

Technical Manual

MDT Presence Detector



SCN-P360D3.02

SCN-P360K3.02

SCN-G360D3.02

SCN-G360K3.02

SCN-P360D4.02

SCN-P360K4.02

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2 Overview

2.1 Overview devices

The manual refers to the following devices (Order code printed in bold type):

- **SCN-P360D4.02** Presence detector, 4 Pyro detectors
 - 4 Pyro-Detectors, individually programmable detection sensitivity for standby state day, night and presence, switching options for movement and brightness, separate communication object for night, Master/Slave function, Standby-/Orientation light, 4 area mode
- **SCN-P360K4.02** Presence Detector, 4 Pyro detectors, constant light control
 - 4 Pyro-Detectors, individually programmable detection sensitivity for standby state day, night and presence, switching options for movement and lightness, separate communication object for night, Master/Slave function, Standby-/Orientation light, 4 area mode, extended constant light control with proportional Master/Slave function for up to 3 light groups
- **SCN-P360D3.02/ SCN-G360D3.02** Presence Detector, 3 Pyro detectors
 - 3 Pyro-Detectors, individually programmable detection sensitivity for standby state day, night and presence, switching options for movement and lightness, separate communication object for night, Master/Slave function, Standby-/Orientation light, 3 area mode
- **SCN-P360K3.02/ SCN-G360K3.02** Presence Detector, 3 Pyro detectors, constant light control
 - 3 Pyro-Detectors, individually programmable detection sensitivity for standby state day, night and presence, switching options for movement and lightness, separate communication object for night, Master/Slave function, Standby-/Orientation light, 3 area mode, extended constant light control with proportional Master/Slave function for up to 3 light groups

2.2 Usage & possible applications

The MDT Presence Detector switches the light accordingly to the brightness and presence. It can be used for switching on demand to switch the light economically. Especially in public buildings, but also in rarely used rooms as bath and WC, the presence detector can be used to minimize the non-essential switching periods. An additional channel transmits information about presence in the room to other subsections as Heating-control, air-conditioning, ventilation or shutter controlling. So the presence detector can also be employed in a subsection comprehensive use.

The presence detectors SCN-P360K3.02/SCN-G360K3.02 und SCN-P360K4.02 contain of an additional intelligent constant light control. This can control up to 3 light bands in a way to hold the brightness in a room continuously at a constant value.

2.3 Exemplary circuit diagram

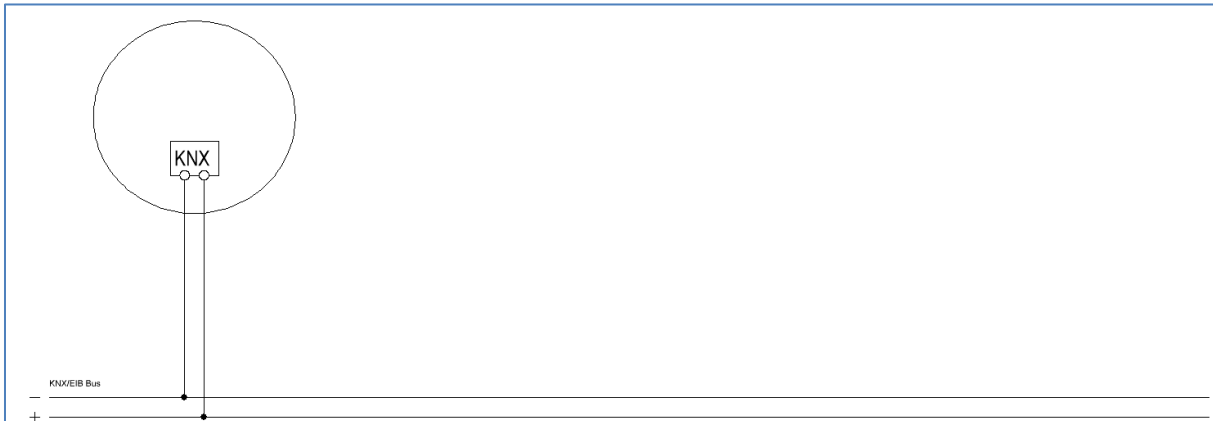


Figure 1: Exemplary circuit diagram

2.4 Structure & installation instructions

The following figure shows the adjustment of the particular sensors, identified with S1=sensor 1 to S4 for the presence detector with 4 pyro sensors. The LEDs are marked with R for the red LED and G for the green LED. The bus connector is marked with BC:

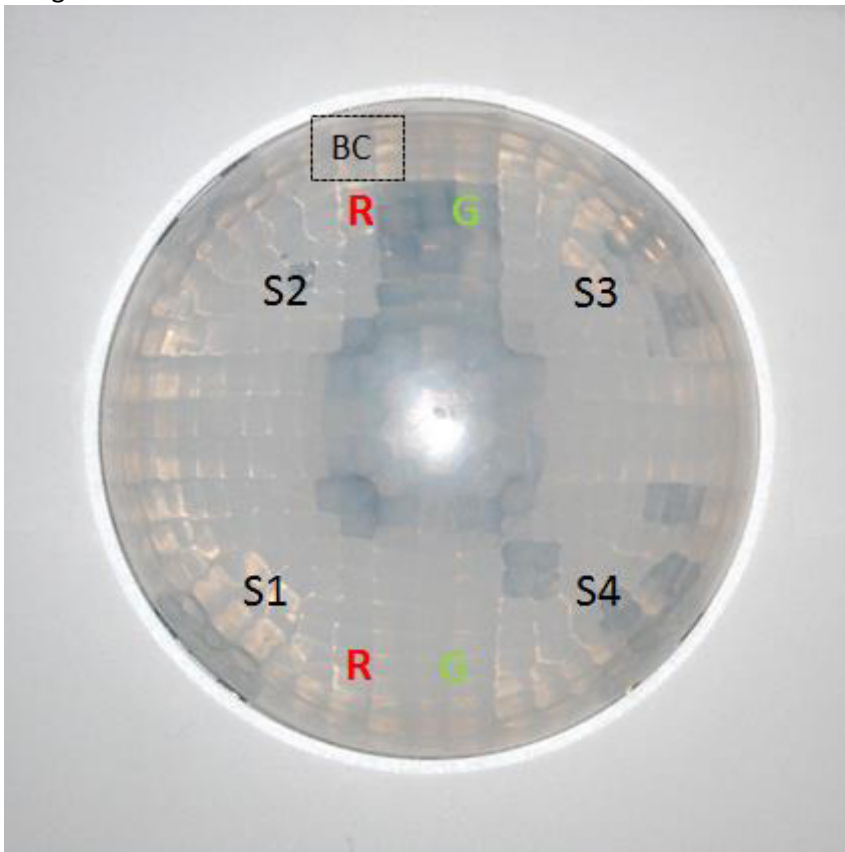


Figure 2: Position of the sensors and LEDs – SCN-P360X4.02

The following figure shows the adjustment of the particular sensors, identified with S1=sensor 1 to 3 , for the presence detector with 3 pyro sensors. The LEDs are marked with R for the red LED and G for the green LED. The bus connector is marked with BC:

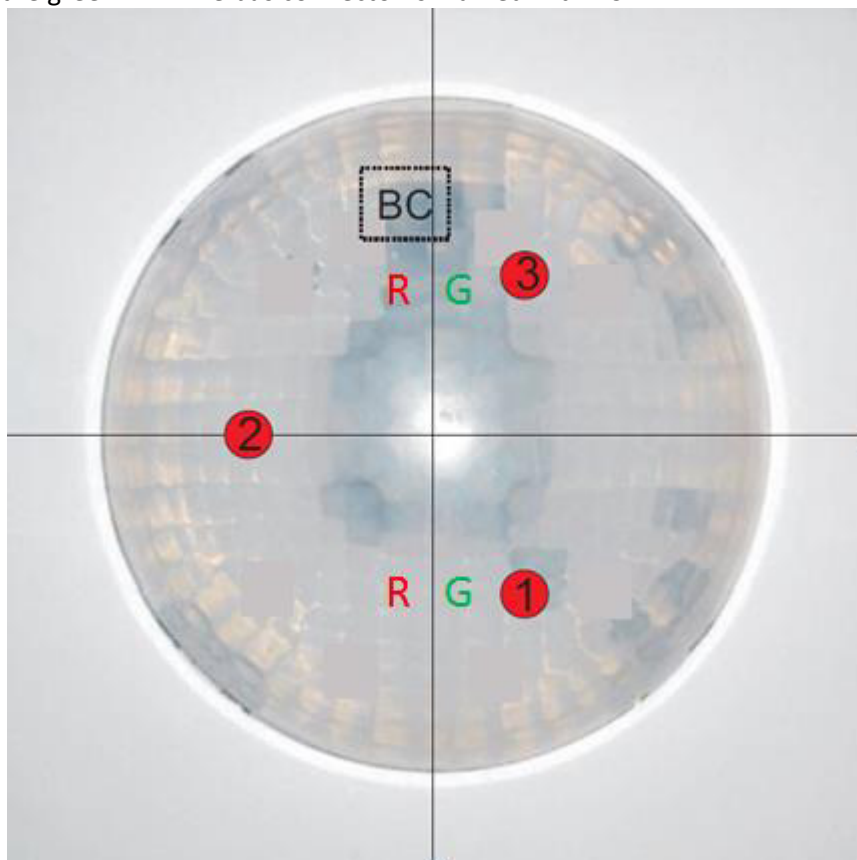


Figure 3: Position of the sensors and LEDs– SCN-P/G360X3.02

The presence detector should be placed in the middle of the room. It is important for the constant light control to install the detector in a minimum distance of 60 cm to the next lamp and in the line of the middle light band.

The following figures show the detection area of the presence detectors:

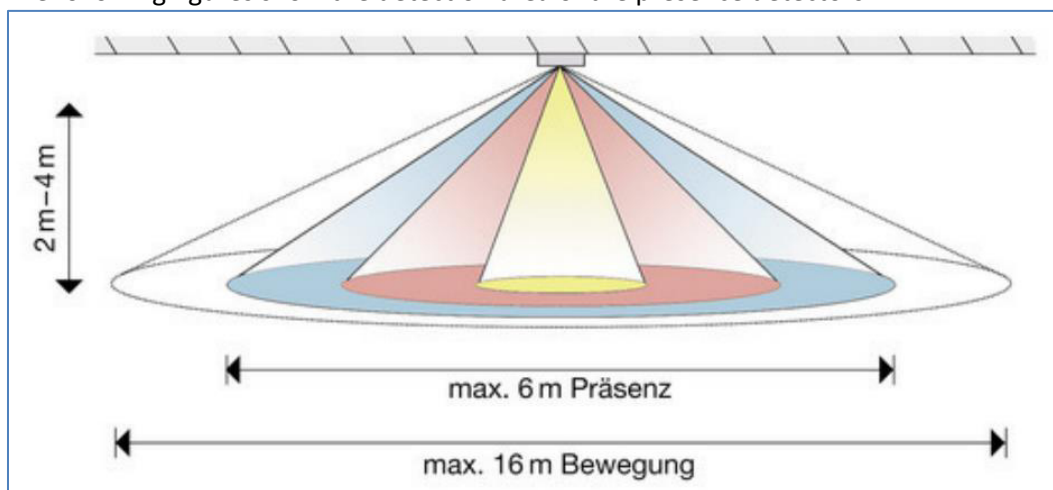


Figure 4: Detection area SCN-P360x4.02

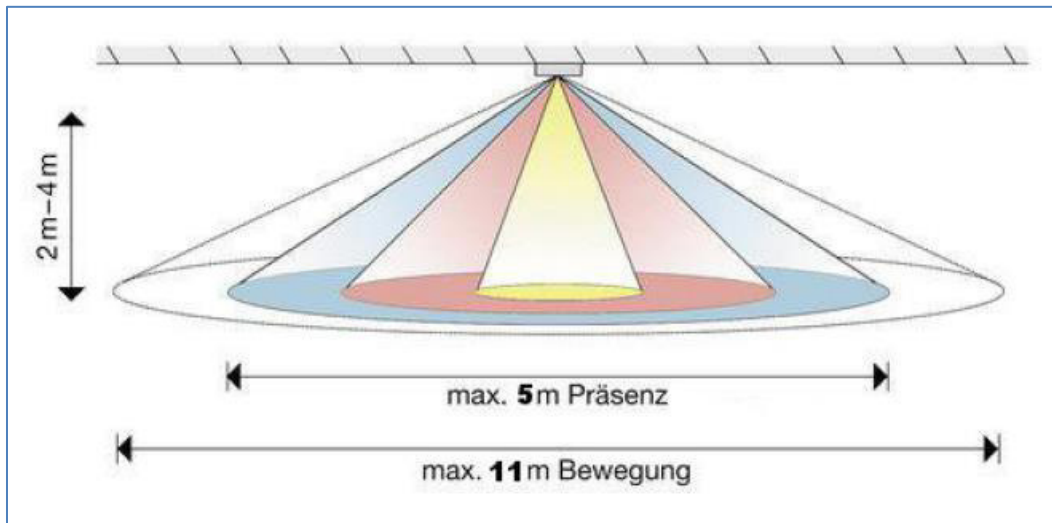


Figure 5: Detection area SCN-P360x3.02

2.5 Functions

The functions of the presence detector are divided in the areas general settings, settings for the light control, the sending behavior and the calibration for the brightness value, settings for logic, activation of LED, settings for scenes and, according to the the hardware type, the constant light control.

The following menus are shown and can be parametrized further:

- **General setting**
The general settings are used for basic configuration of the presence detector. Here, the usage of the day/night object (separate switching objects for day/night), basic settings of sensitivity and brightness, forced control as well as release of external push-button input are set.
- **Channel selection**
Up to four light groups, one HCV and one alarm group can be activated here.
 - **Light groups 1/2/3/4** (Only 3 light groups possible for models with only 3 sensors).
Settings for presence operation can be made here. In this menu, active sensors, the operating mode of the detector, forced control or lock object, the sending conditions, the follow-up time and external push-button inputs can be defined.
 - **HCV**
The Heating-, Ventilation-, Climate-channel is the interface of the presence detector to other subsections. In contrast to the light channels, the HCV channel has adjustable observation windows with which the presence in the room can be monitored. By using this channel you can, for example, control the ventilation of a room as required or switch other HCV functions in presence/absence.
 - **Alarm**
The alarm channel is used to recognize and detect movements during absence. For this purpose, the channel has a separate sensitivity setting and its own enable/lock object with which monitoring can be started. Like the HCV channel, the alarm channel also provides adjustable observation windows.
- **LED**
Here you can set whether and for which light channel the green LED is active
- **Scenes**
Up to 8 scenes with different settings for light channels 1-4 can be activated here
- **Brightness**
Settings for the sending of the measured brightness value and a treshold value can be adjusted here.
- **Calibration of brightness value**
The correction of the measured brightness value can be adjusted by a steady parameter or via the Teach-In object.

- **Constant light** *(only for SCN-x360Kx.02)*
In this menu, all settings for controlling the Constant light function are made. The presence detector can control up to 3 light bands, which are divided into wall, centre and window sections. An intelligent proportional master/slave control ensures that the presence detector regulates the entire room to the same brightness and thus compensates for external influences such as sunlight..
- **Logic**
Up to 4 logic blocks can be activated in this menu. Within one logic block, settings can be made between the functions AND/OR/XOR, different output objects, sending conditions and up to two internal inputs or four external inputs.

2.6 Settings in the ETS-Software

Selection at the product database

Manufacturer: MDT Technologies

Product family: Presence detector

Product type: Ceiling

Medium Type: Twisted Pair (TP)

Product name:: dependent of the used type, e.g.SCN-P360K4.02

Order number: dependent of the used type, e.g. SCN-P360K4.02

2.7 Commissioning

After wiring, the allocation of the physical address and the parameterization of every channel follows:

- (1) Connect the interface with the bus, e.g. MDT USB Interface
- (2) Switch on bus voltage
- (3) Press the programming button at the device (red programming LED lights)
- (4) Loading of the physical address out of the ETS-Software by using the interface (red LED goes off as soon as this process was completed successfully)
- (5) Loading of the application, with requested parameterization
- (6) If the device is enabled you can test the requested functions (also possible by using the ETS-Software)

3 Communication objects

3.1 Default settings of the communication objects

The following table shows the standard settings for the communication objects:

Default settings									
No.	Name	Function	Length	Priority	C	R	W	T	U
0	Light channel 1 – Output 1 (day)	Switching	1 Bit	Low	X	X		X	
0	Light channel 1 - Output	Dimming absolute	1 Byte	Low	X	X		X	
0	Light channel 1 - Output	Scene	1 Byte	Low	X	X		X	
1	Light channel 1 – Output 1 (night)	Switching	1 Bit	Low	X	X		X	
2	Light channel 1 – Output 2 (addition)	Switching	1 Bit	Low	X	X		X	
3	Light channel 1 - Input	External push button short	1 Bit	Low	X		X		
4	Light channel 1 - Input	External push button long	2 Bit	Low	X		X		
5	Light channel 1 - Input	External motion (Slave)	1 Bit	Low	X		X		
6	Light channel 1 - Input	Force control	1 Bit	Low	X		X		
6	Light channel 1 - Input	Lock object	1 Bit	Low	X		X		
7	Light channel 1 - Input	Lock object On	1 Bit	Low	X		X		
8	Light channel 1 –Status	Status Automatic mode	1 Bit	Low	X	X		X	
+10	Light channel 2								
40	HCV – Output 1	Switching	1 Bit	Low	X	X		X	
40	HCV – Output 1	Dimming absolute	1 Byte	Low	X	X		X	
40	HCV – Output 1	Scene	1 Byte	Low	X	X		X	
43	HCV – Input	External push button short	1 Bit	Low	X		X		
44	HCV – Input	External push button long	2 Bit	Low	X		X		
45	HCV – Input	External motion	1 Bit	Low	X		X		
46	HCV – Input	Force control	1 Bit	Low	X		X		
46	HCV – Input	Lock object	1 Bit	Low	X		X		
47	HCV – Input	Lock object On	1 Bit	Low	X		X		
48	HCV – Status	Status Automatic mode	1 Bit	Low	X	X		X	
50	Alarm – Output 1	Switching	1 Bit	Low	X	X		X	
51	Alarm – Night mode	Switching	1 Bit	Low	X	X		X	
56	Alarm – Input	Lock	1 Bit	Low	X		X		
56	Alarm – Input	Enable	1 Bit	Low	X		X		
60	Day/Night toggle	Day = 0 / Night = 1	1 Bit	Low	X		X	X	X
60	Day/Night toggle	Day = 1 / Night = 0	1 Bit	Low	X		X	X	X

64	Scene	Input	1 Bit	Low	X		X		
65	Output heartbeat	Status	1 Bit	Low	X	X		X	
66	Brightness sensor	Threshold switch	1 Bit	Low	X	X		X	
67	Brightness sensor	Status brightness value	2 Byte	Low	X	X		X	
68	TeachIn	Calibration start	1 Bit	Low	X		X		
69	TeachIn	Status absolute dimming value	1 Byte	Low	X		X		
80-83	Logic 1	Input C-F	1 Bit	Low	X		X	X	X
84	Logic 1	Output 1	1 Bit/ 1 Byte/ 2 Bit	Low	X	X		X	
+5 next Logic									
100	Constant light	Switch On/Off	1 Bit	Low	X		X		
101	Constant light	Dimming relative	4 Bit	Low	X		X		
102	Constant light	Dimming absolute	1 Byte	Low	X		X		
104	Constant light	Lock	1 Bit	Low	X		X		
105	Constant light	Scenes	1 Byte	Low	X		X		
106	Constant light	Output dimming absolute main	1 Byte	Low	X	X		X	
107	Constant light	Output dimming absolute wall	1 Byte	Low	X	X		X	
108	Constant light	Output dimming absolute window	1 Byte	Low	X	X		X	

Table 1: Standard settings - communication objects

The preset default settings can be taken from the tables above. The priority of the individual communication objects as well as the flags can be adapted as required by the user. The flags assign the respective task to the communication objects in the programming. C stands for communication, R for reading, W for writing, T for transmission, and U for updating.

4 Reference ETS-Parameter

4.1 General Settings

The following figure shows the submenu for the general settings:

Day / Night object	used, read after reset	▼
Value for Day/Night	<input type="radio"/> Day = 0 / Night = 1 <input checked="" type="radio"/> Day = 1 / Night = 0	
Toggle Day/Night	<input type="radio"/> at next presence <input checked="" type="radio"/> directly at toggle	
Basic setting of sensitivity		
Release sensitivity for Day	6	▼
Trigger sensitivity at night	3 (low)	▼
Presence sensitivity	8 (high)	▼
Basic setting of brightness		
Switch-On Day	200	▲ ▼ Lux
Switch-On Night	10	▲ ▼ Lux
Switch-off when exceeding	not active	▼
Forced retrigger		
Forced retrigger	after presence and follow-up time	▼
Follow-up time for force	3 min	▼
Release time for push button long (Manuel => Auto)	<input checked="" type="radio"/> after presence and follow-up time <input type="radio"/> after fix time	
Follow-up time for push button	3 min	▼
Cyclical sending "heartbeat"	1 min	▼

Figure 6: General Settings

The following table shows the possible settings for this menu:

ETS-Text	Dynamic range [Default value]	Comment
Day/Night Object	<ul style="list-style-type: none"> not used used used, read after reset 	Setting whether a day/night object is to be used and whether it should be queried in the case of a reset.
Value for Day/Night	<ul style="list-style-type: none"> Day = 0 / Night = 1 Day = 1 / Night = 0 	Polarity of the Day/Night object
Toggle Day/Night	<ul style="list-style-type: none"> At next Presence directly at toggle 	Setting when day/night changeover is active
Basic setting of sensitivity		
Release sensitivity for day	1-8 [6]	Setting of the release sensitivity in day mode
Release sensitivity for night	1-8 [3]	Setting of the release sensitivity in night mode
Presence sensitivity	1-8 [8]	Sensitivity adjustment when presence detected
Basic settings of brightness		
Switch-on threshold – day	10-2000Lux [200]	Setting of the brightness threshold below which the sensor is activated in day mode
Switch-on threshold – night	10-2000Lux [10]	Setting of the brightness threshold below which the sensor is activated in night mode
Switch-off when exceeding	<ul style="list-style-type: none"> not active 10-2000Lux 	Setting of the brightness threshold from which the sensor is deactivated
Forced retrigger	<ul style="list-style-type: none"> not active After presence and follow-up time after fix time 	Activation of a filter for short-term brightness fluctuations
Follow-up time for force	30s-12h	Setting the release/follow-up time
Release time for push button long (Manual => Auto)	<ul style="list-style-type: none"> After presence and follow-up time after fix time 	Activation of a release time from the override by an external push button
Follow-up time for push button/ Release time for push button	30s-12h	Setting the release/follow-up time
Cyclical sending "heartbeat"	<ul style="list-style-type: none"> not active 1min – 24h 	Activation of a cyclic "heartbeat" telegram

Table 2: Parameter - General Settings

Die nachfolgende Tabelle zeigt die allgemeinen Kommunikationsobjekte:

Nummer	Name	Größe	Verwendung
60	Day/Night toggle	1 Bit	Switchover between day and night mode
65	Output heartbeat	1 Bit	Sending of a cyclic "heartbeat" telegram

Table 3: General communication objects

4.2 Light Channel 1/2/3/4/HCV

Up to 4 lighting groups can be activated for all presence detectors with 4 sensors and up to 3 lighting groups for all detectors with 3 sensors. In addition, a HCV channel and an alarm channel (see 4.3 Alarm) can be activated.

