under the "External push-button" parameter.

The "actuator status" object is activated under the status "display parameter".

10.5.40 Extended parameters — Use of status of control object

Options:	No Yes
----------	-----------

- No: There is no separate "status of control" object.
- Yes: A 1-bit "status of control" communication object (output) is being enabled. This object sends a 1 telegram when the constant light controller functions automatically. The object sends a 0 telegram when manual action takes place, e.g. if a manual switch-off has taken place.

10.5.41 Extended parameters — Overwriting settings during a download

Options:	Yes No
----------	-----------

- Yes: When the application is reloaded into the detector, the values changed via the bus are overwritten with the parameterized values of the ETS application.
- No: When the application is reloaded into the detector, the values changed via the bus are not overwritten with the parameterized values of the ETS application.

Values:

- Setpoint
- Switch-off delays
- Brightness correcting values

10.5.42 Sensor selection — Use of sensors 1 - 4

Options:	Yes No
----------	-----------

- Yes: This sensor is active and detects movement.
- No: This sensor is switched off and movement is no longer detected in this area.

10.5.43 Enable — Presence detector enable object

Options:	No Yes
----------	-----------

- No: There is no object with which the constant light controller can be blocked or enabled.
- Yes: A 1-bit “enable presence” communication object (input) is being enabled. This object allows the constant light controller to be enabled or blocked. No telegrams are sent by the detector during blockage.

10.5.44 Enable — Enable with

Options:	ON telegram OFF telegram
----------	-----------------------------

- On telegram: With the receipt of value 1 on the enable movement (input) object, the detector is enabled and blocked with value 0.
- Off telegram: With the receipt of value 0 on the enable movement (input) object, the detector is enabled and blocked with value 1.

10.5.45 Enable — After bus voltage recovery, presence detector is

Options:	Enabled Blocked
----------	--------------------

- Enabled: The device is enabled and functions normally when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.
- Blocked: The device is blocked and must be enabled for normal function when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.

10.5.46 Enable — At enable, output sends

Options:	Current output value
	Start value

- Current output value: During enable it is checked whether a movement has taken place. If yes, the lighting is switched on. If no, the lighting is switched off.
- Start value: During enable it is checked whether a movement has taken place. If yes, a switch-on takes place with a start value. If no, 0% is sent and not the parameterized start value.

10.5.47 Enable — Output sends at blockage

Options:	No telegram
	OFF after expiration of the light-on time
	Single value for switching off

- No telegram: No telegram is sent during blockage.
- Off after expiry of switch-off delay: During blockage the switch-off delay is started anew, and the detector sends the value that is parameterized under the “value for switch-off” parameter only after this time has expired.
- Single value for switch-off: During enable the single value which has been parameterized under the “value for switch-off” parameter is sent.

10.6 Application "HVAC" (Heating, ventilation, air-conditioning)

10.6.1 General parameters — Output is of type

Options:	1 bit 1 byte 0 - 100% 1 byte 0 - 255 Light scene number (1-64) RTC operating mode switchover (1 byte) 2-byte float
----------	---

- 1 Bit: Intended for switch actuators.
 - 1 Byte 0 - 100%: For activating dimmers.
 - 1 Byte 0 - 255: For actuators, which are activated with a value of between 0 and 255.
 - Light scene number (1-64): For activating light scenes.
 - RTC operating mode switchover (1 Byte): To directly switch room temperature controllers into a specific operating mode:
 - Auto
 - Comfort
 - Standby
 - ECO
- Frost/heat protection
- 2-byte float: To send a specific temperature for example.



Note

If the type of output is changed, also the options for setting the parameters change:

- Value for switch-on
- Value for switch-off
- Value for force-position

In this manual only values for setting the RTC operating mode switchover (1-byte) are described.

10.6.2 General parameters — Use of slave input

Options:	No Yes
----------	-----------

- No: The option of receiving telegrams from a slave is not available.
- Yes: A 1-bit “slave” communication object (input) is being enabled. Via this input the master detector receives the (On) telegrams of the connected slaves or of a push-button.

10.6.3 General parameters — Slave sends

Options:	Cyclic On telegram On/off telegram
----------	---------------------------------------

- Cyclic On telegram: The presence detector, which is connected to the master as slave, sends only on telegrams cyclically.
- On/Off telegram: The presence detector, which is connected to the master as slave, sends only on/off telegrams.

10.6.4 General parameters — Value for switch-on

Options:	Auto Comfort Standby ECO Frost/heat protection
----------	--

- Auto: When movement is detected, value 0 (auto) is sent superimposed via the “HVAC” object on the bus to the “operating mode” object, to reset the RTC into automatic mode.
- Comfort: When movement is detected, value 1 (comfort) is sent via the “HVAC” object on the bus.
- Standby: When movement is detected, value 2 (standby) is sent via the “HVAC” object on the bus.
- ECO: When movement is detected, value 3 (ECO) is sent via the “HVAC” object on the bus.
- Frost/heat protection: When movement is detected, value 3 (ECO) is sent via the “HVAC” object on the bus.

10.6.5 General parameters — Value for switch-off

Options:	Auto Comfort Standby ECO Frost/heat protection
----------	--

- Auto: When movement is no longer detected and the switch-off delay has expired, value 0 (auto) is sent superimposed via the "HVAC" object on the bus to the "operating mode" object, to reset the RTC into automatic mode.
- Comfort: When movement is no longer detected, and the switch-off delay has expired, value 1 (comfort) is sent through the "HVAC" object to the bus.
- Standby: When movement is no longer detected, and the switch-off delay has expired, value 2 (standby) is sent through the "HVAC" object to the bus.
- ECO: When movement is no longer detected, and the switch-off delay has expired, value 3 (ECO) is sent through the "HVAC" object to the bus.
- Frost/heat protection: When movement is no longer detected, and the switch-off delay has expired, value 3 (ECO) is sent through the "HVAC" object to the bus.

10.6.6 General parameters — Switch-on delay time (hh:mm:ss)

Options:	00:00:10 .. 00:03:00 .. 18:12:15
----------	----------------------------------

- The switch-on delay time is a waiting period before the presence detector sends something on the bus. In the standard setting the time is reset if movement is no longer detected during this period. In fan mode (which can be set via the extended parameters) the time is not reset and the "HVAC" object will always switch on.

10.6.7 General parameters — Switch-off delay (hh:mm:ss)

Options:	00:00:10 .. 00:03:00 .. 18:12:15
----------	----------------------------------

- The switch-off delay is the time period between the last movement detected and the sending of the telegram "Value for switch-off". If movement is detected again within this period, the switch-off delay timer is started again.

10.6.8 General parameters — Sensitivity

Options:	High Medium Low Maximum
----------	----------------------------------

- High: Standard - intended for indoor use.
- Medium: To be used when there are small interfering heat sources within the detection range.
- Low: To be used when there are large interfering heat sources within the detection range.
- Maximum: To be used when there are no interfering heat sources within the detection range.



Note

The transmission range can NOT be changed via the sensitivity.
The sensitivity refers to sensors 1, 2, 3, 4.

10.6.9 General parameters — Fade in extended parameters

Options:	No Yes
----------	-----------

- No: Only the most important parameters for setting the detector are displayed.
- Yes: All parameters are displayed, also those that are not required in most cases.

Examples:

- Extended parameters
- Sensor selection
- Enable

10.6.10 Extended parameters — Operating mode

Options:	Heating/air-conditioning Ventilation
----------	---

- Heating/air-conditioning: The switch-on delay time starts with a movement. If movement is no longer detected during the switch-on delay time, the switch-on delay time is reset. If movement continues and the switch-on delay time has expired, the output is activated with the programmed switch-on value. As soon as movement is no longer detected, the switch-off delay starts. The switch-off delay is triggered by each movement within the detection range. After the switch-off delay has expired the output is activated with the programmed switch-off value.
- Ventilation: A movement in the detection range starts the switch-on delay time. After the switch-on delay time has expired the output is activated with the programmed switch-on value. As soon as movement is no longer detected, the switch-off delay starts. The switch-off delay is triggered by each movement within the detection range. After the switch-off delay has expired the output is activated with the programmed switch-off value.

10.6.11 Extended parameters — Switch-on sensitivity

Options:	High Medium Minimal
----------	---------------------------

- High: During the switch-on delay time the presence detector checks whether there is still movement in the room. With setting "High," this test interval is very high.
- Medium: During the switch-on delay time the presence detector checks whether there is still movement in the room. With setting "Medium," this test interval is high.
- Minimal: During the switch-on delay time the presence detector checks whether there is still movement in the room. With setting "Minimal," this test interval is not high.

10.6.12 Extended parameters — Object for switch-on delay time

Options:	No Yes
----------	-----------

- No: There is only the option of changing the switch-on delay time via the "switch-on delay time" parameter.
- Yes: There is a separate 2-byte "switch-on delay time" (input) object for changing the delay time of the presence detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.



Note

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> value = 10
- Value > 65535 -> value = 65535

10.6.13 Extended parameters — Use of object for switch-off delay

Options:	No
	Yes

- No: The only option available is to change the switch-off delay via the switch-off delay parameter setting.
- Yes: There is a separate 2-byte “switch-off delay” object (input) for changing the switch-off delay of the detector. The time entered is in seconds. A switch-off delay of 4 minutes, for example, has a value of 240 seconds.



Note

The values which can be sent are between 10 and 65535 seconds. If a value that is too small or too large is sent, the value is automatically adjusted to the limit value:

- Value < 10 -> value = 10
- Value > 65535 -> value = 65535

10.6.14 Extended parameters — Use of object for force-position

Options:	No
	Yes

- No: There is no separate “force-position” object.
- Yes: There is a separate 1-bit “force-position” object (input). When an On telegram is received via the object, the presence detector is blocked and the value under force-position is sent through the “HVAC” object. If an Off telegram is received through the object, the presence detector is enabled again. If a movement is then detected, the value for switch-on is sent. If no movement occurs, the value for switch-off is sent.

10.6.15 Extended parameters — Value for force-position

Options:	Auto
	Comfort
	Standby
	ECO
	Frost/heat protection

- Here it is specified what is to be sent when the “force-position” object receives an On telegram.

10.6.16 Extended parameters — Overwriting settings during a download

Options:	Yes
	No

- Yes: When the application is reloaded into the detector, the values changed via the bus are overwritten with the parameterized values of the ETS application.
- No: When the application is reloaded into the detector, the values changed via the bus are not overwritten with the parameterized values of the ETS application.

Values:

- Switch-on delay
- Switch-off delay

10.6.17 Sensor selection — Use of sensors 1 - 4

Options:	Yes
	No

- Yes: This sensor is active and detects movement.
- No: This sensor is switched off and movement is no longer detected in this area.

10.6.18 Enable — Use of enable object

Options:	No
	Yes

- No: There is no object with which the HVAC control can be blocked or enabled.
- Yes: A 1-bit “enable heating, ventilation and air-conditioning communication” object (input) is being enabled. This object allows the HVAC control to be enabled or blocked. No telegrams are sent by the detector during blockage.

10.6.19 Enable — Enable with

Options:	ON telegram
	OFF telegram

- On telegram: With the receipt of value 1 on the “enable movement” (input) object, the detector is enabled and blocked with value 0.
- Off telegram: With the receipt of value 0 on the “enable movement” (input) object, the detector is enabled and blocked with value 1.

10.6.20 Enable — After bus voltage recovery the device is

Options:	Enabled Blocked
----------	--------------------

- Enabled: The device is enabled and functions normally when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.
- Blocked: The device is blocked and must be enabled for normal function when the bus voltage is interrupted, or the device has been reprogrammed, as well as after a reset.

10.6.21 Enable — Output sends at enable

Options:	No telegram Current status Single value for switching on Single value for switching off
----------	--

- No telegram: No telegram is sent during enable.
- Current status: During enable the detector checks whether a movement exists. If yes, the single value for switch-on is sent. Otherwise the single value for switch-off is sent.
- Single value for switch-on: During enable the single value which has been parameterized under the “value for switch-on parameter” is sent.
- Single value for switch-off: During enable the single value which has been parameterized under the “value for switch-off parameter” is sent.

10.6.22 Enable — Output sends at blockage

Options:	No telegram OFF after expiration of the light-on time Single value for switching off
----------	--

- No telegram: No telegram is sent during blockage.
- Off after expiry of switch-off delay: During blockage the switch-off delay is started anew, and the detector sends the value that is parameterized under the “value for switch-off” parameter only after this time has expired.
- Single value for switch-off: During blockage the single value which is parameterized under the “value for switch-off” parameter is sent.

10.7 "Brightness detection" application

10.7.1 General parameters — Sending of brightness every (hh:mm:ss)

Options:	00:00:05 .. 00:00:30 .. 18:12:15
----------	----------------------------------

- Here it is specified how often the brightness is sent on the bus.