4.2.1 General Settings

The following figure shows the basic settings for a light channel:

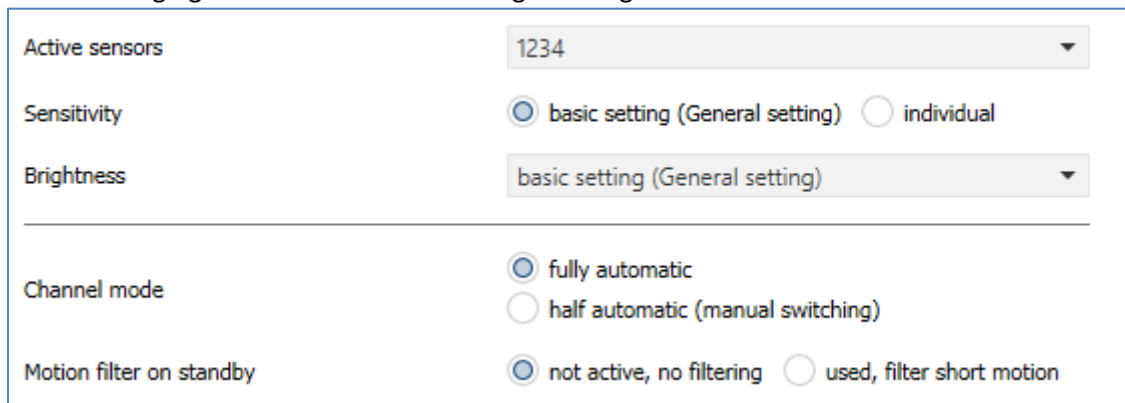


Figure 7: Basic settings - light channel

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
Active sensors	<ul style="list-style-type: none"> • 1-4 • 1234 	Setting which sensors are active for the selected channel
Sensitivity	<ul style="list-style-type: none"> • Basic setting (General setting) • individual 	<p>Basic setting: The sensitivity values set in the General Settings menu are used.</p> <p>Individual: Individual sensitivity values can be set for this light channel.</p>
Brightness (only light channels)	<ul style="list-style-type: none"> • Basic setting (General setting) • Basic setting or active object "Dark" • Independent of brightness 	<p>Basic setting: The light channel uses the brightness settings of the general settings.</p> <p>Basic setting or active object "Dark": The light channel uses the brightness settings of the general settings, but can be switched independent of brightness with a "1" to the object "Dark".</p> <p>Independent of brightness: The light channel switches independently of the measured brightness</p>

Motion filter in standby	<ul style="list-style-type: none"> • not active, no filtering • active, filter short movement 	Only in fully automatic mode! Activation of a motion filter in standby mode (= output is switched off)
Number of monitoring time slots (only for HCV)	0-30 [3]	Definition of how many movements have to be detected before switch-on
Length of monitoring time slot (only for HCV)	0-30000s [30s]	Determination of the length for a monitoring time slot

Table 4: Basic settings - light channel

The parameters „brightness“ and „monitoring time slots“ are explained in more detail below:

- **Brightness (only light channels)**
 Sensor activation/deactivation is only available for the light group. In this way, the presence detector can be assigned a specific work area. The parameter "Sensor activation below" defines the brightness threshold below which the detector detects presence. No movement is detected above this threshold, but the detector does not switch off the light as soon as the brightness is exceeded. This can be achieved with the parameter "Switch-off when exceeding". However, this value should not be set too low, as this can result in a continuous on/off switching.
- **Monitoring time slot (only HCV)**
 The monitoring time slot is only available for one HCV channel. This means that a longer detection time is required for switching on. In order to switch on the channel, at least, one detection must have taken place in each of the set monitoring time slots

4.2.2 Channel Mode Selection

A distinction can be made between two operating modes: Fully automatic and half-automatic:

- **Fully automatic**
 If the motion detector is set as fully automatic, each detected presence causes the output to be switched on and is switched off again after the follow-up time has expired.
- **Half automatic**
 In half automatic mode, the output is switched on via the "External push-button short" object and is automatically switched off again after the follow-up time has expired..

4.2.3 Follow-up time

The following figure shows the available settings for the follow-up time:

Reduction of follow-up time	<input type="radio"/> not active <input checked="" type="radio"/> active
Maximum duration for short time presence	20 s
Follow-up time for short time presence	90 s
Follow-up time	3 min

Figure 8: Settings - Follow-up time

The delay time describes the time that expires after the last detection of a movement until the output is switched off. For example, with a follow-up time of 3 minutes, the light would be switched on for at least 3 minutes with motion detection. Each new detection leads to a retriggering and thus to a restart of the follow-up time..

In addition, a "reduction of follow-up time" can be activated. In this case, two additional parameters are displayed:

Maximum duration for short time presence: Indicates the duration between the first and last motion detection to activate the short-time presence..

Follow-up time for short time presence: Indicates the duration of the follow-up time if the short-time presence has been activated.

If the first and last movement within the set duration for short-time presence was detected when short-time presence was activated, the output is not switched on for the regular follow-up time, but only for the follow-up time of the short-time presence.

4.2.4 Force or lock object

The following figure shows the settings for the force control/lock object:

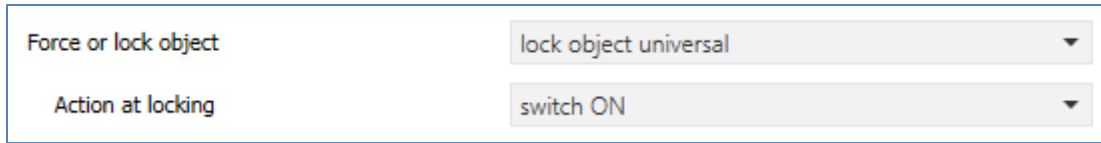


Figure 9: Settings - Force control/lock object

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
Force or lock object	<ul style="list-style-type: none"> • Force control object • Lock object • Lock object and lock object ON 	Select whether a force control object or a lock object is to be used
Action at locking	<ul style="list-style-type: none"> • Switch ON • Switch OFF • Lock (current state) 	Parameter only available for lock object; Defines the status which is to be sent when the device is locked

Table 5: Settings - Force or lock object

The presence detector can be overridden with the force control/lock object and call up a certain status.

The force control object knows 3 possible states:

- **Force control ON (control = 1, value = 1)**
The command for "ON" is sent unconditionally to the output object. The evaluation is then stopped and the release time for force control begins. If nothing is received on the force control object after the release time has expired, normal operation is resumed..
- **Force control OFF (control = 1, value = 0)**
The command for "OFF" is sent unconditionally to the output object. The evaluation is then stopped and the release time for force control begins. If nothing is received on the force control object after the release time has expired, normal operation is resumed.
- **Force control AUTO (control = 0, value = 0)**
After that the normal operation of the detector is continued

As an alternative to the force control object, 1 or 2 locking objects of size 1 bit can be displayed. 3 different states can be configured for the lock object:

- **Switch ON**
The light channel sends the output value ON and remains in the ON state until the locking process is deactivated..
- **Switch OFF**
The light channel sends the output value OFF and remains in the OFF state until the locking process is deactivated..
- **Lock (current state)**
The light channel is locked in its current state and remains locked until the locking process is deactivated..

By activating "Lock object ON", the light channel sends the output value ON and remains in the ON state until the locking process is deactivated..

The following table shows the corresponding communication objects:

Number	Name	Length	Usage
6	Lock object	1 Bit	Locking the light channel
6	Force control object	2 Bit	Activate/deactivate force control
7	Lock object ON	1 Bit	Switching on the light channel and locking the light channel in the ON state

Table 6: Communication objects - Force control/lock object

Attention: If the value is "On" when the output is locked, the set follow-up time runs again when the lock is released before the channel switches off!

4.2.5 Output object

The following figure shows the settings for the output object:

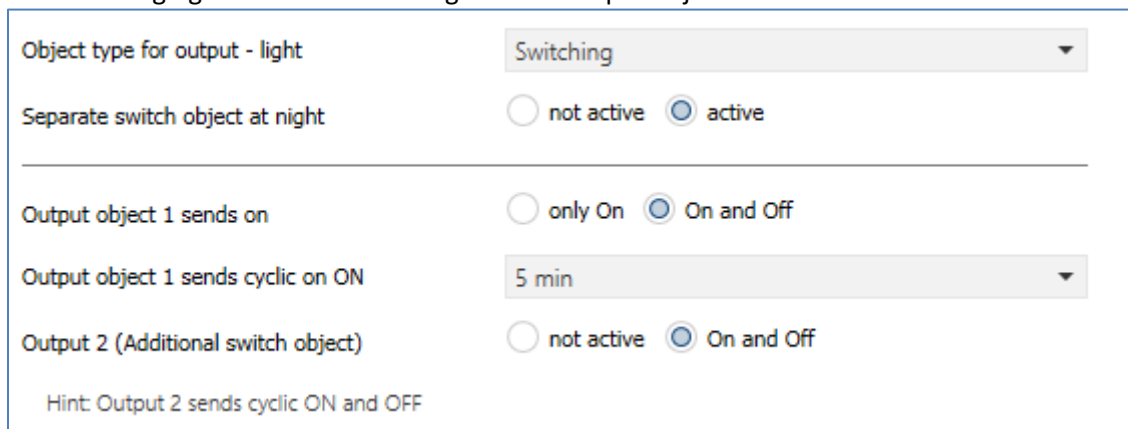


Figure 10: Settings - Output object

Die nachfolgende Tabelle zeigt die möglichen Einstellungen für diese Parameter:

ETS-Text	Dynamic range [Default value]	Comment
Object type for output – Light	<ul style="list-style-type: none"> • Switching • Dimming • Scene 	Selection of the object type which is sent when a movement is detected

Table 7: Settings - Output object

The parameter "Object type for output" defines the data point type of the output object.

Output object: Switching

If the object type "Switching" is selected, a separate object for night operation can be displayed. For example, the main light can be switched on in day mode and a small orientation light can be switched on in night mode.