10.7.2 General parameters — Use of object for LED

Options:	No Yes
----------	-----------

- No: There is no separate "LED" object.
- Yes: There is a separate 1-bit "LED" object (input) for the option of switching on the LED via an On telegram and to switch it off with an Off telegram.



Note

Only the LED has been switched. This does NOT place the device into programming mode.

10.7.3 General parameters — Correction of internal brightness

Options:	No with daylight adjustment with daylight and artificial light adjustment (1 output) with daylight and artificial light adjustment (2 outputs)
----------	---

- No: It is not necessary to calibrate the internal brightness sensor.
- With daylight adjustment: This adjustment is used mainly for the detector application.
- With daylight and artificial light adjustment (1 output): This adjustment is used for the constant light switch and constant light controller and only for one light row. It starts with the daylight adjustment, and only if the control then does not function optimally can the artificial light adjustment be carried out.
- With daylight and artificial light adjustment (2 outputs): This adjustment is used for the constant light switch and constant light controller and for two light rows. It starts with the daylight adjustment, and only if the control then does not function optimally can the artificial light adjustment be carried out.



Note

Information on how to perform the adaptation can be found in Chapter 7.2.6 "Instructions on the calibration of the internal light controller".

10.7.4 General parameters — Fade in extended parameters

Options:	No Yes
----------	-----------

- No: Only the most important parameters for setting the detector are displayed
- Yes: All parameters are displayed, also those that are not required in most cases.

10.7.5 Extended parameters — Use of internal brightness

Options:	Yes No
----------	-----------

- Yes: The internal brightness sensor is used as encoder for the different detector applications.
- No: The internal brightness sensor is not used. The brightness values must then be sent from the external brightness sensors.

10.7.6 Extended parameters — Number of external brightness measurement objects

Options:	0 1 2
----------	-------------

- 0: There are no separate 2-byte “external brightness 1 and 2” (input) objects to link the external brightness sensors with the presence detector.
- 1: There is a separate “external brightness 1” (input) object with which the internal brightness sensor is not used. The brightness values must then be sent from the external brightness sensors.
- 2: There is a separate “external brightness 2” (input) object with which the internal brightness sensor is not used. The brightness values must then be sent from the external brightness sensors.

10.8 Application "RTC object"

10.8.1 General — Device function

Options:	Single device
	Master device
	Slave device

- Single device: The device is used singly in a room as room temperature controller.
- Master device: At least two room temperature controllers are located in one room. One device must be set up as a master device, while the others must be programmed as slave devices / temperature sensors. The master device must be linked to the slave devices using the appropriately labelled communication objects. The master device regulates the temperature.
- Slave device/temperature sensor: At least two room temperature controllers are located in one room. One device must be set up as a master device, while the others must be programmed as slave devices / temperature sensors. The slave devices must be linked to the master device with the appropriately labelled communication objects. The slave device operates the room thermostat functions of the master.

10.8.2 General — Control function

Options:	Heat
	Heating with additional stage
	Cool
	Cooling with additional stage
	Heating and cooling
	Heating and cooling with additional stage

- Heating: For operating a heat-based automatic single-room control. The temperature is regulated to the setpoint value defined in the parameter. The "Controller type" and "Heating type" can be programmed for optimal control.
- Heating with additional stage: In addition to the control function described under heating, the additional stage enables the activation of an additional heating circuit. This type of additional stage is used, for example, to quickly heat up a bathroom with floor heating via a heated towel rack.
- Cooling: For operating a cooling-based automatic single-room control. The temperature is regulated to the setpoint value defined in the parameter. The "Controller type" and "Cooling type" can be programmed for optimal control.
- Cooling with additional stage: In addition to the control function described under cooling, the additional stage enables the activation of an additional cooling device. This type of additional stage is used, for example, to quickly cool a room via an added cooling device.
- Heating and cooling: For operating a two-wire or four-wire system used to heat or cool a room. Switching between heating and cooling takes place using a central switch (two-wire system) or is carried out manually and / or automatically via the single room temperature controller (four-wire system).
- Heating and cooling with an additional stage: In addition to the heating and cooling functions, one additional stage each with an autonomous controller type can be programmed.



Note

This parameter is only available if the "Device function" parameter is set on "Single device" or "Master device".

10.8.3 General — Operating mode after reset

Options:	Comfort Standby Eco mode Cooling with additional stage Frost/heat protection
----------	--

After a reset the device will run in the operating mode after a restart until a new operating mode is set as the result of device operation or by communication objects, as the case may be. This operating mode should be defined during the planning phase. An improperly defined operating mode can result in a loss of comfort or increased energy consumption.

- Comfort: If the room temperature is not automatically lowered and the room is therefore controlled independent of its use.
- Standby: If the room is controlled automatically, e.g. by a presence detector, as a function of its use.
- Eco mode: If the room is controlled automatically or manually as a function of its use.
- Frost/heat protection: If only the building protection function is necessary in the room after a reset.



Note

This parameter is only available if the "Device function" parameter is set on "Single device" or "Master device".

10.8.4 General — Additional functions

Options:	No Yes
----------	-----------

- This parameter enables additional functions and communication objects, e.g. window contact and presence detector.

10.8.5 General — Send cyclic "In operation" (min)

Options:	Setting option between 5 - 3000 minutes
----------	---

- The "In operation" communication object serves to inform that the controller still operates. Value "1" is sent cyclic. This parameter is used to set the cycle for sending. If the cyclic telegram fails, the function of the device is faulty, and the air-conditioning of the room can be maintained with a forced operation. However, for this the system and/or actuator must have "Forced operation" function.



Note

This parameter is only available if the "Additional function" parameter is set to "Yes".

10.8.6 Heating control



Note

Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating," "Heating with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.7 Heating control – Control value type

Options:	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil
----------	--

The actuation of the control valve is determined by the selection of the controller type.

- 2-Point 1 Bit, Off/On: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
- 2-Point 1 Byte, 0/100%: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmitted as 1-byte values (0% / 100%).
- PI continuous, 0-100%: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmitted cyclically.
- PI PWM, On/Off: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is converted into a pulse-interval signal.
- Fan coil: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 - 3).

10.8.8 Heating control – Heating type

Options:	PI continuous, 0 – 100% and PI PWM, On/Off: <ul style="list-style-type: none"> – Area (e.g. floor heating) 4°C 200 min – Convactor (e.g. heater) 1.5°C 100 min – Free configuration Fan coil: <ul style="list-style-type: none"> – Fan coil 4°C 90min – Free configuration
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Multiple heating types (panel heating, convactor heating or fan coil) with preset parameters are available to the user.

If the required heating type is not available, individual parameters can be specified in free configuration.

**Note**

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.9 Heating control — P-component (x 0.1°C)

Options:

Setting option between 10 - 100

The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.

**Note**

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Heating type" parameter must be set on "Free configuration".

10.8.10 Heating control — I-component (min.)

Options:

Setting option between 0 - 255

The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.

**Note**

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Heating type" parameter must be set on "Free configuration".

10.8.11 Heating control — Extended settings

Options:

No

Yes

- This parameter enables additional functions and communication objects, e.g. "Basic stage heating".

10.8.12 Basic stage heating

**Note**

Only available when the "Extended settings" parameter under "Heating control" is set on "Yes".

10.8.13 Basic stage heating — Status object heating

Options:

No

Yes

- This parameter enables the "Status heating" communication object.

10.8.14 Basic stage heating — Mode of the control value

Options:

Normal

Inverse

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

- Normal: Value 0 means "Valve closed".
- Inverse: Value 0 means "Valve open".

10.8.15 Basic stage heating — Hysteresis (x 0.1°C)

Options:

Setting option between 3 - 255

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".

**Note**

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

10.8.16 Basic stage heating — Control value difference for sending of heating control value

Options:	2%
	5%
	10%
	Send cyclic only

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmitted when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be entered here.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off," or "Fan coil".

10.8.17 Basic stage heating — Cyclic sending of the control value (min)

Options:	Setting option between 1 - 60 minutes
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The current control value used by the device can be cyclically transmitted to the bus.



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On," "2-point 1 Byte, 0/100%," "PI continuous, 0-100%" or "Fan coil".

10.8.18 Basic stage heating — PWM cycle heating (min)

Options:	Setting option between 1 - 60 minutes
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In PI PWM, On/off the control value percentage values are converted into a pulse-interval signal. This means that a selected PWM cycle will be divided into an on-phase and an off-phase based on the control value. Accordingly, a control value output of 33% in a PWM cycle of 15 minutes results in an On-phase of five minutes and an Off-phase of 10 minutes. The time for a PWM cycle can be specified here.



Note

This parameter is only available when the "Control value type" parameter is set on "PI PWM, On/Off".

10.8.19 Basic stage heating — Maximum control value (0 - 255)

Options:

Setting option between 0 - 255

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.20 Basic stage heating — Minimum control value for basic load (0 to 255)

Options:

Setting option between 0 - 255

The minimum control value of the PI controller defines the minimum value issued by the controller. If a minimum value that is greater than zero is selected, the controller will not issue a lower value, even if it calculates a control value that is lower. This parameter can be used to set a basic load, e.g. for operating floor heating. Even if the controller calculates the control value zero, a heating medium will flow through the floor heating system to prevent the floor from cooling down. Under "Settings of basic load," it is also possible to define whether this basic load will be permanently active or whether it will be switched by the "Basic load" object.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.21 Control of additional heating stage



Note

Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage" or "Heating and cooling with additional stages".

10.8.22 Control of additional heating stage — Control value type

Options:	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil
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The actuation of the control valve is determined by the selection of the controller type.

- 2-Point 1 Bit, Off/On: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
- 2-Point 1 Byte, 0/100%: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmitted as 1-byte values (0% / 100%).
- PI continuous, 0-100%: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmitted cyclically.
- PI PWM, On/Off: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is converted into a pulse-interval signal.
- Fan coil: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 - 3).

10.8.23 Control of additional heating stage — Additional heating type

Options:	PI continuous, 0 – 100% and PI PWM, On/Off: <ul style="list-style-type: none"> – Area (e.g. floor heating) 4°C 200 min – Convector (e.g. heater) 1.5°C 100 min – Free configuration Fan coil <ul style="list-style-type: none"> – Fan coil 4°C 90min – Free configuration
----------	--

Multiple heating types (panel heating, convector heating or fan coil) with preset parameters are available to the user.

If the required heating type is not available, individual parameters can be specified in free configuration.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.24 Control of additional heating stage — P-component (x 0.1°C)

Options:	Setting option between 10 - 100
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The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Additional heating type" parameter must be set on "Free configuration".

10.8.25 Control of additional heating stage — P-component (min)

Options:	Setting option between 0 - 255
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The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Additional heating type" parameter must be set on "Free configuration".

10.8.26 Control of additional heating stage — Temperature difference to basic stage (x 0.1°C)

Options:

Setting option between 0 - 255

The setpoint temperature of the additional stage is defined as a function of the current setpoint temperature of the base stage and is expressed as a difference. The value represents the setpoint value starting at which the additional stage will operate.

10.8.27 Control of additional heating stage — Extended settings

Options:

No

Yes

This parameter enables additional functions and communication objects, e.g. "Additional heating stage".

10.8.28 Additional heating stage



Note

Only available when the "Extended settings" parameter under "Control of additional heating stage" is set on "Yes".

10.8.29 Additional heating stage — Mode of the control value

Options:

Normal
Inverse

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

- Normal: Value 0 means "Valve closed".
- Inverse: Value 0 means "Valve open".

10.8.30 Additional Heating Stage — Hysteresis (x 0.1°C)

Options:

Setting option between 3 - 255

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

10.8.31 Additional heating stage — Control value difference for sending of heating control value

Options:

2%
5%
10%
Send cyclic only

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmitted when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be entered here.



Note

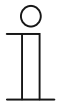
This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.32 Additional heating stage — Cyclic sending of the control value (min)

Options:

Setting option between 1 - 60 minutes

The current control value used by the device can be cyclically transmitted to the bus.



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On," "2-point 1 Byte, 0/100%," "PI continuous, 0-100%" or "Fan coil".

10.8.33 Additional heating stage — Maximum control value (0 - 255)

Options:

Setting option between 0 - 255

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.34 Additional heating stage — Minimum control value for basic load (0 - 255)

Options:

Setting option between 0 - 255

The minimum control value of the PI controller defines the minimum value issued by the controller. If a minimum value that is greater than zero is selected, the controller will not issue a lower value, even if it calculates a control value that is lower. This parameter can be used to set a basic load, e.g. for operating floor heating. Even if the controller calculates the control value zero, a heating medium will flow through the floor heating system to prevent the floor from cooling down. Under "Settings of basic load," it is also possible to define whether this basic load will be permanently active or whether it will be switched by the "Basic load" object.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.35 Cooling control



Note

Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.36 Cooling control — Control value type

Options:	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil
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The actuation of the control valve is determined by the selection of the controller type.