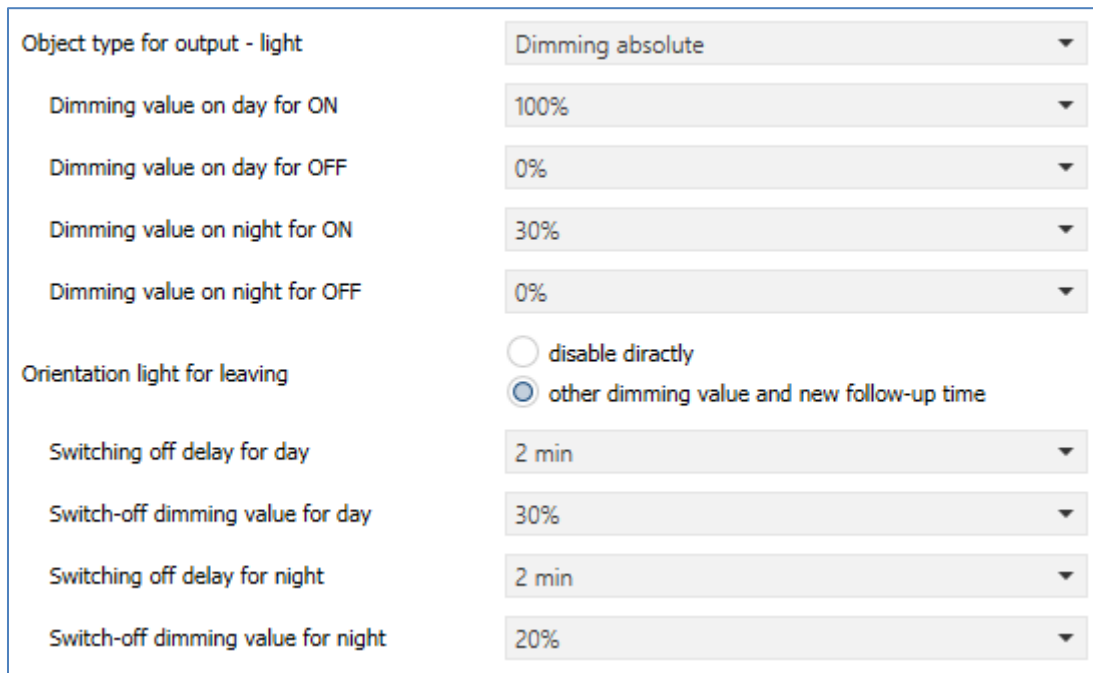
The following table shows the general communication objects:

Number	Name	Length	Usage
0	Light channel 1 – Output 1 (Day)	1 Bit	Switching function of the light channel for daytime operation
1	Light channel 1 – Output 1 (Night)	1 Bit	Switching function of the light channel for nighttime operation
2	Light channel 1 – Output 2	1 Bit	Second switching function of the light channel

Table 8: Communication objects - Output object "switching"

Output object: Dimming absolute

If the output object is set to "Dimming absolute", different dimming values for day and night can be defined:



Object type for output - light: Dimming absolute

Dimming value on day for ON: 100%

Dimming value on day for OFF: 0%

Dimming value on night for ON: 30%

Dimming value on night for OFF: 0%

Orientation light for leaving: disable directly, other dimming value and new follow-up time

Switching off delay for day: 2 min

Switch-off dimming value for day: 30%

Switching off delay for night: 2 min

Switch-off dimming value for night: 20%

Figure 11: Settings - Output object "Dimming absolute"

In addition, an orientation light can be activated to leave the room. The orientation light is called up when the follow-up time of the light channel has expired. Without orientation light, the channel would be switched off without delay. The orientation light now causes the output to call up the parameterised value for the switch-off delay day/night. The light channel is not switched off until the switch-off delay for day/night has expired.

In addition to the output object "Dimming absolute", a second output object "Switching" is displayed. The following table shows the general communication objects:

Number	Name	Length	Usage
0	Light channel 1 – Output 1 – Dimming absolute	1 Byte	Dimming function of the light channel
2	Light channel 1 – Output 2 - Switching	1 Bit	Second switching function of the light channel

Table 9: Communication objects - Output object "Dimming absolute"

Output object: Scene

If the object type "Scene" is selected, scene numbers for the value On/Off for day/night operation can be sent..

In addition to the output object "Scene", a second output object "Switching" is displayed.

The following table shows the general communication objects:

Number	Name	Length	Usage
0	Light channel 1 – Output 1 – Scene	1 Byte	Scene function of the light channel
2	Light channel 1 – Output 2 - Switching	1 Bit	Second switching function of the light channel

Table 10: Communication objects - Output object "Scene"

Cyclical sending

Output object 1 (depending on the parameterisation Switching, absolute dimming or scene) can send the parameterised value cyclically. In addition, the second switching object can also send its value cyclically.

4.2.6 External Push Button Input

The following figure shows the settings for the external push-button input:

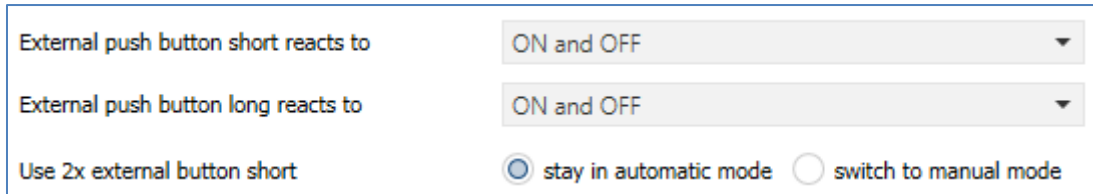


Figure 12: Settings - External push button input

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
External push button short/long reacts to	<ul style="list-style-type: none"> • only ON • only OFF • ON and OFF 	Selection of which telegrams are valid for the external pushbutton
Use 2x external button short	<ul style="list-style-type: none"> • stay in automatic mode • switch to manual mode 	Setting what should happen if the "External push button - short" object receives an OFF command twice in quick succession.

Table 11: Settings - External push button input

With the external push-button input, the presence detector can be switched on independently of movement detection..

The object for the "external push-button short" switches the presence detector to the next state (see also 4.2.8 Process diagram).

In contrast, the object "External push button long" always switches the motion detector directly On or Off.

The following table shows the general communication objects:

Number	Name	Length	Usage
3	Light channel 1 – Input – External push button short	1 Bit	Object for the output of an external push-button; is used for manual switching between the states of the light channel or for switching on the light channel in the half-automatic mode.
4	Light channel 1 – Input – External push button long	1 Bit	Object for the output of an external push-button; is used for manual switching ON/OFF of the light channel

Table 12: Communication objects - External push button input

4.2.7 Idle time after switch-off

The idle time after switching off defines the time that the presence detector is blocked for further detection after the follow-up time has elapsed.

4.2.8 Process diagram

Fully automatic without orientation light:

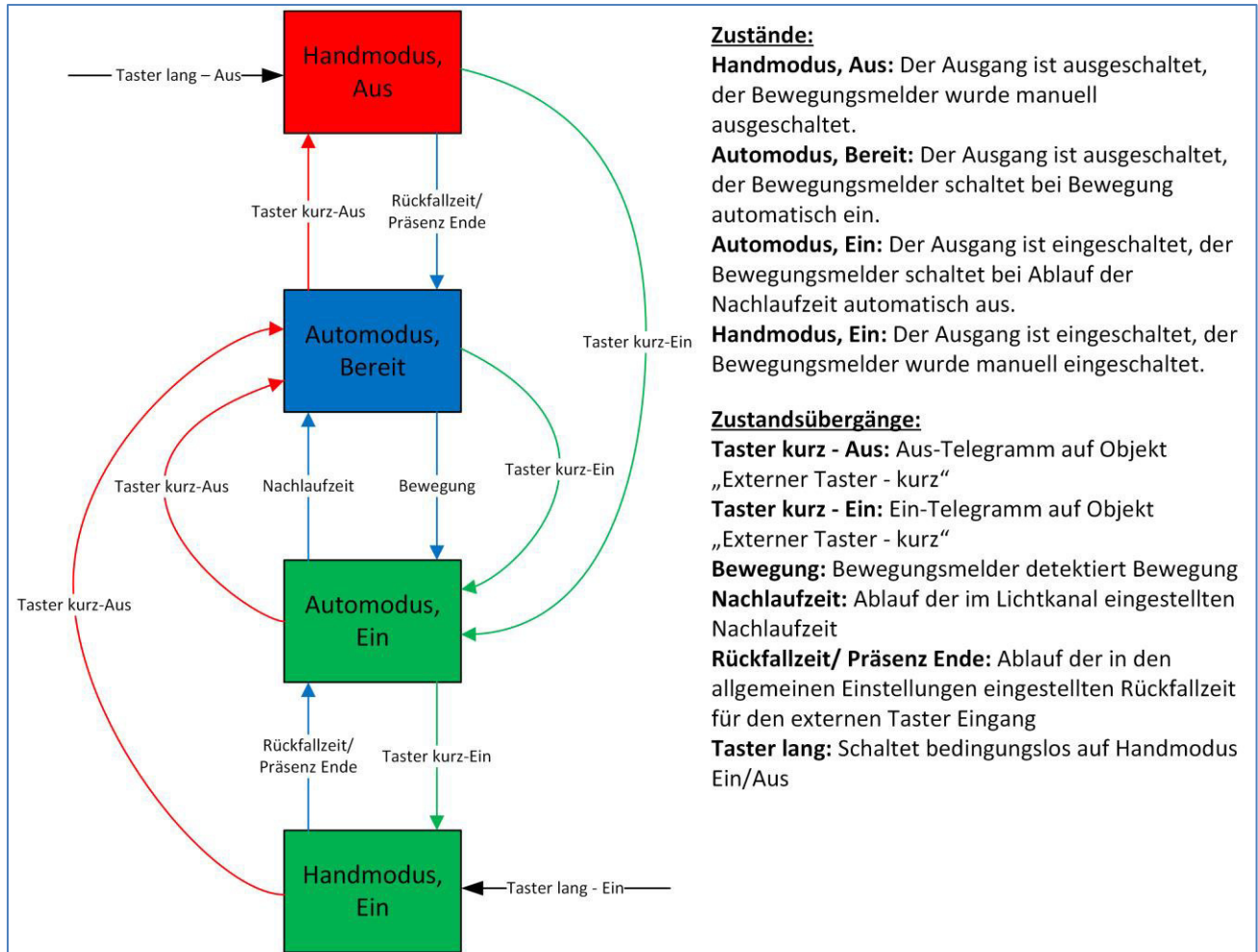


Figure 13: Process diagram - Fully automatic without orientation light

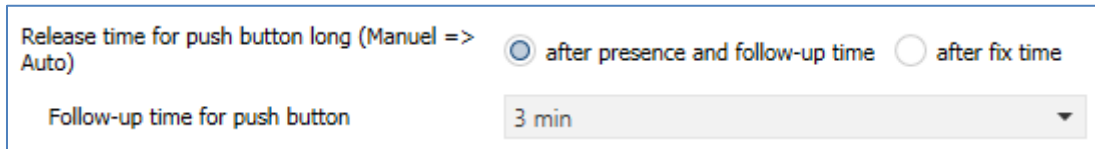
In the operating mode "Fully automatic", the presence detector switches on automatically when movement is detected. The object "External push button short" can be used to override the automatic mode of the motion detector and force the presence detector into manual mode. From this mode, the detector automatically returns to auto mode according to the settings in the menu "General settings" - "Release of push button input"

If the output of the light channel is switched on (automatic mode - ON or manual mode - ON) and the light channel is switched off via the object "External push button short", then the light channel is blocked for 10 seconds for motion detection in order to leave the room and prevent brief restart. The detector can be switched to manual mode via the "external push-button - long" object. From this mode, the detector automatically returns to auto mode according to the settings in the General settings menu – Release time for push button.

extended application example 1:

The room is entered, the detector detects presence and switches on the lighting group. However, the light should be switched off for the duration of the presence and automatically switched on again when the room is entered again.

To implement this scenario, you must set the parameter "Long reset of external pushbutton" in the general settings as follows:



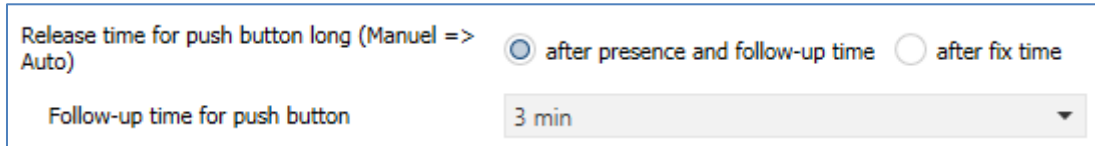
The follow-up time for the pushbutton can be set as desired according to your own requirements. Now the object 4 - external push-button long (light channel 1) is connected to the push-button which is to switch off the light..

After pressing the button, the light remains off (manual mode state, off) as long as the detector detects presence and then for the set follow-up time for the external button. The light is then switched off and the light channel changes to the "Auto mode, ready" state..

extended application example 2:

The room is entered, the detector detects presence, but the light is not switched on because the set brightness threshold is not exceeded. However, the light should be switched on for the duration of the presence and switched off again automatically after leaving the room..

To implement this scenario, you must set the parameter "Long reset of external pushbutton" in the general settings as follows:



The follow-up time for the pushbutton can be set as desired according to your own requirements. Now the object 4 - external push-button long (light channel 1) is connected to the push-button which is to switch on the light.

After the push-button has been pressed, the light remains on (manual mode state, On) as long as the detector detects presence and then for the set follow-up time for the external push-button. The light is then switched off and the light channel changes to the "Auto mode, ready" state.

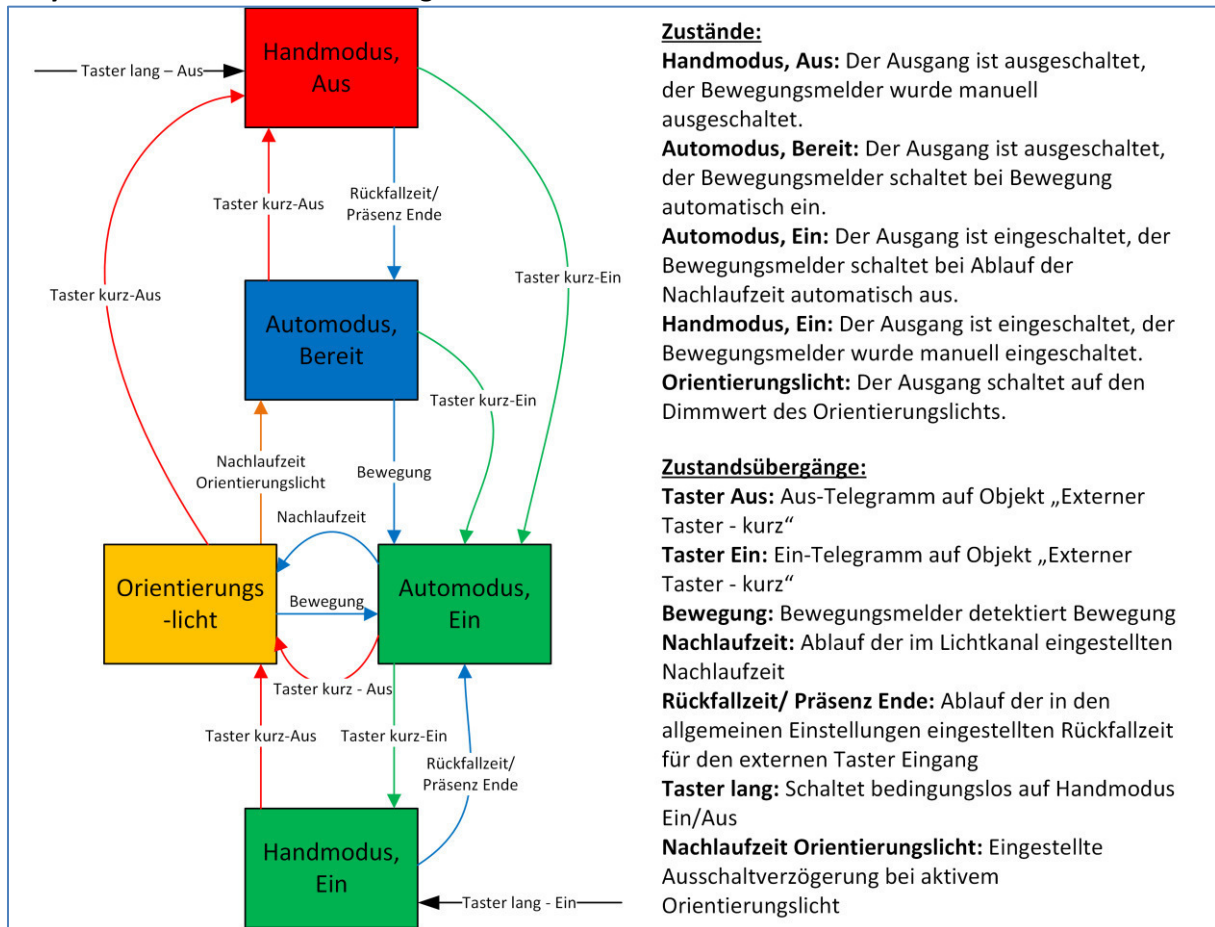
Fully automatic with orientation light:


Figure 14: Process diagram - Fully automatic with orientation light

The operating mode "fully automatic with orientation light" extends the operating mode fully automatic by the status orientation light. The orientation light can be activated as soon as the "Object type for output - light" parameter is set to absolute dimming.

The orientation light is switched on as soon as the follow-up time of the light channel has elapsed. The output is then switched to the orientation light state and can therefore dim the light to a darker level in order to leave the room safely.

Half automatic without orientation light:

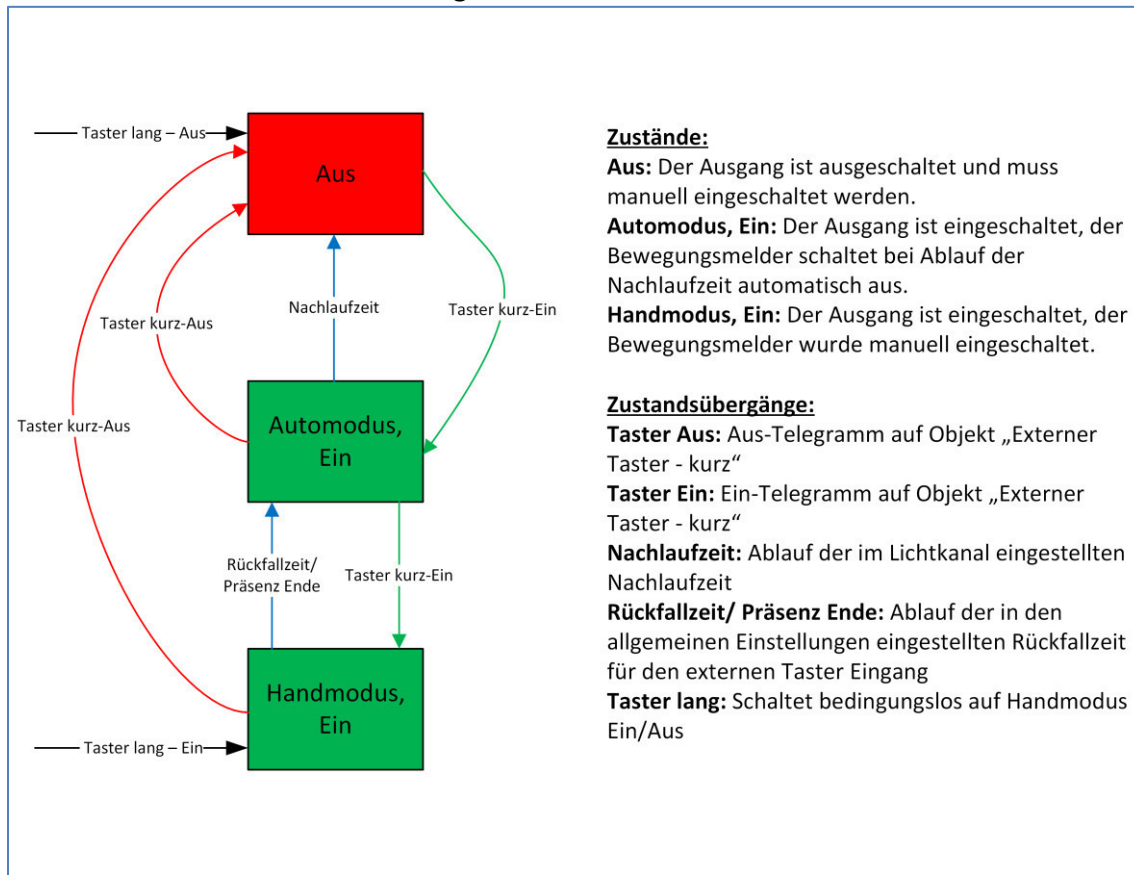


Figure 15: Process diagram - Half automatic without orientation light

In the operating mode "half-automatic", the motion detector has to be switched on manually via the object "external push-button - short". The light channel is automatically switched off again after the follow-up time (=no movement detection for the set follow-up time) has elapsed. The light channel can also be overridden via the "external push-button - short" object. The motion detector can be switched to manual mode by pressing twice

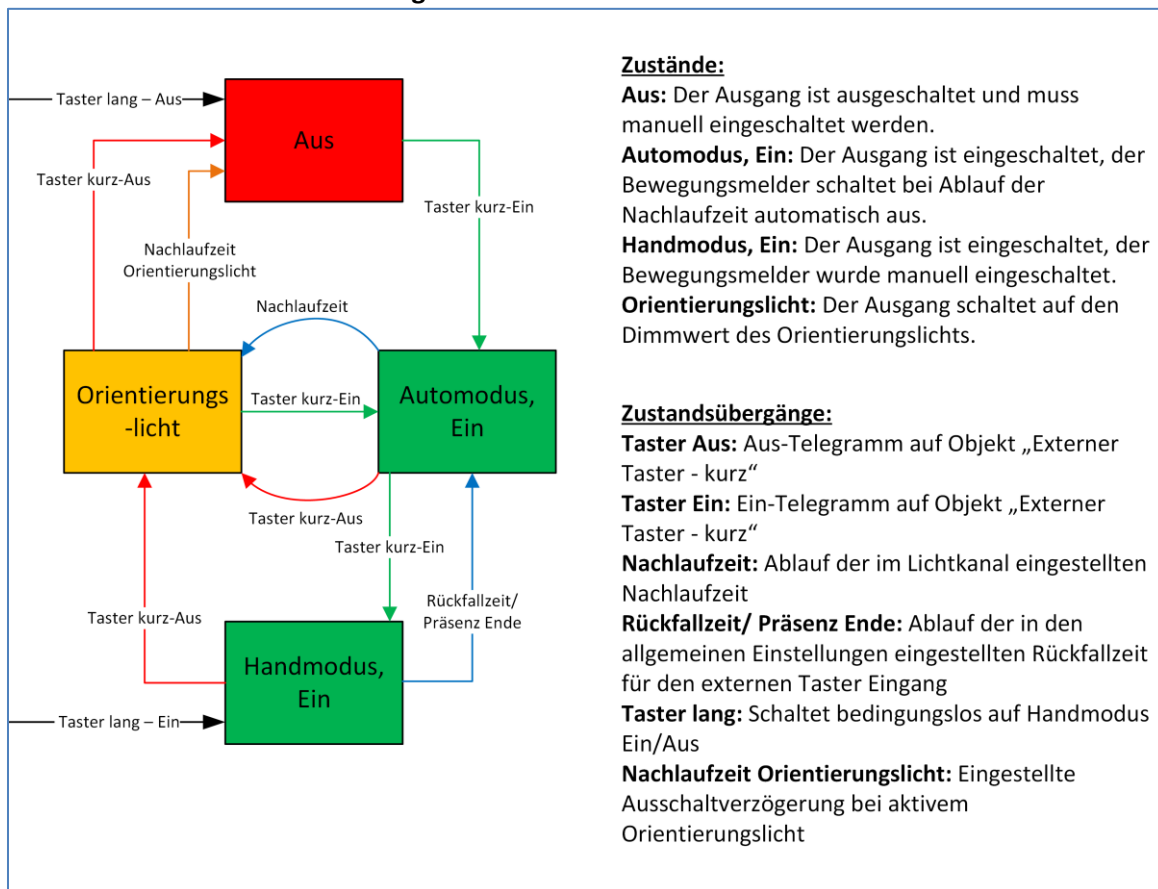
Half automatic with orientation light:


Figure 16: Process diagram - Half automatic with orientation light

The operating mode half-automatic with orientation light extends the operating mode half-automatic by the orientation light state. The orientation light can be activated as soon as the "Object type for output - light" parameter is set to absolute dimming.