- 2-Point 1 Bit, Off/On: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
- 2-Point 1 Byte, 0/100%: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmitted as 1-byte values (0% / 100%).
- PI continuous, 0-100%: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmitted cyclically.
- PI PWM, On/Off: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is converted into a pulse-interval signal.
- Fan coil: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 - 3).

10.8.37 Cooling control — Cooling type

Options:	PI continuous, 0 – 100% and PI PWM, On/Off: <ul style="list-style-type: none"> – Area (e.g. cooling ceiling) 5°C 240 min – Free configuration Fan coil: <ul style="list-style-type: none"> – Fan coil 4°C 90min – Free configuration
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Two cooling types (area or fan coil) with preset parameters are available to the user.

If the required cooling type is not available, individual parameters can be specified in free configuration.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.38 Cooling control — P-component (x 0.1°C)

Options:	Setting option between 10 - 100
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The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Cooling type" parameter must be set on "Free configuration".

10.8.39 Cooling control — I-component (min.)

Options:	Setting option between 0 - 255
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The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Cooling type" parameter must be set on "Free configuration".

10.8.40 Cooling control — Extended settings

Options:	No Yes
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This parameter enables additional functions and communication objects, e.g. "Basic stage cooling".

10.8.41 Basic stage cooling



Note

Only available when the "Extended settings" parameter under "Cooling control" is set on "Yes".

10.8.42 Basic stage cooling — Status object cooling

Options:

No
Yes

This parameter enables the "Status cooling" communication object.

10.8.43 Basic stage cooling — Mode of the control value

Options:

Normal
Inverse

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

- Normal: Value 0 means "Valve closed".
- Inverse: Value 0 means "Valve open".

10.8.44 Basic stage cooling — Hysteresis (x 0.1°C)

Options:

Setting option between 3 - 255
Yes

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

10.8.45 Basic stage cooling — Control value difference for sending of cooling control value

Options:	2%
	5%
	10%
	Send cyclic only

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmitted when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be entered here.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.46 Basic stage cooling — Cyclic sending of the control value (min)

Options:	Setting option between 1 - 60 minutes
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The current control value used by the device can be cyclically transmitted to the bus.



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On," "2-point 1 Byte, 0/100%," "PI continuous, 0-100%" or "Fan coil".

10.8.47 Basic stage cooling — PWM cycle cooling (min)

Options:	Setting option between 1 - 60 minutes
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In PI PWM, On/off the control value percentage values are converted into a pulse-interval signal. This means that a selected PWM cycle will be divided into an on-phase and an off-phase based on the control value. Accordingly, a control value output of 33% in a PWM cycle of 15 minutes results in an On-phase of five minutes and an Off-phase of 10 minutes. The time for a PWM cycle can be specified here.



Note

This parameter is only available when the "Control value type" parameter is set on "PI PWM, On/Off".

10.8.48 Basic stage cooling — Maximum control value (0 - 255)

Options:

Setting option between 0 - 255

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.49 Basic stage cooling — Minimum control value for basic load (0 to 255)

Options:

Setting option between 0 - 255

The minimum control value of the PI controller defines the minimum value issued by the controller. If a minimum value that is greater than zero is selected, the controller will not issue a lower value, even if it calculates a control value that is lower. This parameter can be used to set a basic load, e.g. for operating surface cooling. Even if the controller calculates the control value zero, a cooling medium will flow through the cooling area to prevent the floor from heating up. Under "Settings of basic load," it is also possible to define whether this basic load will be permanently active or whether it will be switched by the "Basic load" object.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.50 Control of additional cooling stage



Note

Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Cooling with additional stage" or "Heating and cooling with additional stages".

Options:	2-point 1 bit, Off/On 2-point 1 byte, (0/100%) PI continuous, 0-100% PI PWM, On/Off Fan coil
----------	--

The actuation of the control valve is determined by the selection of the controller type.

- 2-Point 1 Bit, Off/On: The 2-point control is the simplest type of control. The controller switches on when the room temperature drops below a certain level (setpoint temperature value minus hysteresis) and switches off when a particular value (setpoint temperature value plus hysteresis) is exceeded. The switch-on and switch-off commands are transmitted as 1-bit commands.
- 2-Point 1 Byte, 0/100%: This is another two-point control as described above. In this case, however, the switch-on and switch-off commands are transmitted as 1-byte values (0% / 100%).
- PI continuous, 0-100%: The PI controller adjusts its output value between 0% and 100% to match the difference between the actual value and the setpoint value and enables a precise regulation of the room temperature to the setpoint value. It sends the control value to the bus as a 1-byte value (0% - 100%). To reduce the bus load, the control value is only transmitted if it has changed by a predefined percentage in relation to the previous sent value. The control value can also be transmitted cyclically.
- PI PWM, On/Off: This also is a PI controller. Here, the output is a 1-bit command. For this to occur, the calculated control value is converted into a pulse-interval signal.
- Fan coil: The fan coil controller operates like the PI continuous controller. In addition, it allows the separate activation of the fan in the fan coil unit (e.g. fan speed levels 1 - 3).

10.8.51 Control of additional cooling stage — Cooling type

Options:	PI continuous, 0 – 100% and PI PWM, On/Off: <ul style="list-style-type: none"> – Area (e.g. cooling ceiling) 5°C 240 min – Free configuration Fan coil: <ul style="list-style-type: none"> – Fan coil 4°C 90min – Free configuration
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Two cooling types (area or fan coil) with preset parameters are available to the user.

If the required cooling type is not available, individual parameters can be specified in free configuration.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.52 Control of additional cooling stage — P-component (x 0.1°C)

Options:

Setting option between 10 - 100

The P-component refers to the proportional band of a control. It fluctuates around the setpoint value and can be used to influence control speed with a PI controller. The smaller the setpoint, the faster it reacts to the control. However, to avoid the risk of an overshoot, this value should not be set too low. A P-component from 0.1 to 25.5 K can be set.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Cooling type" parameter must be set on "Free configuration".

10.8.53 Control of additional cooling stage — P-component (min)

Options:

Setting option between 0 - 255

The I-component refers to the reset time of a control. The integral component has the effect of moving the room temperature slowly toward, and ultimately reaching, the setpoint value. Depending on the type of system used, the reset time has to have different values. In general, the more inactive the overall system, the greater the reset time.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil". In addition, the "Cooling type" parameter must be set on "Free configuration".

10.8.54 Control of additional cooling stage — Extended settings

Options:

No

Yes

This parameter enables additional functions and communication objects, e.g. "Additional cooling stage".

10.8.55 Additional cooling stage



Note

Only available when the "Extended settings" parameter under "Control of additional cooling stage" is set on "Yes".

10.8.56 Additional cooling stage — Mode of the control value

Options:

Normal
Inverse

The mode of the control value can be used to adapt the control value to de-energized opened (normal) or de-energized closed (inverse) valves.

- Normal: Value 0 means "Valve closed".
- Inverse: Value 0 means "Valve open".

10.8.57 Additional cooling stage — Hysteresis (x 0.1°C)

Options:

Setting option between 3 - 255

The hysteresis of the two-point controller specifies the fluctuation range of the controller around the setpoint value. The lower switching point is located at "Setpoint value minus hysteresis" and the upper point is at "Setpoint value plus hysteresis".



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On" or "2-point 1 Byte, 0/100%".

10.8.58 Additional cooling stage — Control value difference for sending of cooling control value

Options:

2%
5%
10%

The control values of the 0 - 100% PI continuous controller are not transmitted after every calculation. Instead, they are transmitted when the calculation results in a value that is different enough to the previous sent value to make a transmission meaningful. This value difference can be entered here.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.59 Additional cooling stage — Cyclic sending of the control value (min)

Options:

Setting option between 1 - 60 minutes

The current control value used by the device can be cyclically transmitted to the bus.



Note

This parameter is only available when the "Control value type" parameter is set either on "2-point 1 Bit, Off/On," "2-point 1 Byte, 0/100%," "PI continuous, 0-100%" or "Fan coil".

10.8.60 Additional cooling stage — Maximum control value (0 - 255)

Options:

Setting option between 0 - 255

The maximum control value of the PI controller defines the maximum value outputted by the controller. If a maximum value under 255 is chosen, the value will not be exceeded, even if the controller calculates a higher control value.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.61 Additional cooling stage — Minimum control value for basic load (0 - 255)

Options:

Setting option between 0 - 255

The minimum control value of the PI controller defines the minimum value issued by the controller. If a minimum value that is greater than zero is selected, the controller will not issue a lower value, even if it calculates a control value that is lower. This parameter can be used to set a basic load, e.g. for operating surface cooling. Even if the controller calculates the control value zero, a cooling medium will flow through the cooling area to prevent the floor from heating up. Under "Settings of basic load," it is also possible to define whether this basic load will be permanently active or whether it will be switched by the "Basic load" object.



Note

This parameter is only available when "Control value type" parameter is set either on "PI continuous, 0 – 100%," "PI PWM, On/Off" or "Fan coil".

10.8.62 Settings of basic load



Note

Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating with additional stage," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.63 Settings of basic load — Minimum control value for basic load > 0

Options:

Always active

Activate via object

The function is, for example, used if the floor in the required area must have a basic warmth, e.g. floor heating. The size of the minimum control value specifies the volume of heating medium that flows through the controlled area, even when the calculation of the control value of the controller would indicate a lower value.

- Always active: Here it is possible to define whether this basic load will be permanently active or whether it will be switched via the "Basic load" object.
- Activate via object: When this parameter is selected, the basic load function, which means the minimum control value with a value higher than zero, can be activated (1) or deactivated (0) using the "Basic load" object. If it is activated, then the heating medium will always be fed through the system with at least the minimum control value. If it is deactivated, the control value can be reduced to zero with the controller.

10.8.64 Combined heating and cooling modes



Note

Only available when the "Device function" parameter is set on either "Single device" or "Master device" and the control function parameter is set on either "Heating and cooling" or "Heating and cooling with additional stages".

10.8.65 Combined heating and cooling modes — Switchover of heating/cooling

Options:	Automatic
	Only via object
	On-site/via extension unit and via object

This function makes it possible to switch between the heating and cooling mode of the device.

- Automatic: E.g. for four-conductor systems which allow the switchover between heating and cooling at all times. The device switches automatically between heating and cooling and to the associated setpoint. "Switchover heating/cooling" is a transmitting object.
- Only via object: E.g. for two-conductor systems which are operated in heating mode in the winter and cooling mode in the summer. The switchover between heating and cooling and to the associated setpoint is carried out via the corresponding communication object. This function is used when a central switchover of the single room controllers is required. "Switchover heating/cooling" is a receiving object.
- Local/ via extension unit and via object: E.g. for four-conductor systems which allow the switchover between heating and cooling at all times. The switchover between heating and cooling and to the associated setpoint is carried out manually on the device by the user of the room or via the "Switchover heating/cooling" object via the bus. "Switchover heating/cooling" is a transmitting and receiving object.

10.8.66 Combined heating and cooling modes — Operating mode after reset

Options:	Cool
	Heat

After a bus voltage failure, a system reset, or the attachment of a device to the bus coupler, the device starts in the parameterized "Operating mode after reset". The operating mode can be changed when the system is running using the options set under "Switchover heating/cooling".

10.8.67 Combined heating and cooling modes — Heating/cooling control value output

Options:	Via 1 object
	Via 2 objects

This parameter is used to define whether the control value is transmitted to the climate control actuator using one or two objects. If the climate control actuator has separate control value inputs for heating and cooling, or if separate actuators are used, then the option "Via 2 objects" must be selected. Select the option "Via 1 object" if a single actuator only has one object that receives both the heating and the cooling control values.

10.8.68 Combined heating and cooling modes — Additional heating/cooling stage control value output

Options:

Via 1 object

Via 2 objects

This parameter is used to define whether the control value is transmitted to the climate control actuator using one or two objects. If the climate control actuator has separate control value inputs for heating and cooling, or if separate actuators are used, then the option "Via 2 objects" must be selected. Select the option "Via 1 object" if a single actuator only has one object that receives both the heating and the cooling control values.



Note

This parameter is only available when the "Control function" parameter is set on "Heating and cooling with additional stages".

10.8.69 Setpoint settings

**Note**

This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device".

10.8.70 Setpoint settings — Setpoint for heating comfort = setpoint for cooling comfort

Options:

No

Yes

This parameter is used to configure the manner in which the setpoint adjustment functions.

- Yes: The device has the same setpoint for heating and cooling in the comfort mode. The system switches to heating mode when the temperature drops below the setpoint minus hysteresis. It switches to cooling mode when the temperature exceeds the setpoint plus hysteresis. The hysteresis can be parameterized.
- No: The function has two separate setpoints for heating and cooling in the comfort mode. The device will display the currently active setpoint value. Switching between heating and cooling occurs via the "Switchover heating/cooling" parameter setting.

**Note**

This parameter is only available when the "Control function" parameter is set on "Heating and cooling" or "heating and cooling with additional stages".

10.8.71 Setpoint settings — Hysteresis for switchover heating/cooling (x 0.1°C)

Options:

Setting option between 5 - 100

This parameter specifies the one-sided hysteresis for switching between heating and cooling when "Setpoint heating comfort = Setpoint cooling comfort" is active. If the room temperature exceeds the setpoint temperature value plus hysteresis, the system switches to cooling mode. If the room temperature falls below the setpoint temperature value minus hysteresis, the system switches to heating mode.

**Note**

This parameter is only available when the "Setpoint heating comfort = Setpoint cooling comfort" parameter is set on "Yes".

10.8.72 Setpoint settings — Setpoint temperature for heating and cooling comfort (°C)

Options:

Setting option between 10 - 40

Specifies the comfort temperature for heating and cooling when people are present.

**Note**

This parameter is only available when the "Control function" parameter is set on "Heating and cooling" or "heating and cooling with additional stages".

10.8.73 Setpoint settings — Setpoint temperature for heating comfort (°C)

Options:

Setting option between 10 - 40

Specifies the comfort temperature for heating when people are present.



Note

This parameter is only available when the "Control function" parameter is set on "Heating" or "Heating with additional stage".

10.8.74 Setpoint settings — Reduction for standby heating (°C)

Options:

Setting option between 10 - 40

Specifies the temperature in heating mode when nobody is present. On devices with a display, this mode is indicated by the standby icon.



Note

This parameter is only available when the "Control function" parameter is set on "Heating," "Heating with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.75 Setpoint settings — Reduction for ECO heating (°C)

Options:

Setting option between 0 - 15

Specifies the temperature in heating mode when nobody is present. On devices with a display, this mode is indicated by the ECO icon.

10.8.76 Setpoint settings — Setpoint temperature for frost protection (°C)

Options:

Setting option between 5 - 15

Function for protecting the building against the cold. On devices with a display, this mode is indicated by the frost protection icon. Manual operation is blocked.



Note

This parameter is only available when the "Control function" parameter is set on "Heating," "Heating with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.77 Setpoint settings — Setpoint temperature for cooling comfort (°C)

Options:

Setting option between 10 - 40

Specifies the comfort temperature for cooling when people are present.



Note

This parameter is only available when the "Control function" parameter is set on "Cooling" or "Cooling with additional stage".

10.8.78 Setpoint settings — Increase for standby cooling (°C)

Options:

Setting option between 0 - 15

Specifies the temperature in cooling mode when nobody is present. On devices with a display, this mode is indicated by the standby icon.



Note

This parameter is only available when the "Control function" parameter is set on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.79 Setpoint settings — Increase for ECO cooling (°C)

Options:

Setting option between 0 - 15

Specifies the temperature in cooling mode when nobody is present. On devices with a display, this mode is indicated by the ECO icon.



Note

This parameter is only available when the "Control function" parameter is set on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.80 Setpoint settings — Setpoint temperature for heat protection (°C)

Options:

Setting option between 27 - 45

Function for protecting the building against heat. On devices with a display, this mode is indicated by the heat protection icon. Manual operation is blocked.



Note

This parameter is only available when the "Control function" parameter is set on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.81 Setpoint settings — Display indicates

Options:	Current setpoint
	Relative setpoint

The display can indicate either the absolute or relative setpoint value.

- Current setpoint: On devices with a display, the setpoint is shown as an absolute temperature, e.g. 21.0°C.
- Relative setpoint: On devices with display, the setpoint is indicated as a relative value, e.g. - 5°C to + 5°C.

10.8.82 Setpoint settings — Send current setpoint

Options:	Cyclic and during change
	Only for change

The current setpoint value can be sent to the bus either cyclically and after a change, or only after a change.

10.8.83 Setpoint settings — Cyclic sending of the current setpoint temperature (min)

Options:	Setting option between 5 - 240
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This parameter is used to specify the amount of time that will elapse before the current setpoint value is automatically transmitted.



Note

This parameter is only available when the "Send current setpoint" is set on "Only during change".

10.8.84 Setpoint adjustment

**Note**

This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device".

10.8.85 Setpoint adjustment — Maximum manual increase during heating mode (0 - 15°C)

Options:

Setting option between 0 - 15

This preset can be used to limit the manual increase during heating.

**Note**

This parameter is only available when the "Control function" parameter is set on "Heating," "Heating with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.86 Setpoint adjustment — Maximum manual reduction during heating mode (0 - 15°C)

Options:

Setting option between 0 - 15

This preset can be used to limit the manual decrease during heating.

**Note**

This parameter is only available when the "Control function" parameter is set on "Heating," "Heating with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.87 Setpoint adjustment — Maximum manual increase during cooling mode (0 - 15°C)

Options:

Setting option between 0 - 15

This preset can be used to limit the manual increase during cooling.

**Note**

This parameter is only available when the "Control function" parameter is set on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.88 Setpoint adjustment — Maximum manual reduction during cooling mode (0 - 15°C)

Options:	Setting option between 0 - 15
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This preset can be used to limit the manual decrease during cooling.

**Note**

This parameter is only available when the "Control function" parameter is set on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.89 Setpoint adjustment — Resetting of the manual adjustment for receipt of a basic setpoint

Options:	No
	Yes

Activating this parameter will cause the manual adjustment to be deleted and the new setpoint value to be provided when a new value is received via the "Basic setpoint" object.

If the parameter is deactivated, the manual adjustment is added to the new base setpoint value. Example: Previous base setpoint value of 21°C + manual adjustment of 1.5°C = 22.5°C. The object receives a new basic setpoint of 18°C plus the previous manual adjustment of 1.5°C for a total of 19.5°C.

10.8.90 Setpoint adjustment — Resetting the manual adjustment for change of operating mode

Options:	No
	Yes

If the device switches to a new operating mode, the manual adjustment is deleted and the parameterized setpoint temperature for the operating mode plus any change by the base setpoint value object will be applied if this parameter is activated. Example: Comfort temperature of 21°C plus manual adjustment of 1.5°C = 22.5°C. Change to Eco with programmed temperature 17°C. The device regulates the temperature to 17°C, since the manual adjustment is deleted.

If the parameter is deactivated, the manual setpoint adjustment will be added to the temperature in the new operating mode. Example: Comfort temperature of 21°C plus manual adjustment of 1.5°C = 22.5°C. If the system switches to Eco with a parameterized temperature of 17°C, the device regulates the temperature to 18.5°C, since the manual adjustment is added.

10.8.91 Setpoint adjustment — Resetting the manual adjustment via object

Options:	No
	Yes

If this parameter is activated, a separate object can be used to delete the manual adjustment at any time. Example of application: Resetting the manual adjustment on all devices located in a building using a system clock.

10.8.92 Setpoint adjustment — Permanent storage of on-site operation

Options:	No
	Yes

If this parameter is activated, the manual settings for setpoint and, where applicable, fan speed level, as well as the value of the "Basic load" object, will be stored in the device and re-activated after a reset. If the device is re-programmed, the stored setpoint values will also be deleted.

10.8.93 Temperature reading — Inputs of temperature reading

Options:	Internal measurement
	External measurement
	Weighted measurement

The room temperature can be measured at the device or fed to the device by an object via the bus. In addition, weighted measuring is also available, in which the weighted average of up to three temperature values (1 x internal, 2 x external) is calculated and used as an input value for control.

10.8.94 Temperature reading — Inputs of weighted temperature reading

Options:	Internal and external measurement
	2 x external measurement
	Internal and 2x external measurement

Specifies the temperature reading inputs for the weighted measurement, in which the calculated weighted average of the inputs is used as an input value for control.



Note

This parameter is only available when the "Inputs of temperature reading" parameter is set on "Weighted measurement".

10.8.95 Temperature reading — Weighting of internal measurement (0 to 100%)

Options:	Setting option between 0 - 15
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Specifies the weighting of the internal measurement at a level between 0% and 100%.



Note

This parameter is only available when the "Inputs of weighted temperature reading" parameter is set on "Internal and external measurement" or "Internal and 2x external measurement".

10.8.96 Temperature reading — Weighting of external measurement (0 to 100%)

Options:	Setting option between 0 - 15
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Specifies the weighting of the external measurement at a level between 0% and 100%.



Note

This parameter is only available when the "Inputs of weighted temperature reading" parameter is set on "Internal and external measurement", "2x external measurement" or "Internal and 2x external measurement".

10.8.97 Temperature reading — Weighting of external measurement 2 (0 to 100%)

Options:

Setting option between 0 - 15

Specifies the weighting of the external measurement 2 at a level between 0% and 100%. When added together with the (0%...100%) weighting of the external measurement, the result must be 100%.

**Note**

This parameter is only available when the "Inputs of weighted temperature reading" parameter is set on "2x external measurement" or "Internal and 2x external measurement".

10.8.98 Temperature reading — Cyclic sending of the actual temperature (min)

Options:

Setting option between 5 - 240

The current actual temperature used by the device can be cyclically transmitted to the bus.

10.8.99 Temperature reading — Difference of value for sending the actual temperature (x 0.1°C)

Options:

Setting option between 1 - 100

If the change in temperature exceeds the parameterized difference between the measured actual temperature and the previous actual temperature that was sent, the changed value will be transmitted.

10.8.100 Temperature reading — Adjustment value for internal temperature measurement (x 0.1°C)

Options:

Setting option between 1 - 100

Every installation location has different physical conditions (interior or exterior wall, lightweight or solid wall, etc.). In order to use the actual temperature at the installation location as a measured value for the device, a temperature measurement must be performed by an external equalized and / or calibrated thermometer at the installation location. The difference between the actual temperature displayed on the device and the actual temperature determined by the external measurement device must be entered in the parameter field as an "Adjustment value".

**Note**

- The calibration measurement should not be carried out immediately after the device has been installed. The device should first adjust to the ambient temperature before calibration is carried out. The calibration measurement should be repeated shortly before or after the room is occupied.
- This parameter is only available when the "Inputs of temperature reading" parameter is set to "Internal measurement" or "Weighted measurement".

10.8.101 Temperature reading — Monitoring time for temperature reading (0 = no monitoring) (min)

Options:

Setting option between 1 - 120

If no temperature is read within the parameterized time period, the device switches to error mode. It transmits a telegram to the bus via the "Actual temperature error" object and applies the operating mode and control value for error settings.

10.8.102 Temperature reading — Operating mode for fault

Options:

Cool

Heat

In the event of a failure of the actual temperature measurement, the device will no longer be able to independently specify the heating/cooling operating type. As a result, the operating type best suited to protecting the building will be selected.



Note

This parameter is only available when the "Control function" parameter is set to "Heating and cooling" or "Heating and cooling with additional stage".

10.8.103 Temperature reading — Control value for fault (0 - 255)

Options:

Setting option between 1 - 255

In the event of a failure of the actual temperature measurement, the device will no longer be able to independently determine the control value. Therefore, a control value which is suitable for protecting the building will be selected.

10.8.104 Alarm functions



Note

This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device".

10.8.105 Alarm functions — Condensate water alarm

Options:

No
Yes

If a fan coil is used, condensation may form during operation as a result of excessive cooling and/or humidity. The associated condensate is typically collected in a container. To protect the container against overflowing, and thus prevent potential damage to devices and/or the building, the container alerts the "Condensation alarm" object (receiving only) that the maximum fill level has been exceeded. This causes the controller to switch to a protective mode. This status is indicated by the corresponding icon on devices that have a display. Local operation is blocked. Operation is only possible again after the alarm has been deactivated.



Note

This parameter is only available when the "Control function" parameter is set either on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.106 Alarm functions — Dew point alarm

Options:

No
Yes

When refrigerating machines are used, dew may appear on the refrigerant supply lines during operation as a result of excessive cooling and/or humidity. The dew indicator reports the dew formation via the "Dew point alarm" object (receiving only). This causes the controller to switch to a protective mode. This status is indicated by the corresponding icon on devices that have a display. Local operation is blocked. Operation is only possible again after the alarm has been deactivated.



Note

This parameter is only available when the "Control function" parameter is set either on "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.107 Alarm functions — Frost alarm temperature for HVAC and RHCC status (°C)

Options:

Setting options between 0 and 15

The RHCC status and HVAC objects have a frost alarm bit. If the input temperature of the controller drops below the temperature set in this parameter, then the frost alarm bit is set in the status objects. It is reset when the temperature is exceeded.

10.8.108 Alarm functions — Heat alarm temperature for RHCC status (°C)

Options:

Setting options between 25 and 70

The RHCC status object has a heat alarm bit. If the input temperature of the controller exceeds the temperature set in this parameter, then the heat alarm bit is set in the status object. It is reset when the temperature falls below the set temperature.