The orientation light is switched on as soon as the follow-up time of the light channel has elapsed.

The output is then switched to the orientation light state and can therefore dim the light to a darker level in order to leave the room safely.

4.2.9 Master/Slave Operation

4.2.9.1 Light channel

In larger rooms the use of a single motion detector is often not sufficient. To detect movement in every corner of the room, several detectors have to be used across the entire room. Here, however, a detected movement should always lead to the same settings regardless of the corner of the room in which the presence was detected. For this purpose, one detector is switched as master and any number of others as slave

The settings for master/slave control are made in the "Light channel 1-4" menu.

To achieve this, the slaves have to be set as follows:

- Setting to fully automatic (so that the movement is always sent)
- Set follow-up time to the same value as the Master
- Set object type for light to switching
- Activate cyclical sending for the output object
 - Parameters: Output object 1 sends cyclically at ON
 - Standard value: 1min; with longer follow-up times, e.g. at 15min, cyclic sending can be increased to 5 min, for example, in order to reduce the bus load
- Set the "Switch-on threshold" parameter to maximum (independently of brightness)
(This setting has to be done in the menu "General Settings")

The master is parameterised to fully- or half automatic, as desired.

A value of 10 minutes is recommended as the common follow-up time.

The objects have to be connected as follows:

- The corresponding output objects of the slaves (objects 0, 10, 20, 30, 40, 50) have to be connected to object 5 "External motion (slave)" of the master..

The master now evaluates each self-detected movement as well as movement detected by the slaves. The master then switches the light groups according to its own settings, regardless of who has detected the movement.

4.2.9.2 HCV/Alarm

The master/slave circuit can also be used with the HCV/alarm channels. The settings for the slave are the same as for the slaves of the light groups. However, the settings for the brightness values are omitted for the HVAC/alarm channel. The observation windows can be set according to individual requirements.

The objects have to be connected as follows:

- All output objects of the slaves - object 40 (HCV) or object 50 (alarm) have to be connected to the external motion object (object 45) of the master.

Attention: As long as the slave is in its follow-up time, it cyclically sends a "1" to the master. After the last "1" sent to the master, the master's follow-up time expires before it switches off its output. In this case, the follow-up time from master and slave is added.

4.3 Alarm

The following figure shows the settings for the alarm function:

Active sensors	1234
Release sensitivity for day	3 (low)
Release sensitivity for night	2
Presence sensitivity	6
<hr/>	
Motion filter on standby	<input type="radio"/> not active, no filtering <input checked="" type="radio"/> used, filter short motion
Length of monitoring time slot	2s
Number of monitoring time slot	3
Follow-up time	5 min
<hr/>	
Locking or enabling object	<input checked="" type="radio"/> lock object <input type="radio"/> enabling object
Separate switch object at night	<input type="radio"/> not active <input checked="" type="radio"/> active
Output object sends at	<input type="radio"/> only On <input checked="" type="radio"/> ON and OFF
Output object sends cyclic	2 min

Figure 17: Settings - Alarm function

The following table shows the parameter settings for alarm detection:

ETS-Text	Dynamic range [Default value]	Comment
Active sensors	<ul style="list-style-type: none"> • ---- • 1--- • -2— • . • . • . • -234 • 1234 	Setting which sensors are active for alarm detection Number of sensors per type (3 or 4)!
Release sensitivity for Day/Night	1-6 [3 (Day), 2 (Night)]	Adjustment of sensitivity for triggering the alarm in standby mode (no motion detected)

Presence sensitivity	1-8 [6]	Adjustment of the sensitivity after a first motion has been detected
Motion filter on standby	<ul style="list-style-type: none"> • not active, no filtering • used, delete short motion 	Activation of a motion detector at standby (= output is switched off)
Length of monitoring time slot	1-5s [2s]	Determination of the length for a monitoring time slot
number of monitoring time slot	2-5 [3]	Definition of how many movements have to be detected before switch-on
Follow-up time	1s-4h [5min]	Setting the follow-up time
Locking or enabling object	<ul style="list-style-type: none"> • Lock object • Enabling object 	Setting whether a locking or enabling object is to be used
Separate switch object for night	<ul style="list-style-type: none"> • not active • aktiv 	Displays a separate object for night mode
Output objekt sends at	<ul style="list-style-type: none"> • Only ON • ON and OFF 	Output filter for the first output object
Output objekt sends cyclic	<ul style="list-style-type: none"> • not active • 10s-60min 	Activation of cyclic sending for the first output object

Table 13: Settings - Alarm function

The alarm function can be used to monitor a room in case of absence and to call certain actions in the KNX system during motion detection.

The individual parameters are described in more detail below:

Release sensitivity for Day/Night

The release sensitivity describes the sensitivity in stand-by mode (the output is switched off, no motion has been detected)

Presence sensitivity

Presence sensitivity describes the sensitivity in presence mode (the output is switched on, a motion has been detected.).

Motion filter in Standby

In order to avoid false detection, a motion filter can be activated which filters out very short motions e. g. by draughts. If this filter is activated, then 2 further parameters appear: "Length of the monitoring time slots" and "Number of monitoring time slots".

This means that a longer detection time is required for switching on. To switch on the channel, at least one detection has to have taken place in each of the set monitoring time slots.

So e.g. with 3 monitoring time slots and a length of 2 sec for one monitoring slot at least one detection would have to take place in the first 2 sec, at least one detection in the second 2s and at least one detection in the third 2 sec. Thus it takes at least 6 seconds until the alarm channel is triggered.

Follow-up time

The follow-up time describes the time that expires after the last detection of a motion until the output is switched off. For example, with a follow-up time of 3 minutes, the light would be switched on for at least 3 minutes with motion detection. Each new detection leads to a retriggering and thus to a restart of the follow-up time..

Locking or enabling object

To lock or enable the alarm channel, you can activate a lock or enabling object. The lock object switches off the channel with a 1, the enable object activates the alarm channel with a 1..

Separate switch object at night

This parameter displays a separate switch object for night mode..

Output object sends at

This parameter can be used to activate a sending filter for the output. If you want the output to send only ON commands, you have to use the setting "only ON".

Output object sends cyclic

Activation of cyclic sending for object 50 "Alarm - output 1".

The following table shows the corresponding communication objects:

Number	Name	Length	Usage
50	Alarm – Output 1	1 Bit	Output of the Alarm function
51	Alarm – Night mode	1 Bit	Output of the Alarm function at night mode
56	Alarm Input – Lock	1 Bit	Locking the alarm function
56	Alarm Input – Enable	1 Bit	Enabling the alarm function

Table 14: Communication objects - Alarm function

4.4 LED

The following figure shows the submenu LED:

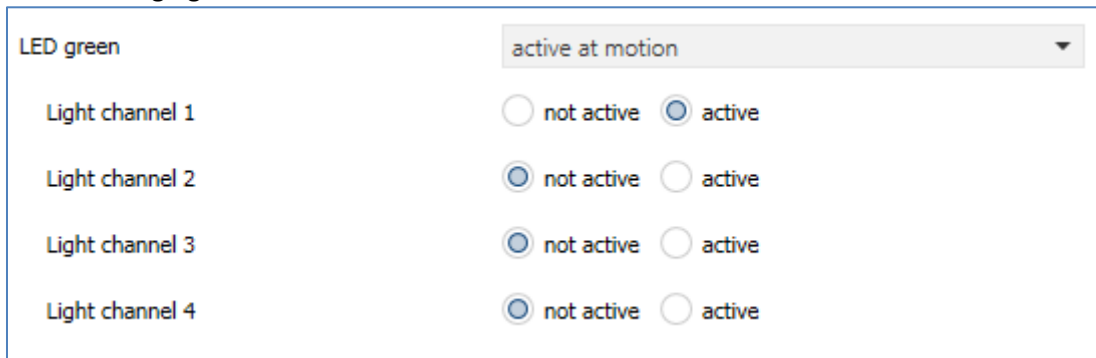


Figure 18: Submenu - LED

The following table shows the parameter settings for the submenu LED:

ETS-Text	Dynamic range [Default value]	Comment
LED green	<ul style="list-style-type: none"> not active active at motion active at motion, only during the day 	Setting the lighting behaviour of the green LED
Light channel 1-4	<ul style="list-style-type: none"> not active active 	Setting whether the green LED for this channel should signal a detected movement

Table 15: Settings Submenu - LED

4.5 Scenes

The following figure shows the submenu Scene:

Scene A number	1
Scene A Light channel 1	set external push button input to value 1
Scene A Light channel 2	lock active ON
Scene A Light channel 3	lock active
Scene A Light channel 4	not active
Scene B number	not active
Scene C number	not active

Figure 19: Submenu - Scenes

The following table shows the parameter settings for the submenu Scenes:

ETS-Text	Dynamic range [Default value]	Comment
Scene A-H number	1-63 [not active]	Setting the scene number
Scene A-H Light channel 1-4	<ul style="list-style-type: none"> • not active • Lock active ON • Lock active OFF • Lock active • Lock disable • Set external push button input to value 1 • Set external push button input to value 0 • Set object Day/Night on Day (for all channels) • Set object Day/Night on Night (for all channels) 	Setting the action for light channel 1-4 for calling up the scene 1-3 for detectors with 3 sensors, 1-4 for detectors with 4 sensors

Table 16: Settings Submenu - Scene

The scene function can be used to initiate actions for light channel 1/2 by sending the corresponding scene numbers. For example, the value of the disable function can be changed or the value of the external input button can be changed.