10.8.109 Fan coil settings — Fan speed levels

**Note**

This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil".

10.8.110 Fan coil settings — Fan speed levels — Number of fan speed levels

Options:	3 levels
	5 levels

This parameter is used to specify the number of fan speed levels the actuator will use to control the fan of the fan coil.

10.8.111 Fan coil settings — Fan speed levels — Format of the level output

Options:	0..5
	0..255
	1 bit m off n
	1 bit m 1 off n

- 0 to 5: The level values (0..3 or 0..5) are output in the 1-byte format as the counter values 0..3 or 0..5.
- 0 to 255: The level values (0..3 or 0..5) are output as percentage values. Example 5-stage fan: The level value 1 is output as 20%, and 5 is output as 100%.
- 1 Bit m from n: The level values (0..3 or 0..5) are output using 1-bit objects. The number of objects available is the same as the number of fan speed levels. For level 2, for example, the 1-bit fan speed level objects 1 and 2 are output as the value 1, while the other fan speed level objects use the value 0.
- 1 Bit 1 from n: The level values (0..3 or 0..5) are output using 1-bit objects. The number of objects available is the same as the number of fan speed levels. For the level 2, for example, only the 1-bit fan speed level object 2 is output as the value 1. The other fan speed level objects use the value 0.

10.8.112 Fan coil settings — Fan speed levels — Level output

Options:	For manual operation and automatic
	Only for manual operation

This parameter is used to specify when the output of the fan speed level values will occur: either only when the fan speed levels are manually adjusted or also in automatic mode. This setting depends on the options for the fan coil actuator. If the actuator itself controls the fan speed levels in automatic mode based on a derivative of the control value, then the "Only for manual operation" option must be selected. Otherwise, the other option should be selected.

10.8.113 Fan coil settings — Fan speed levels — Lowest manually adjustable level

Options:	Speed level 0
	Speed level 1

This parameter is used to preselect the lowest fan speed level that can be set by an operation performed at the device. When level 0 is selected, the heating/cooling system will not be in operation (fan speed level and valve control 0) as long as the current operating mode and operation type are maintained. To avoid damage to the building, level 0 is deactivated after 18 hours and the device is returned to automatic mode.

10.8.114 Fan coil settings — Fan speed levels — Level status evaluation

Options:	No
	Yes

The controller obtains the current fan speed level for controlling a fan coil actuator either by calculating it from the table of level values under "Fan coil settings for heating" or "Fan coil settings for cooling," or by receiving feedback from the fan coil actuator. If the "Yes" option is selected, the "Fan coil step status" object is activated for receiving the fan speed level from the fan coil actuator.

10.8.115 Fan coil settings heating



Note

This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil". In addition, the "Control function" parameter must be set on either "Heating," "Heating with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.116 Fan coil settings for heating — Speed level 1 to 5 up to control value (0 to 255) heating

Options:

Setting option between 0 - 255

In this parameter, the control values of the controller are assigned to fan speed levels. This assignment is used if the fan speed levels are transmitted together with the control values.



Note

- These level settings should be adjusted to match the settings in the fan coil actuator
- Setting the "Control value type" to "Fan coil" in the control parameters is only useful for one of either the basic stage or the additional stage. Setting the basic and additional stage parameters to fan coil is not useful, since the control of only one fan coil actuator each for heating and cooling is supported.
- The "Fan speed level 4 - 5 up to control value (0 - 255) heating" parameters are available only when the "Number of fan speed levels" is set on "5 steps".

10.8.117 Fan coil settings for heating — Fan speed level limit heating in ECO mode

Options:

No
Yes

This parameter limits the fan speed level when the system is switched to eco mode.

10.8.118 Fan coil settings for heating — Maximum speed level heating for eco mode

Options:

Setting option between 0 - 5

Specifies the maximum possible fan speed level when the system is switched to eco mode.

10.8.119 Fan coil settings for cooling

**Note**

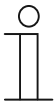
This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device" and the "Control value type" parameter is set on "Fan coil". In addition, the "Control function" parameter must be set on either "Cooling," "Cooling with additional stage," "Heating and cooling" or "Heating and cooling with additional stages".

10.8.120 Fan coil settings for cooling — Speed level 1 to 5 up to control value (0 to 255) cooling

Options:

Setting option between 0 - 255

In this parameter, the control values of the controller are assigned to fan speed levels. This assignment is used if the fan speed levels are transmitted together with the control values.

**Note**

- These level settings should be adjusted to match the settings in the fan coil actuator
- Setting the "Control value type" to "Fan coil" in the control parameters is only useful for one of either the basic stage or the additional stage. Setting the basic and additional stage parameters to fan coil is not useful, since the control of only one fan coil actuator each for heating and cooling is supported.
- The "Fan speed level 4 - 5 up to control value (0 - 255) cooling" parameters are available only when the "Number of fan speed levels" is set on "5 steps".

10.8.121 Fan coil settings for cooling — Fan speed level limit cooling for ECO mode

Options:

No
Yes

This parameter limits the fan speed level when the system is switched to eco mode.

10.8.122 Fan coil settings for cooling — Maximum fan speed level cooling for eco mode

Options:

Setting option between 0 - 5

Specifies the maximum possible fan speed level when the system is switched to eco mode.

10.8.123 Summer compensation

**Note**

This parameter is only available if the "Device function" parameter is set on either "Single device" or "Master device".

10.8.124 Summer compensation – Summer compensation

Options:	No Yes
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In order to save energy, and to ensure that the temperature difference occurring during entry and exit of a climate-controlled building stays within comfortable limits, the excessive reduction of room temperature should be prevented during high temperatures in the summer (Summer compensation according to DIN 1946). The room temperature is increased by adjusting the setpoint temperature for cooling.

Raising the room temperature does not, however, mean that you heat up the room. Rather, the adjustment is intended to allow the room temperature to increase to a certain setpoint without cooling. This, for example, prevents the air-conditioning system from further reducing the room temperature to 24°C with an external temperature of 35°C.

However, activation of the summer compensation requires an outside temperature sensor that transmits its measured value to the bus and can be evaluated by the room temperature controller.

The following parameters are available for summer compensation:

- "Lower outside temperature value for summer compensation"
- "Upper outside temperature value for summer compensation"
- "Lower setpoint offset for summer compensation"
- "Upper setpoint offset for summer compensation"

Above the "upper outside temperature value," the minimum setpoint temperature for cooling is the outside temperature minus the "upper setpoint offset". The outside temperature has no effect on the minimum setpoint temperature for cooling below the "lower outside temperature value". Between the "Lower" and "Upper outside temperature value," the minimum setpoint temperature for cooling undergoes floating adjustment by the parameterized setpoint temperature equal to the outside temperature minus the "Lower offset" to a value equal to the outside temperature minus the "Upper setpoint offset" as a function of the outside temperature.

Typical values for summer compensation are:

- 21°C: lower outside temperature value
- 32°C: upper outside temperature value
- 0 K: lower setpoint offset
- 6 K: upper setpoint offset

This means that a continuous increase of the minimum setpoint value for cooling occurs to a value equal to the outside temperature minus a setpoint offset of 0 to 6 K if the outside temperature increases to 32°C from 21°C.

For example:

For an increasing outside temperature, the minimum setpoint value for cooling will be increased starting at an outside temperature of 21°C. The minimum setpoint temperature for cooling is 25.1°C at an outside temperature of 30°C; 25.5°C at an outside temperature of 31°C; 26°C at an outside temperature of 32°C; and 27°C at an outside temperature of 33°C.

10.8.125 Summer compensation — (Lower) Starting temperature for summer compensation (°C)

Options:

Setting option between -127 to + 127

The parameter defines the lower outside temperature value from which temperature value the setpoint correction (summer compensation) is performed based on too high an outside temperature.



Note

This parameter is only available if the "Summer compensation" parameter is set to "Yes".

10.8.126 Summer compensation — Offset of the setpoint temperature for the entry into summer compensation (x 0.1°C)

Options:

Setting option between -127 to + 127

The parameter is used to define how many degrees Kelvin the setpoint value will be increased by during summer compensation when the lower temperature value is reached.

Typical values for summer compensation are:

- 20°C: lower outside temperature value
- 32°C: upper outside temperature value
- 0 K: lower setpoint offset
- 4 K: upper setpoint offset

That means that a flowing setpoint increase of 0 to 4 K occurs if the outside temperature increases from 20°C to 32°C.



Note

This parameter is only available if the "Summer compensation" parameter is set to "Yes".

10.8.127 Summer compensation — (Upper) exit temperature for summer compensation (°C)

Options:

Setting option between -127 to + 127

The parameter defines the upper outside temperature value up to which temperature value the setpoint correction (summer compensation) is performed based on too high an outside temperature.



Note

This parameter is only available if the "Summer compensation" parameter is set to "Yes".

10.8.128 Summer compensation — Offset of the setpoint temperature for the exit from summer compensation (x 0.1°C)

Options:

Setting option between -127 to + 127

The parameter is used to define how many degrees Kelvin the setpoint value will be increased by during summer compensation when the upper temperature value is reached.

Typical values for summer compensation are:

- 20°C: lower outside temperature value
- 32°C: upper outside temperature value
- 0 K: lower setpoint offset
- 4 K: upper setpoint offset

That means that a flowing setpoint increase of 0 to 4 K occurs if the outside temperature increases from 20°C to 32°C.



Note

This parameter is only available if the "Summer compensation" parameter is set to "Yes".

10.9 Application: "Logic functions"

10.9.1 Channel 1 – 5

Various logic functions can be assigned to the channels.

Options (application):	Inactive Logic gate Gate Delay Staircase lighting
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- Inactive: No logic functions assigned.
- Logic gate: logic objects

No.	Object name	Data type	Flags
0	Output	(1 Bit) 1 Bit EIS1 / DPT 1.001	
0	Output	(1 Byte) 1 Byte EIS14 / DPT 5.010	
1	Input 1	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
1	Input 1	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
2	Input 2	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
2	Input 2	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
3	Input 3	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
3	Input 3	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
4	Input 4	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
4	Input 4	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
5	Input 5	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
5	Input 5	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
6	Input 6	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
6	Input 6	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
7	Input 7	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
7	Input 7	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
8	Input 8	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
8	Input 8	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
9	Input 9	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
9	Input 9	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
10	Input 10	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
10	Input 10	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U

- Gate: The "Gate" application allows specific signals to be filtered and the signal flow to be temporarily blocked. The function has three communication objects: "Control input," "Input" and "Output". The input or output object can assume different sizes.

The bit size can be freely assigned with the "Not assigned" setting. This means that the first internal or external group address/action that is assigned and already connected to some other communication object will specify the size.

The control can occur from "Input to output" or also from "Output to input," provided the control input allows this. Enabling via the control input can occur via an ON or an OFF telegram.

If, for example, the "Control input" setting is set to "ON telegram," only telegrams from the input are transmitted to the output, if prior to this the control input has received an ON telegram.

It is also possible to block signals via the "Filter function" setting. Either "nothing is filtered out" or the signal "ON is filtered out" or the signal "OFF is filtered out". This function is always necessary, for example, when only the ON telegram is interesting for a sensor and the sensor does not offer any filter function in its application program.

- Delay: Telegrams can be received via the "Input" object using the "Delay" application. The telegrams received are sent out on the "Output" object with a set delay time. The object types for "Input" and "Output" can be collectively parameterized for the different applications.
- Staircase lighting: With the "Staircase lighting" application, switching telegrams or value telegrams can be provided with a switch-off delay. Depending on the parameterization, the application shows different communication objects:
 - A 1-bit object for input and output
If an ON telegram is received via the "Input/Output" object, the switch-off delay is started immediately.
This can be a switch-off delay of 10 seconds to 88:45 minutes, which is adjustable in 1-second steps. After expiration of the switch-off delay, the "Input/Output" object sends an OFF telegram.
 - Two 1-bit objects for input and output
 - Two 1-byte objects for input and output
If a telegram is received via the "Input" object, the switch-off delay is started immediately and a telegram with the same value of the telegram received on the input is sent out on the "Output" object. This can be a switch-off delay of 10 seconds to 88:45 minutes, which is adjustable in 1-second steps. After expiration of the switch-off delay, the "Output" object sends out an OFF telegram (1-bit) or a telegram with the value "0" (1-byte).
Via two additional communication objects, it is possible to specify the switch-off delay and the switch-off prewarning time. The values received are written to the memory of the device and are retained even after a power failure and subsequent return of voltage.

10.10 Communication objects — Presence detector — Master

10.10.1 Px: switchover of manual operation

Number	Name	Object function	Data type
12 30 48 64	Px: switchover of manual operation	Input	1.001 switch

This object is used to switch over from automatic mode to manual mode (default: 0 = automatic, 1 = manual).

10.10.2 Px: external push-button

Number	Name	Object function	Data type
13 31 49 65	Px: external push-button	Input	1.001 switch

The detector switches on if a 1 (default) is received via this object. The detector switches off if a 0 (default) is received via this object.

- Manual mode inactive: Movement detector is back on automatic.
- Manual mode active: The movement detector remains switched off until the detector is switched on manually or manual mode is deactivated.



Note

The movement detector is inactive in manual mode and to switch it on or off is only possible only via the external push-button. In automatic mode the switch-on via the external push-button simulates a movement.

10.10.3 Px: Activate test mode

Number	Name	Object function	Data type
14 32 50 66	Px: Activate test mode	Input	1.001 switch

The test mode is activated via this object (1 = activated, 0 = deactivated). It is automatically deactivated after 10 minutes.

10.10.4 Px: Brightness reduced according to switch-off delay

Number	Name	Object function	Data type
16 34 52 68	Px: Brightness reduced according to switch-off delay	Input	7.005 time (s)

If no movement is detected after the switch-off delay has expired, the function enters the programmed switch-off delay and then switches off. The switch-off delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.11 Communication objects — Presence detector — Slave

10.11.1 Px: Enable movement

Number	Name	Object function	Data type
1 19 37 53	Px: Enable movement		1.001 switch

The detector can be blocked or enabled via the object. Enabling has priority over all other objects.

10.11.2 Px: Actuator status

Number	Name	Object function	Data type
4 22 40 56	Px: Actuator status		1.001 switch

Actuators controlled by the detector can send their status to this input (1 bit). Upon the receipt of an Off telegram on the object the detection of movement is suppressed for the specified pause time and the switch-off delay is reset.

10.11.3 Px: Detection independent of brightness

Number	Name	Object function	Data type
5 23 41 57	Px: Detection independent of brightness		1.001 switch

If a 1 is received on this object, the detector switches at every movement independent of brightness. However, if a 0 is received, the detector switches on only when the brightness drops below the programmed brightness-value threshold and during movement.

10.11.4 Px: External brightness

Number	Name	Object function	Data type
6 24 42 58	Px: External brightness		9.* 2-byte float value

The brightness value of an external brightness sensor is sent to this object.

10.11.5 Px: External brightness — value threshold

Number	Name	Object function	Data type
7 25 43 59	Px: External brightness-value threshold		9.* 2-byte float value

The external brightness-value threshold can be adjusted via this object. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.11.6 Internal brightness — value threshold

Number	Name	Object function	Data type
8 26 44 60	Internal brightness-value threshold		9.* 2-byte float value

The internal brightness-value threshold can be adjusted via this object. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.11.7 Px: Movement (slave)

Number	Name	Object function	Data type
11 29 47 63	Px: Movement (slave)		1.001 switch

To trigger the master, this object sends (default: independent of brightness) a 1 telegram.

10.12 Communication objects — Presence detector — Monitoring

10.12.1 Px: Enable movement

Number	Name	Object function	Data type
1 19 37 53	Px: Enable movement	Input	1.001 switch

The detector can be blocked or enabled via the object. Enabling has priority over all other objects.

10.12.2 Px: Monitoring

Number	Name	Object function	Data type
15 33 51 67	Px: Monitoring	Output	1.001 switch

The programmed value is sent to the actuator via the output during movement and after expiry of the switch-off delay (2 seconds).

10.13 Communication objects — Presence detector — Constant light switch

10.13.1 P1: Output 1

Number	Name	Object function	Data type
	P1: Output 1		1.001 switch
			5.001 percentage (0..100%)
			5.010 counter pulses (0..255)
			18.001 scene control
			20.102 HAVC mode
			9.* 2-byte float value

The parameterized value during movement is sent to the actuator via the output when the parameterized brightness threshold including the hysteresis is exceeded or falls short. When output 2 is active, output 1 is to activate the light row with the largest distance to the window and output 2 with the smallest distance to the window.

10.13.2 Px: Output 2

Number	Name	Object function	Data type
	Px: Output 2		1.001 switch
			5.001 percentage (0..100%)
			5.010 counter pulses (0..255)
			18.001 scene control
			20.102 HAVC mode
			9.* 2-byte float value

The parameterized value during movement is sent to the actuator via the output when the parameterized brightness threshold including the hysteresis is exceeded or falls short. When output 2 is active, output 1 is to activate the light row with the largest distance to the window and output 2 with the smallest distance to the window.

10.13.3 Px: Automatic / manual off

Number	Name	Object function	Data type
	Px: Automatic / manual off		1.001 switch

The control can be activated (automatic) or deactivated (manual) via the object. If the object is connected to a control element, the device is switched off with a 0 and the control is deactivated.

10.13.4 Px: slave

Number	Name	Object function	Data type
	Px: Slave		1.001 switch

The constant light switch can be switched on with a 1 from a different movement or presence detector via the object.

10.13.5 Px: External brightness

Number	Name	Object function	Data type
	Px: External brightness		9.* 2-byte float value

Via this object it is possible to link an external value from a different brightness sensor with the constant light switch.

10.13.6 Px: Enable presence

Number	Name	Object function	Data type
	Px: Enable presence		1.001 switch

The constant light switch can be blocked or enabled via the object. Enabling has priority over all other objects.

10.13.7 Px: Switch-off delay

Number	Name	Object function	Data type
	Px: Switch-off delay		7.005 time (s)

If no movement is detected, the function enters the programmed switch-off and then switches off. The switch-off delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.13.8 Px: Brightness — value threshold

Number	Name	Object function	Data type
	Px: Brightness-value threshold		9.* 2-byte float value

This communication object can be used to specify values from outside. This value is used as the new switching threshold. The current switching threshold can be read via this communication object. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.13.9 Px: Saving brightness — value threshold

Number	Name	Object function	Data type
	Px: Saving brightness-value threshold		1.001 switch

If value = 1 is sent on this communication object, the current measured brightness value is saved as the new switching threshold of the control.

10.13.10 Px: Actual brightness

Number	Name	Object function	Data type
	Px: Actual brightness		9.* 2-byte float value

The current (filtered) brightness value is made available via the "Actual brightness" communication object under consideration of the daylight and artificial light correction.

10.13.11 Px: Status of control

Number	Name	Object function	Data type
	Px: Status of control		1.001 switch

The object indicates the status of the control, as to whether the control is active (value = 1) or inactive (value = 0).

10.14 Communication objects — Presence detector — Constant light controller

10.14.1 Px: Output 1

Number	Name	Object function	Data type
1 19	Px: Output 1	Output	5.001 percentage (0..100%)
			5.010 counter pulses (0..255)

The respective control value is sent to the actuator via the output. When output 2 is active, output 1 is to activate the light row with the largest distance to the window and output 2 with the smallest distance to the window.

10.14.2 Px: Output 2

Number	Name	Object function	Data type
2 20	Px: Output 2	Output	5.001 percentage (0..100%)
			5.010 counter pulses (0..255)

The respective control value is sent to the actuator via the output. When output 2 is active, output 1 is to activate the light row with the largest distance to the window and output 2 with the smallest distance to the window.

10.14.3 Px: Automatic / manual off

Number	Name	Object function	Data type
3 21	Px: Automatic / manual off	Input	1.001 switch

The control can be activated (automatic) or deactivated (manual) via the object. If the object is connected to a control element, the control is deactivated with a 0 and activated with a 1. (0 = manual off, 1 = automatic).

10.14.4 Px: Relative dimming (dimmer)

Number	Name	Object function	Data type
4 22	Px: Relative dimming (dimmer)	Input	3.007 dimming control

The object can be connected to a control element. This makes it possible to dim the lights brighter / darker in the room. The constant light controller is deactivated.

10.14.5 Px: Value (dimmer)

Number	Name	Object function	Data type
5 23	Px: Value (dimmer)	Input	5.001 percentage (0..100%)

The object can be connected to a value sender. This makes it possible to regulate the lighting in the room manually. The constant light controller is deactivated.

10.14.6 Px: slave

Number	Name	Object function	Data type
6 24	Px: slave	Input	1.001 switch

The constant light controller can be switched on with a 1 from a different movement or presence detector via the object.

10.14.7 Px: External brightness

Number	Name	Object function	Data type
7 25	Px: External brightness	Input	9.* 2-byte float value

Via this object it is possible to link an external value from a different external brightness sensor with the constant light controller. The internal brightness sensor is inactive for the constant light controller.

10.14.8 Px: Enable presence

Number	Name	Object function	Data type
8 26	Px: Enable presence	Input	1.001 switch

The constant light controller can be blocked or enabled via the object. Enabling has priority over all other objects.

10.14.9 Px: Switch-off delay

Number	Name	Object function	Data type
10 28	Px: Switch-off delay	Input	7.005 time (s)

If no movement is detected, the function enters the programmed switch-off and then switches off. The switch-off delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.14.10 Px: Setpoint brightness

Number	Name	Object function	Data type
11 29	Px: Setpoint brightness	Input / output	9.* 2-byte float value

This communication object can be used to specify values from outside. This value is used as the new setpoint. The current setpoint can be read via this communication object. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.14.11 Px: Saving setpoint brightness

Number	Name	Object function	Data type
12 30	Px: Saving setpoint brightness	Input	1.001 switch

The desired brightness value is set with a control element via communication objects automatic / manual off, relative dimming (dimmer) and / or value (dimmer). If, for example, the luxmeter shows the value 500 lx, this brightness value with the sending of a 1 will be stored on this communication object as new setpoint of the control. Note: When setting the desired brightness, e.g. 500 lx, the lamp's light-up time is to be taken into account.

10.14.12 Px: Actual brightness

Number	Name	Object function	Data type
13 31	Px: Actual brightness	Output	9.* 2-byte float value

The current (filtered and corrected with daylight and constant light correction) brightness value is made available via the "Actual brightness" communication object.

10.14.13 Px: Move/adjust blind

Number	Name	Object function	Data type
14 32	Px: Move/adjust blind	Input	1.008 up/down

The object is connected with the move command of the control element. When a value 1 (moving up) or 0 (moving down) is received, the parameters set under "Control parameters for blind movement" become active. The switch mode is deactivated after a programmed time and the normal control algorithm is reactivated.

10.14.14 Px: Move blind into position

Number	Name	Object function	Data type
15 33	Px: Move blind into position	Input	5.001 percentage (0..100%)

The object is connected with a 1-byte position command of the control element / actuator. When a value is received, the parameters set under "Control parameters for blind movement" become active. The switch mode is deactivated after a programmed time and the normal control algorithm is reactivated.

10.14.15 Px: Brightness reduced according to switch-off delay

Number	Name	Object function	Data type
16 34	Px: Brightness reduced according to switch-off delay	Input	7.005 time (s)

If no movement is detected after the switch-off delay has expired, the function enters the programmed switch-off delay and then switches off. The switch-off delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.14.16 Px: Status of control

Number	Name	Object function	Data type
17 35	Px: Status of control	Output	1.001 switch

The object indicates the status of the control, as to whether the control is active (value = 1) or inactive (value = 0).

10.14.17 Px: Brightness calibration

Number	Name	Object function	Data type
18 36	Px: Brightness calibration	Input / output	1.001 switch

The calibration of the lamps can be started with value = 1 of this communication object. The lamps are then switched on with 100% and then dimmed darker in steps of 10%. The detector then knows what the dimming curves of the lamps look like. This object sends value = 1 when the calibration has been completed. If an error occurs during calibration, this object sends value = 0.

10.15 Communication objects — Presence detector — HVAC

10.15.1 P3: HVAC

Number	Name	Object function	Data type
37	P3: HVAC	Output	1.001 switch
			5.001 percentage (0..100%)
			5.010 counter pulses (0..255)
			18.001 scene control
			20.102 HAVC mode
			9.* 2-byte float value

The value for switching on is sent to the actuator via the output during movement and after expiry of the switch-on delay.

The value for switch-off is sent to the actuator after expiry of the switch-off delay.

10.15.2 P3: Slave

Number	Name	Object function	Data type
37	P3: Slave	Input	1.001 switch

The constant light controller can be switched on with a 1 from a different movement or presence detector via the object.

10.15.3 P3: Enable HVAC

Number	Name	Object function	Data type
39	P3: Enable HVAC	Input	1.001 switch

The detector can be blocked or enabled via the object. Enabling has priority over all other objects.

10.15.4 P3: Light-on time

Number	Name	Object function	Data type
40	P3: Light-on time	Input	7.005 time (s)

If no movement is detected, the function enters the programmed switch-off and then switches off. The switch-off delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.15.5 P3: Switch-on delay

Number	Name	Object function	Data type
41	P3: Switch-on delay	Input	7.005 time (s)

The switch-on delay can be reprogrammed at all times via this object from a different control element without the aid of ETS. If this value is not to be overwritten during each download, the parameter "Overwrite setting during download" is to be programmed accordingly.