The following table shows the corresponding communication objects:

Number	Name	Length	Usage
64	Scene – Input	1 Byte	Call up of the scene

Table 17: Communication objects - Scene

4.6 Brightness

The following picture shows the available settings for brightness detection:

Send brightness at change of	50 Lux
Cyclical sending of light value	not used
Threshold switch enable at	300 Lux
Hystereses of threshold switch	30 Lux
Object value at Day and exceedance	<input type="radio"/> OFF <input checked="" type="radio"/> ON
Object value at Night and exceedance	<input type="radio"/> OFF <input checked="" type="radio"/> ON
Object value at shortfall	<input checked="" type="radio"/> OFF <input type="radio"/> ON
Send at Day	ON and OFF
Send at Night	ON and OFF

Figure 20: Settings - Brightness

The following table shows the possible settings for this parameter:

ETS-Text	Dynamic range [Default value]	Comment
Send brightness at change of	<ul style="list-style-type: none"> not send 10 Lux – 1200 Lux [50 Lux] 	Minimum rate of change to send the current brightness value
Cyclical sending of light value	<ul style="list-style-type: none"> not used 5s – 30min 	Definition of a fixed time period after which the current brightness value is transmitted
Threshold switch enable at	60Lux – 1000 Lux [300 Lux]	Setting of the threshold at which the threshold switch switches over = defined switch-on point
Hysteresis of threshold switch	5 Lux– 200 Lux [30 Lux]	Distance between switch-off and switch-on point Switch-off point = value for switching the threshold switch - Hysteresis
Object value at Day and exceedance	<ul style="list-style-type: none"> ON OFF 	Setting the polarity
Object value at Night and exceedance	<ul style="list-style-type: none"> ON OFF 	Setting the polarity

Object value at shortfall	<ul style="list-style-type: none"> • ON • OFF 	Setting the polarity
Send at Day	<ul style="list-style-type: none"> • Send nothing • only ON • only OFF • ON und OFF 	Transmit filter during daytime operation
Send at Night	<ul style="list-style-type: none"> • Send nothing • only ON • only OFF • ON und OFF 	Transmit filter during nighttime operation

Table 18: Settings - Brightness

In the menu "Brightness" the transmission conditions for the measured brightness value can be defined. The measured brightness value can be transmitted both at a certain change and at certain intervals.

In addition, a threshold value switch can be set for a specific brightness. This can be set with a hysteresis that avoids too frequent switching. The interplay of hysteresis and threshold value is illustrated in the following diagram:

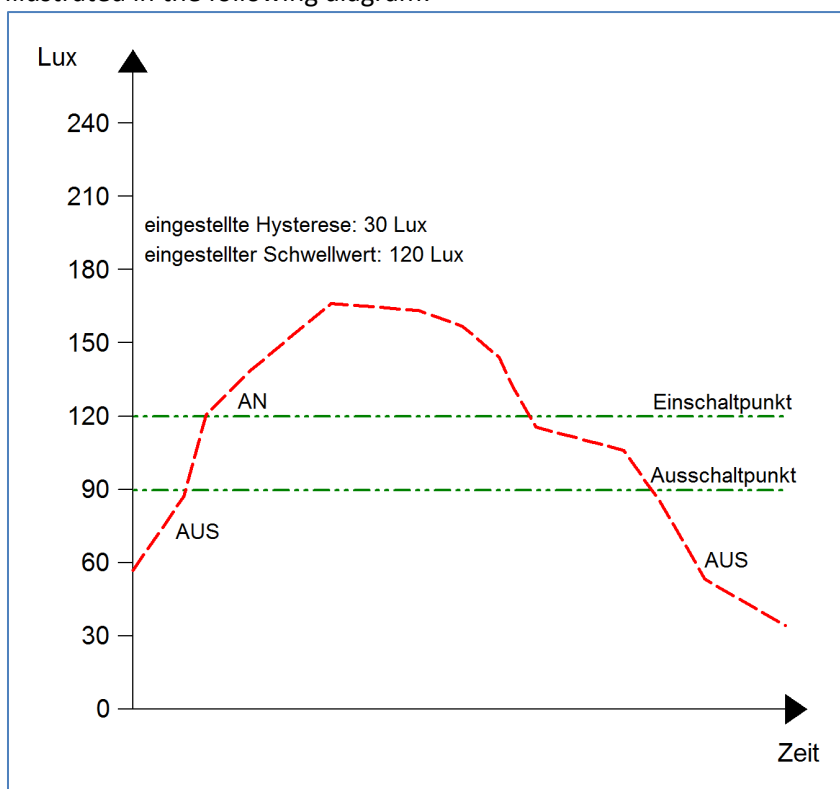


Figure 21: Hysteresis - threshold switch

The polarity and the transmission conditions can be defined as desired with the other parameters. Both, the polarity and a transmit filter can be set.

The following table shows the relevant communication objects:

Number	Name	Length	Usage
66	Threshold switch	1 Bit	sends the set value at exceedance/shortfall
67	Status brightness value	2 Byte	measured brightness value

Table 19: Communication objects - Brightness

4.7 Calibration of brightness value

The following figure shows the individual cell options for calibrating the brightness value:

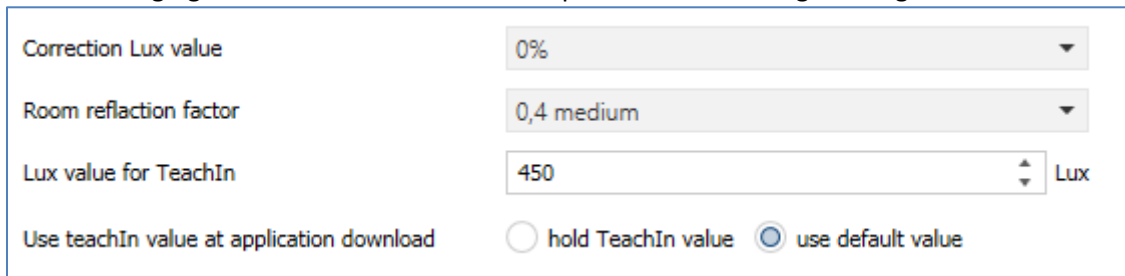


Figure 22: Calibration brightness value

The following table shows the possible settings for this parameter:

ETS-Text	Dynamic range [Default value]	Comment
Correction Lux value	-50% to 70% [0%]	Increase/decrease by the set value
Room reflection factor	<ul style="list-style-type: none"> • 1 • 0,7 very high • 0,5 high • 0,4 medium • 0,3 low • 0,25 low • 0,2 very low 	Reflectance of the environment: Indicates how much of the light is reflected back (1=100%, 0 = 0%)
Lux value for TeachIn	200-1000 [450]	Adjustment value for external read-in
Use TeachIn at application download	<ul style="list-style-type: none"> • Hold TeachIn value • Use default value 	Defines whether the presence detector should hold the teach-in values after the download or load the factory settings.

Table 20: Calibration of brightness value

The individual parameters are described in more detail below:

- Correction Lux value**
 With the correction of the lux value, the measured lux value is shifted by an adjustable percentage offset. Thus, at a set value of -50%, the measured value is reduced by 50%. Thus the presence detector would output the value 200 at a measured value of 400 lux and a correction value of -50%.

- **Room reflexion factor**

The reflection factor indicates how much of the radiated light is reflected back from the surroundings. The value 1 means that 100% of the emitted light is reflected back. For dark floors, a reflection factor of 0.25 is usually suitable.

For example, they measure 400 lux at workplace height and only 100 lux under the ceiling. These are then converted to 400 lux..

If no TeachIn is carried out, the measured brightness can be corrected with the room reflection factor. If a TeachIn is carried out, the brightness measurement is automatically corrected. The reflection factor should not be changed after a teach-in.

The TeachIn procedures for the presence detector with constant light control and without constant light control differ in the type of execution and the effect of the TeachIn procedure.

In particular with constant light control, the TeachIn procedure should be used to increase the accuracy of the control.

The procedure for the TeachIn with constant light control (SCN-P360K3.02 and SCN-P360K4.02) is described in the following chapter, the TeachIn procedure for presence detectors without constant light control (SCN-P360D3.02 and SCN-P360D4.02) is described in the next but one chapter.

4.7.1 Procedure for TeachIn with constant light control

For using the whole advantages of the intelligent constant light control, the presence detector has to be adjusted once via the Teach-In process. Therefore a luxmeter is needed.

The approach is as follows:

1. Adjust the parameter "TeachIn brightness value" to the desired brightness value. Mostly 400-500 Lux are used.
2. Adjust the Parameter "Use TeachIn value at application download" from "Use factory default values" to "hold TeachIn values". den gewünschten Wert.
3. Make the desired settings for the constant light function. (have a look at chapter 4.5)
4. Connect the communication objects for the different light groups with the objects of the dimming actuator
5. Connect the object "19-Status absolute dimming value" with the status object of the dimming actuator for the light band in the middle.
6. Connect the object "18-Calibration start" with a new group address, if the calibration shall be activated via the ETS (Group monitor) or with a push button.
7. Download the application.
8. The room has to be darkened or the measurement must be performed in the twilight. The presence detector teaches the brightness and dimming values via the Teach-In function. If the Teach-In is performed at day-/sunlight the measurement is disturbed and the saves wrong values.
9. Activate the Teach-In function by sending a logical 0 to the object 18. The green LED in the presence detector starts flashing with a 1s rhythm. Sending a logical 0 again causes an interruption of the Teach-In process.
10. Change the brightness value by sending dimming values (absolute or relative) until the Luxmeter shows the adjusted value (TeachIn brightness value) at the desired height.
11. Now send a logical 1 to the object 18. The red and green LED flashes alternating.
12. The presence detector adjusts now the brightness measurement, teaches the appropriated dimming value and learns the brightness value at different dimming values.
13. After successful end of the Teach-In process, the green LED flashes fast for 10 seconds. The control is started again automatically and adjusts the brightness to the reference value. If an error occurs, the process is aborted and the red LED flashes fast for 10 seconds. This can occur if for example no valid dimming value is available (status). Check point 5 and start the process again.
14. If the parameter "use switch on dimming value" is adjusted to "calculate switch on value", the switch on value is calculated automatically now.

The light codes for the LEDs can be taken from the following table:

LED behaviour	State
green LED flashes slowly	TeachIn is activated; detector is in TeachIn mode
green and red LED flashes alternately	TeachIn process in progress
green LED flashes fast for 10 sec	TeachIn process is completed successfully
red LED flashes fast for 10 sec	TeachIn process failed

Table 21: LED behaviour - TeachIn

The following table shows the relevant communication objects:

Number	Name	Length	Usage
18	Calibration start	1 Bit	starts the alignment via Teach-In
19	Status absolute dimming value	1 Byte	Measured brightness value

Table 22: Communication objects - TeachIn

4.7.2 Procedure for teach-in without constant light control

The TeachIn process at presence detectors without constant light control is for correcting the measured value.

The process is as described below:

1. Adjust the parameter "TeachIn brightness value" to the desired brightness value.
The best way doing the Teach-In process is to darken the room and switch the artificial lights on. Now the brightness must be measured via a luxmeter and the measured value must be set for the parameter "TeachIn brightness value".
2. Adjust the Parameter "Use TeachIn value at application download" from "Use factory default values" to "hold TeachIn values".den gewünschten Wert.
3. Connect the object "18-Calibration start" with a new group address, if the calibration shall be activated via the ETS (Group monitor) or with a push button.
4. Download the application.
5. Activate the Teach-In function by sending a logical 1 to the object 18.
6. Now the presence detector has adopted the adjusted value as new measurand and corrects its measurement from now according to the TeachIn value.

4.8 Constant light control

Only for detectors with constant light control: SCN-P360K3.02, SCN-P360K4.02, SCN-G360K3.02

With the new proportional master/slave constant light control it is possible to regulate the light in the room intelligently, so that external influences can be almost completely regulated out. By controlling up to 3 light strips, wall, centre, window, the light in the room can be kept constant despite the influence of sunlight and other light sources. With the intelligent control, constant light control helps to save energy.

Note: The light group selection should be set to 1 light group or 1 light group + HCV. Constant lighting control with 2 lighting groups (zones) does not make sense.