10.15.6 P3: Force-position

Number	Name	Object function	Data type
42	P3: Force-position	Input	1.001 switch

By means of function force-position the control function is deactivated (value = 1) and the device switches to a parameterized value until the force-position is deactivated again (value = 0). The force-position has a lower priority than enable.

10.16 Communication objects — Presence detector — Brightness detection

10.16.1 BR: Brightness

Number	Name	Object function	Data type
69	BR: Brightness	Output	9.* 2-byte float value

This object sends the brightness value calibrated via the daylight correction.

10.16.2 BR: Alarm

Number	Name	Object function	Data type
70	BR: Alarm	Output	1.005 alarm

If a brightness value is not received within the programmed time, the object sends value = 1.

10.16.3 BR: External brightness 1

Number	Name	Object function	Data type
71	BR: External brightness 1	Input	9.* 2-byte float value

Via this object it is possible to combine an external value from a different brightness sensor with the internal brightness.

10.16.4 BR: External brightness 2

Number	Name	Object function	Data type
72	BR: External brightness 2	Input	9.* 2-byte float value

Via this object it is possible to combine an external value from a different brightness sensor with the internal brightness.

10.16.5 BR: Brightness adjustment (daylight)

Number	Name	Object function	Data type
73	BR: Brightness adjustment (daylight)	Input	9.* 2-byte float value

The measured value for daylight is sent to this object during the brightness adjustment.

10.16.6 BR: Brightness adjustment (output 1)

Number	Name	Object function	Data type
74	BR: Brightness adjustment (output 1)	Input	9.* 2-byte float value

The measured value for output 1 (light row 1) is sent to this object during the brightness adjustment.

10.16.7 BR: Brightness adjustment (output 2)

Number	Name	Object function	Data type
75	BR: Brightness adjustment (output 2)	Input	9.* 2-byte float value

The measured value for output 2 (light row 2) is sent to this object during the brightness adjustment.

10.16.8 BR: LED

Number	Name	Object function	Data type
76	BR: LED	Input	1.001 switch

The LED located in the device can be switched on and off via this object (1= switch-on, 0 = switch-off).

10.17 Communication objects — Object RTC

10.17.1 Heating control value

Number	Name	Object function	Data type
1	Heating control value (control value heating/cooling)	Output	1. Switching 2. Percent (0..100%)

Description:

1. This object is used to operate a switching actuating drive, e.g. a thermoelectric positioner, that is controlled by a switching/heating actuator.
2. This object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

10.17.2 Additional heating stage

Number	Name	Object function	Data type
2	Additional heating stage (additional heating/cooling stage)	Output	1. Switching 2. Percent (0..100%)

Description:

1. This object is used to operate a switching actuating drive, e.g. a thermoelectric positioner, that is controlled by a switching/heating actuator.
2. This object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.



Note

The additional stage can also be used as a parallel second heating stage. To do this, set the parameter for the temperature difference to the basic stage to 0°C.

10.17.3 Cooling control value

Number	Name	Object function	Data type
3	Cooling control value	Output	1. Switching 2. Percent (0..100%)

Description:

1. This object is used to operate a switching actuating drive, e.g. a thermoelectric positioner, that is controlled by a switching/heating actuator.
2. This object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

10.17.4 Additional cooling stage

Number	Name	Object function	Data type
4	Additional cooling stage	Output	1. Switching 2. Percent (0..100%)

Description:

1. This object is used to operate a switching actuating drive, e.g. a thermoelectric positioner, that is controlled by a switching/heating actuator.
2. This object is used to control an actuating drive with a continuous input value (0%..100%), e.g. an electromotive actuating drive.

**Note**

The additional stage can also be used as a parallel second cooling stage. To do this, set the parameter for the temperature difference to the basic stage to 0°C.

10.17.5 Control On/Off

Number	Name	Object function	Data type
5	1. Control On/Off	Output	Switching
	2. Control On/Off (master)		Switching
	3. Control On/Off (slave)		Switching

If a 0 telegram is received, the controller switches to OFF mode and regulates the temperature to the setpoint value for frost/heat protection. When the controller is switched on again, the remaining operating mode objects are queried in order to determine the new operating mode.

**Note**

About item 2:

During active ON/OFF controller function in master/slave mode the ON/OFF (master) control object is to be linked with this object.

About item 3:

During active ON/OFF controller function in master/slave mode the ON/OFF (slave) control object is to be linked with this object.

10.17.6 Actual temperature

Number	Name	Object function	Data type
6	1. Actual temperature	Output	2-byte floating point value
	2. Actual temperature weighted		2-byte floating point value

1. The object outputs the measured (room) temperature, adjusted by the calibration value.
2. The object outputs the temperature value which is calculated from the recording and weighting of internal and up to two external temperatures.

**Note**

An external temperature measurement for room control may be practical for larger rooms and/or floor heating.

10.17.7 External actual temperature

Number	Name	Object function	Data type
7	External actual temperature	Input	2-byte floating point value

2-byte communication object for reading an external temperature value provided via the KNX bus.

10.17.8 External actual temperature 2

Number	Name	Object function	Data type
8	External actual temperature 2	Input	2-byte floating point value

2-byte communication object for reading an additional external temperature value provided via the KNX bus.

10.17.9 Fault, actual temperature

Number	Name	Object function	Data type
9	1. Fault, actual temperature	Output	Switching
	2. Fault, actual temperature (master)	Output	Switching
	3. Fault, actual temperature (slave)	Output	Switching

If one of the parameterized input temperatures is unavailable to the controller for a period longer than the monitoring time, the controller enters the error mode. The error mode is sent to the bus as the value 1.

**Note**

About item 2:

This object must be connected to the "Fault, actual temperature (slave)" object in order to indicate the error mode.

About item 3:

This object must be connected to the "Fault, actual temperature (slave)" object in order to indicate the error mode.

10.17.10 Local actual temperature

Number	Name	Object function	Data type
10	Local actual temperature	Output	Switching

Not visible!

10.17.11 Current setpoint

Number	Name	Object function	Data type
11	Current setpoint	Output	2-byte floating point value

The object outputs the current setpoint temperature resulting from the following: the parameterized setpoint temperature of the current operation type and operating mode, the manual setpoint temperature adjustment, a change in the base setpoint temperature via the base setpoint value object. This is purely a transmitting object.

10.17.12 Working mode

Number	Name	Object function	Data type
12	1. Operating mode	Input / output	HVAC mode
	2. Operating mode (master)	Input / output	HVAC mode
	3. Operating mode (slave)	Input / output	HVAC mode

The "Operating mode" object receives, as a 1-byte value, the operating mode that is to be set. Here value 1 means "Comfort," value 2 "Standby," value 3 "Economy" and value 4 "Frost/heat protection".

In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode," "Condensate water alarm," "Dew alarm," "Window contact," "Control On/Off," "Presence detector" and "Operating mode (listed in decreasing order of priority).

**Note**

Item 2:

If the master/slave mode is the active operating mode, the Operating mode (slave) object must be connected to this object.

Item 3:

If the master/slave mode is the active operating mode, the operating mode (master) object must be connected to this object.

10.17.13 Superimposed operating mode

Number	Name	Object function	Data type
13	1. Superimposed operating mode	Input	HVAC mode
	2. Superimposed operating mode (master/slave)	Input	HVAC mode

The "Superimposed operating mode" object receives the operating mode that is to be set as 1-byte value. Here value 0 means "Superimposition inactive," value 1 "Comfort," value 2 "Standby," value 3 "Economy" and value 4 "Frost/heat protection".

In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode," "Condensate water alarm," "Dew alarm," "Window contact," "Control On/Off," "Presence detector" and "Operating mode (listed in decreasing order of priority).

**Note**

Item 2:

If the master/slave mode is active, the "Superimposed operating mode" object of the master and the slave must be connected to the group address of the transmitter.

10.17.14 Window contact

Number	Name	Object function	Data type
14	1. Window contact	Input	Switching
	2. Window contact (master/slave)	Input	Switching

The object uses the value 1 to signal an open window to the controller. If no other object with a higher priority is present, then the "Window contact" message causes the controller to be set to the setpoint value for frost/heat protection. In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode," "Condensate water alarm," "Dew alarm," "Window contact," "Control On/Off," "Presence detector" and "Operating mode (listed in decreasing order of priority).

**Note**

If the master/slave mode is active, the "Window contact (master/slave)" object of the master and the slave must be connected to the group address of the transmitter.

10.17.15 Presence detector

Number	Name	Object function	Data type
15	1. Presence detector	Input	Switching
	2. Presence detector (master/slave)	Input	Switching

This object transmits the value 1 to the controller to signal that there are people in the room. If not other object with a higher priority is present, then the "Presence detector" causes the controller to be set to the comfort setpoint value. In addition to manual setpoint adjustment and the adjustment of the basic setpoint value, the setpoint temperature of the controller can also be defined by objects "Superimposed operating mode," "Condensate water alarm," "Dew alarm," "Window contact," "Control On/Off," "Presence detector" and "Operating mode (listed in decreasing order of priority).

**Note**

Item 2:

If the master/slave mode is active, the "Presence detector (master/slave)" object of the master and the slave must be connected to the group address of the transmitter.

10.17.16 Heating status

Number	Name	Object function	Data type
16	Heating status	Output	Switching

The room temperature controller sends an ON telegram via the "Heating status" object as soon as it is active in the heating mode. If the controller is in the inactive zone between heating and cooling or is in cooling mode, the room temperature controller transmits an OFF telegram on the "Heating status" object.

10.17.17 Cooling status

Number	Name	Object function	Data type
17	Cooling status	Output	Switching

The room temperature controller sends an ON telegram via the "Cooling status" object as soon as it is active in the cooling mode. If the controller is in the inactive zone between heating and cooling or is in heating mode, the room temperature controller transmits an OFF telegram on the "Cooling status" object.

10.17.18 Basic load

Number	Name	Object function	Data type
16	Basic load	Input / output	Switching

This object uses the value 1 to activate a parameterized base load, i.e. a minimum control value greater than zero. The value 0 deactivates the base load. When the base load is deactivated, the control value can be lowered all the way to zero if necessary when the setpoint temperature is reached, despite the minimum value set in the parameter.

**Note**

Item 2:

Deactivating the base load for a floor heating system is always useful in the summer, since it saves heating energy.

10.17.19 Switchover heating/cooling

Number	Name	Object function	Data type
17	Switchover heating/cooling	Input / output	Switching

1. Automatic: If the switchover between heating and cooling is performed automatically by the room temperature controller, then this object is used to provide information on the current heating (0) or cooling (1) status to the KNX bus. It is a transmitting object.
2. Only via object: The switchover between heating and cooling on the room temperature controller occurs solely via this 1-bit communication object. The value (0) activates the heating mode, and the value (1) activates the cooling mode. This is a receiving object.
3. Manual or via object: The switchover between heating and cooling on the room temperature controller occurs by user interaction or via the 1-bit communication object. The information on the respective heating (0) or cooling (1) status is available to the KNX bus. This is a receiving and sending object.

10.17.20 Fan coil manual

Number	Name	Object function	Data type
18	1. Fan coil manual	Output	Switching
	2. Fan coil manual (master)	Output	Switching
	3. Fan coil manual (slave)	Output	Switching

Using this 1-bit communication object, a fan coil actuator can be placed in manual fan mode or returned to automatic fan mode. In the automatic fan mode of the fan coil actuator, the fan's rotational speed is defined in the fan coil actuator using the control value. In manual fan operation, the user of the room temperature controller can set the fan's rotational speed as needed. This setting will remain active until it is reset. The fan speed level 0 is an exception: to avoid damage to the building, automatic mode is activated again 18 hours after fan speed level 0 is selected.

**Note**

Item 2:

If fan coil manual is active in the master/slave mode, the fan coil manual (slave) object must be connected to this object.

Item 3:

If fan coil manual is active in the master/slave mode, the fan coil manual (master) object must be connected to this object.

10.17.21 Fan coil step

Number	Name	Object function	Data type
18	1. Fan coil step	Output	2-byte floating point value
	2. Fan coil step (master)	Output	2-byte floating point value
	3. Fan coil step (slave)	Output	2-byte floating point value

The fan speed level in the fan coil actuator is selected via the 1-byte communication object. Whether the fan speed level information is transmitted in manual or also in automatic fan speed level mode can be set. The formats that can be selected for the 1-byte communication object are the fan speed level (0..5) or a percentage value (0..100%) which is calculated back to a fan speed level in the fan coil actuator.

**Note**

Item 2:

If fan coil step is active in the master/slave mode, the fan coil step (slave) object must be connected to this object.

Item 3:

If fan coil step is active in the master/slave mode, the fan coil step (slave) object must be connected to this object.

10.17.22 Fan coil step status

Number	Name	Object function	Data type
20	Fan coil step status	Input / output	2-byte floating point value

Using the "Fan coil step status" object, the room temperature controller receives the current fan speed level of the fan coil actuator.

10.17.23 Fan speed level 1

Number	Name	Object function	Data type
21	Fan speed level 1	Output	Switching

This 1-bit communication object is used to output the active status (1) of the fan speed level, while the other fan speed levels are deactivated (0), depending on the parameter setting. If the fan speed level is inactive, the object has a value of (0).

10.17.24 Fan speed level 2

Number	Name	Object function	Data type
22	Fan speed level 2	Output	Switching

This 1-bit communication object is used to output the active status (1) of the fan speed level, while the other fan speed levels are deactivated (0), depending on the parameter setting. If the fan speed level is inactive, the object has a value of (0).

10.17.25 Fan speed level 3

Number	Name	Object function	Data type
23	Fan speed level 3	Output	Switching

This 1-bit communication object is used to output the active status (1) of the fan speed level, while the other fan speed levels are deactivated (0), depending on the parameter setting. If the fan speed level is inactive, the object has a value of (0).

10.17.26 Fan speed level 4

Number	Name	Object function	Data type
24	Fan speed level 4	Output	Switching

This 1-bit communication object is used to output the active status (1) of the fan speed level, while the other fan speed levels are deactivated (0), depending on the parameter setting. If the fan speed level is inactive, the object has a value of (0).

10.17.27 Fan speed level 5

Number	Name	Object function	Data type
25	Fan speed level 5	Output	Switching

This 1-bit communication object is used to output the active status (1) of the fan speed level, while the other fan speed levels are deactivated (0), depending on the parameter setting. If the fan speed level is inactive, the object has a value of (0).

10.17.28 Basic setpoint

Number	Name	Object function	Data type
26	Basic setpoint	Input	2-byte floating point value

This 2-byte communication object can be used to change/adjust the parameterized basic setpoint value via the KNX bus. Parameters can be used to define whether the value received by this object is interpreted as "Setpoint heating comfort," "Setpoint cooling comfort" or an average between heating and cooling comfort.

10.17.29 Resetting manual setpoints

Number	Name	Object function	Data type
27	Resetting manual setpoints	Input	Switching

This 1-bit communication object is used to reset the manual setpoint adjustment that was set on the device.

10.17.30 Dew point alarm

Number	Name	Object function	Data type
28	Dew point alarm	Input	Switching

This 1-bit communication object is used to place the controller in the dew point alarm mode. This causes the current setpoint value to be set to the heat protection setpoint value in order to keep the structure from being damaged by dew.

**Note**

This protective mechanism is only active in the cooling mode. It remains in place until it is cancelled by the value (0). When an alarm is active, manual operation of the controller is blocked. This information is indicated by a corresponding icon on the control unit.

10.17.31 Condensate water alarm

Number	Name	Object function	Data type
29	1. Condensate water alarm	Input	Switching
	2. Condensate water alarm (master/slave)	Input	Switching

This 1-bit communication object is used to place the controller in the condensation alarm mode. This causes the current setpoint value to be set to the heat protection setpoint value in order to keep the structure from being damaged by an overflowing condensation container.

**Note**

Item 1:

This protective mechanism is only active in the cooling mode. It remains in place until it is cancelled by the value (0). When an alarm is active, manual operation of the controller is blocked. This information is indicated by a corresponding icon on the device.

Item 2:

This protective mechanism is only active in the cooling mode. It remains in place until it is cancelled by the value (0). When an alarm is active, manual operation of the controller is blocked. This information is indicated by a corresponding icon on the device.

When the master/slave mode is active, the condensate water alarm (master/slave) objects must be connected to the alarm transmitter.

10.17.32 Outside temperature for summer compensation

Number	Name	Object function	Data type
30	Outside temperature for summer compensation	Input	2-byte floating point value

In order to save energy, and to ensure that the temperature difference occurring during entry and exit of a climate-controlled building stays within comfortable limits, the reduction of room temperature by cooling devices should be limited as a function of the outside temperature (summer compensation). This, for example, prevents the air-conditioning system from further reducing the room temperature to 24°C with an outside temperature of 35°C.

This function can only be used with an outside temperature sensor. This 2-byte communication object must then be used to provide the controller with the current outside temperature.

10.17.33 Summer compensation active

Number	Name	Object function	Data type
31	Summer compensation active	Output	Switching

This 1-bit communication object is used to indicate via the bus whether the summer compensation is active (1) or inactive (0). If it is active, the setpoint value configured for the cooling mode is increased by the summer compensation function. A decrease of the cooling mode setpoint temperature below the value calculated by the parameterized summer compensation function is not possible. An increase of the setpoint temperature for the cooling mode is always possible.

10.17.34 Setpoint reached

Number	Name	Object function	Data type
32	Setpoint reached	Output	Switching

When the setpoint set on the device in comfort mode has been reached it is sent by means of value (1) as information to the KNX bus via the 1-bit communication object. The function is started by activating the comfort or presence mode. If the reaching of the setpoint temperature is interfered with by the preselection of a different operating mode or by adjustment to a new setpoint, value (0) is sent.

10.17.35 Fahrenheit

Number	Name	Object function	Data type
33	1. Fahrenheit	Input / output	Switching
	2. Fahrenheit (master)	Input / output	Switching
	3. Fahrenheit (slave)	Input / output	Switching

The temperature indication on the display can be changed from Celsius (°C) to Fahrenheit (°F). The conversion from Celsius to Fahrenheit always takes place in the display unit, since only Celsius values are sent over the KNX bus. The value (0) results in a temperature indication in Celsius, while the value (1) results in Fahrenheit.

**Note**

Item 2:

If the Fahrenheit object is active in the master/slave mode, the Fahrenheit (slave) object must be connected to this object.

Item 3:

If the Fahrenheit object is active in the master/slave mode, the Fahrenheit (master) object must be connected to this object.

10.17.36 Display backlighting

Number	Name	Object function	Data type
34	Display backlighting	Input / output	Switching

The display backlighting is activated with value (1) and deactivated with value (0) via the 1-bit communication object.

**Note**

This function is mainly used in rooms where backlighting during the night is considered to be a disturbing factor, such as in hotel rooms and bedrooms.

10.17.37 On/Off request

Number	Name	Object function	Data type
35	1. On/off request (master)	Input	Switching
	2. On/off request (slave)	Input	Switching

This 1-bit communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.38 Setpoint display

Number	Name	Object function	Data type
36	1. Set value display (master)	Input / output	2-byte floating point value
	2. Set value display (slave)	Input / output	2-byte floating point value

This 2-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.39 Request setpoint

Number	Name	Object function	Data type
37	1. Request setpoint (master)	Input	Percent (0..100%)
	2. Request setpoint (slave)	Input	Percent (0..100%)

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.40 Confirm setpoint

Number	Name	Object function	Data type
38	1. Confirm setpoint (master)	Input / output	Percent (0..100%)
	2. Confirm setpoint (slave)	Input / output	Percent (0..100%)

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.41 Heating/cooling request

Number	Name	Object function	Data type
39	1. Heating/cooling request (master)	Input	Switching
	2. Heating/cooling request (slave)	Input	Switching

This 1-bit communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.42 Request manual fan speed level

Number	Name	Object function	Data type
40	1. Request manual fan speed level (master)	Input	Switching
	2. Request manual fan speed level (slave)	Input	Switching

This 1-bit communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.43 Request fan speed level

Number	Name	Object function	Data type
41	1. Request fan speed level (master)	Input	Percent (0..100%)
	2. Request fan speed level (slave)	Input	Percent (0..100%)

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.44 Confirm fan speed level

Number	Name	Object function	Data type
42	1. Confirm fan speed level (master)	Input / output	Percent (0..100%)
	2. Confirm fan speed level (slave)	Input / output	Percent (0..100%)

This 1-byte communication object must be connected to the respective slave communication object in order to synchronize the devices in the master/slave configuration.

10.17.45 Controller status RHCC

Number	Name	Object function	Data type
43	Controller status RHCC	Output	2-byte floating point value

This communication object outputs the heating/cooling operating mode, active/inactive operation, the frost and heat alarm, and the error (actual temperature reading failure) in accordance with the specification for the RHCC (Room Heating Cooling Controller) status.

10.17.46 Controller status HVAC

Number	Name	Object function	Data type
43	1. Controller status HVAC	Output	Percent (0..100%)
	2. Controller status HVAC (master)	Output	Percent (0..100%)
	3. Controller status HVAC (slave)	Output	Percent (0..100%)

This communication object outputs the current operating mode, the heating/cooling mode, active/inactive mode, the frost alarm and the dew point alarm in accordance with the specification for the HVAC (Heating Ventilation Air Conditioning) status.

**Note**

Item 2:

If the master/slave mode is active, the HVAC status (slave) object must be connected to this object.

Item 3:

If the master/slave mode is active, the HVAC status (master) object must be connected to this object.

10.17.47 Commissioned

Number	Name	Object function	Data type
45	Commissioned	Output	Switching

The controller uses this 1-bit communication object to send a cyclical "sign of life". This signal can be used to monitor the device, e.g. by means of a visualization.

10.18 Communication objects — Logic functions

10.18.1 Logic gate

No.	Object name	Data type	Flags
0	Output	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, T
0	Output	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, T
1	Input 1	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
1	Input 1	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
2	Input 2	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
2	Input 2	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
3	Input 3	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
3	Input 3	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
4	Input 4	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
4	Input 4	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
5	Input 5	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
5	Input 5	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
6	Input 6	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
6	Input 6	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
7	Input 7	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
7	Input 7	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
8	Input 8	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
8	Input 8	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
9	Input 9	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
9	Input 9	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U
10	Input 10	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, U
10	Input 10	(1 Byte) 1 Byte EIS14 / DPT 5.010	C, W, U

Logic objects

No. Object nam

10.18.2 Gate

Gate objects

No.	Object name	Data type	Flags
0	Input	-	C, W, T
1	Output	-	C, W, T
2	Control input	1 bit EIS1 / DPT 1.001	C, W

1

10.18.3 Delay

Delay objects

No.	Object name	Data type	Flags
0	Input	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W
0	Input	(1 Bit) 1 Bit EIS7 / DPT 1.008	C, W
0	Input	(1 Bit) 1 Bit EIS7 / DPT 1.007	C, W
0	Input	(1 Byte 0..100 %) 1 Byte EIS6 / DPT 5.001	C, W
0	Input	(1 Byte 0..255) 1 Byte EIS14 / DPT 5.010	C, W
0	Input	(2 Byte Float) 2 Byte EIS5 / DPT 9.xxx	C, W
0	Input	(2 Byte Signed) 2 Byte EIS10 / DPT 8.001	C, W
0	Input	(2 Byte Unsigned) 2 Byte EIS10 / DPT 7.001	C, W
0	Input	(4 Byte Float) 4 Byte EIS9 / DPT 14.xxx	C, W
0	Input	(4 Byte Signed) 4 Byte EIS11 / DPT 13.001	C, W
0	Input	(4 Byte Unsigned) 4 Byte EIS11 / DPT 12.001	C, W
1	Output	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, T
1	Output	(1 Bit) 1 Bit EIS7 / DPT 1.008	C, T
1	Output	(1 Bit) 1 Bit EIS7 / DPT 1.007	C, T
1	Output	(1 Byte 0..100 %) 1 Byte EIS6 / DPT 5.001	C, T
1	Output	(1 Byte 0..255) 1 Byte EIS14 / DPT 5.010	C, T
1	Output	(2 Byte Float) 2 Byte EIS5 / DPT 9.xxx	C, T
1	Output	(2 Byte Signed) 2 Byte EIS10 / DPT 7.001	C, T
1	Output	(2 Byte Unsigned) 2 Byte EIS10 / DPT 7.001	C, T
1	Output	(4 Byte Float) 4 Byte EIS9 / DPT 14.xxx	C, T
1	Output	(4 Byte Signed) 4 Byte EIS11 / DPT 13.001	C, T
1	Output	(4 Byte Unsigned) 4 Byte EIS11 / DPT 12.001	C, T
2	Delay time	(2 Byte) 2 Byte EIS10 / DPT 7.001	C, R, W

Delay objects

No.

10.18.4 Staircase lighting

Staircase lighting objects

No.	Object name	Data type	Flags
0	Input	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W
0	Input	(1 Byte) 1 Bit EIS14 / DPT 5.010	C, W
0	Input_Output	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, W, T
1	Light-on time	(2 Byte) 2 Byte EIS10 / DPT 7.001	C, R, W
2	Switch-off prewarning	(2 Byte) 2 Byte EIS10 / DPT 7.001	C, R, W
3	Output	(1 Bit) 1 Bit EIS1 / DPT 1.001	C, T
3	Output	Output (1 Byte) 1 Bit EIS14 / DPT 5.010	C, T

No.

Objec



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