The figure below illustrates the principle of constant lighting control:

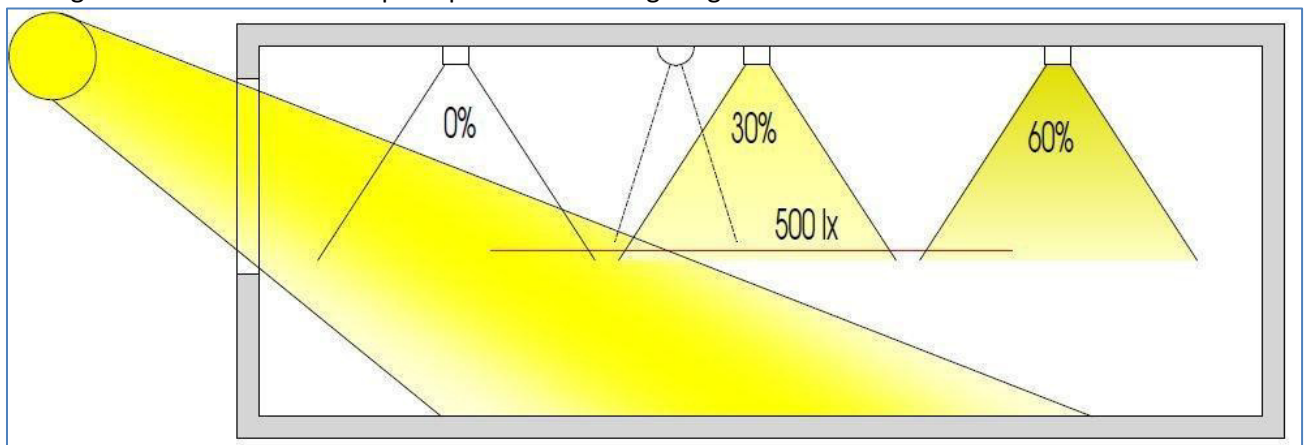


Figure 23: Overview - Proportional zone control

4.8.1 General Settings/ Principle of control

The following figure shows the possible settings for the general constant light control settings:

Constant light control	<input type="radio"/> not active <input checked="" type="radio"/> active
Control out sun light	normal ▼
Select light-band	light group main + wall + window ▼
Influence proportional wall control	medium (x0,7) ▼
Influence proportional window control	medium (x1,6) ▼

Figure 24: General settings - Constant light control

Die nachfolgende Tabelle zeigt die möglichen Einstellungen um die Konstantlichtregelung zu parametrieren:

ETS-Text	Dynamic range [Default value]	Comment
Constant light control	<ul style="list-style-type: none"> • Not active • active 	Activation/Deactivation of the constant light control
Control out sunlight	<ul style="list-style-type: none"> • normal • few • very few 	defines the influence of the solar radiation to the regulation
Selection light band	<ul style="list-style-type: none"> • 1 light group • light group main + wall • light group main + window • light group main + wall + window 	Selection of the light bands, which shall be controlled
Influence proportional wall control	<ul style="list-style-type: none"> • no change (x 1) • very low (x 1,2) • low (x 1,4) • medium (x 1,6) • high (x 1,8) • very high (x 2) 	defines the influence of the light group wall to the constant level light regulation
Influence proportional window control	<ul style="list-style-type: none"> • no change (x 1) • very low (x 0,9) • low (x 0,8) • medium (x 0,7) • high (x 0,6) • very high (x 0,5) 	defines the influence of the light group window to the constant level light regulation

Table 23: General settings - Constant light control

The "Influence of proportional zone control" parameter indicates how strong the influence of the lighting group should be on the control. The setting "no influence"(x 1) switches off the proportionality of the control and all lighting groups always light up with the same value. The setting "very strong" (0.5 for windows and 2 for walls) means that the difference between the absolute dimming values on walls and windows is very large.

If a room is to be controlled by means of constant light control, it is advisable to use the TeachIn procedure, as this is the only way to achieve good results.

The influences of the lighting groups wall and window have to be adapted to the specific conditions. To put it simply, the larger the room, the stronger the control factor has to be, i.e. the stronger the influence must deviate from 1. However, the parameters should always be checked on site and corrected if necessary.

The control can be adjusted using the "Control out sun light" parameter. If the presence detector reduces the light in the room too much in the case of solar radiation, the value for this parameter should be set to little or very little. Alternatively, the presence detector can also be moved further into the centre of the room.

The following diagram illustrates the dimming behaviour for the 3 lighting groups at different levels of solar radiation. In this example, the TeachIn value was reached at an absolute dimming value of 80% with 450 lux, the influences were both set to medium..

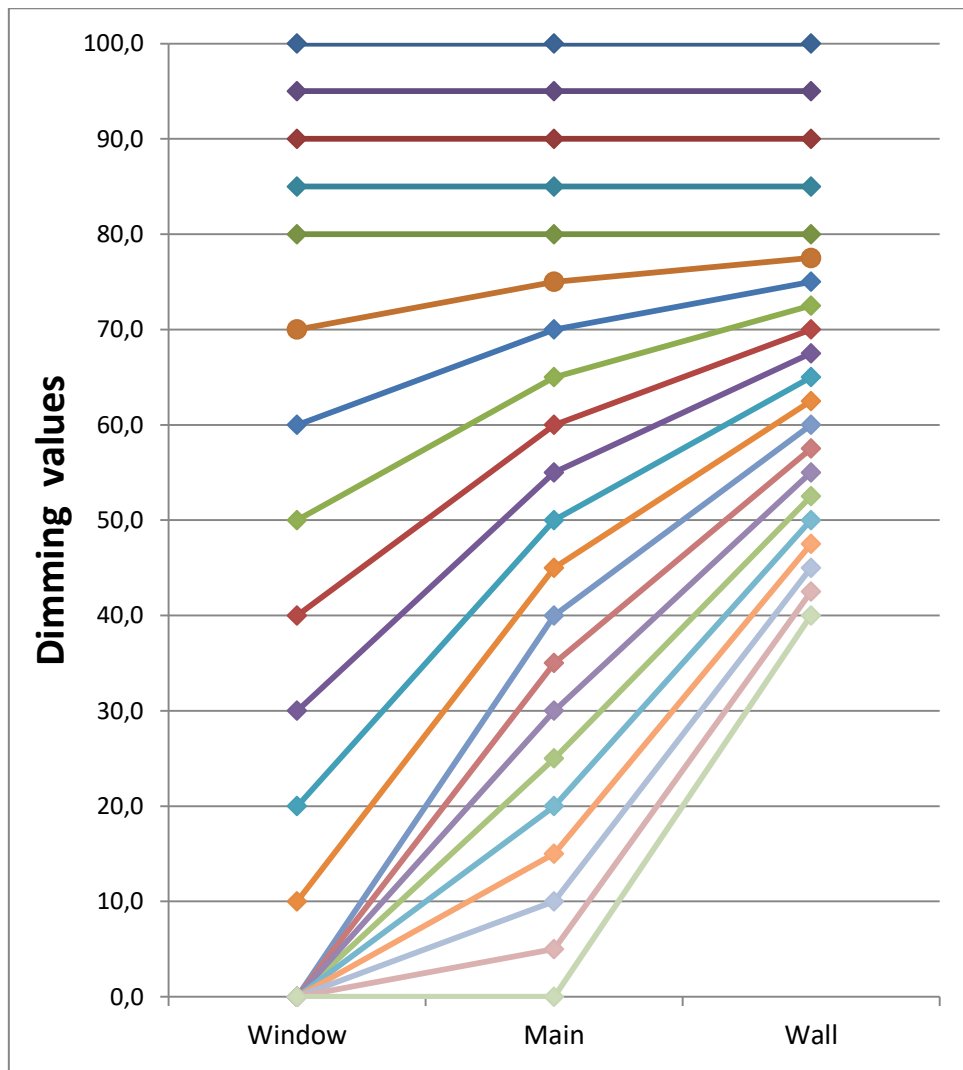


Figure 25: Behavior proportional zone control

Here you can see that depending on the intensity of the sunlight the window side is dimmed down more than the middle and the wall side less.

If the solar radiation decreases again, all light bands are regulated again to 80%.

If, for example, the light intensity is set from 450 lux to 300 lux (relative dimming, abs. dimming or scene), the control factors are only used automatically at the correct dimming value. In this case e.g. at 50%. Without solar radiation, all three light bands then regulate to 300 lux with a dimming value of 50%. With solar radiation, the dimming values below 50% shift accordingly.

The new "proportional master/slave constant light control" eliminates all the disadvantages of the standard "offset master/slave constant light control" with fixed offset..

The following diagram shows the influence of the different control parameters to the regulation:

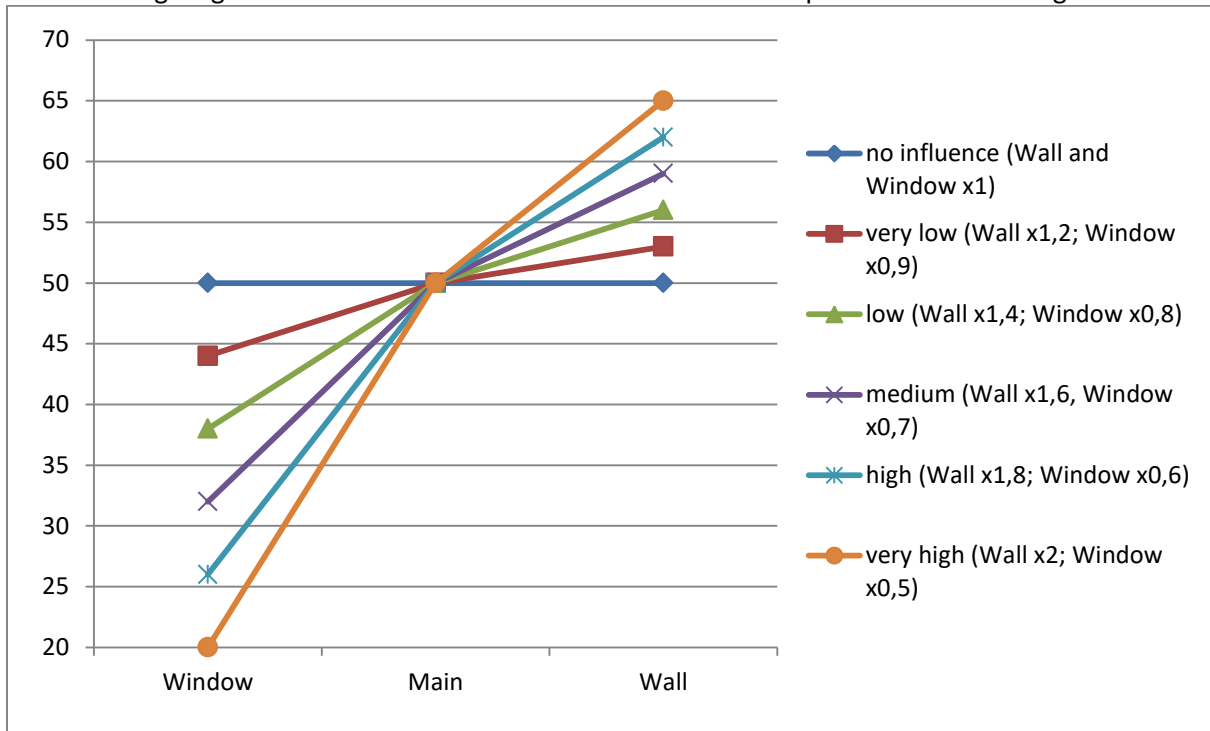


Figure 26: Influence control parameters

4.8.2 Setting Options

The following figure shows the available specific settings for the constant light control:

Constant light controlled by	<input type="radio"/> external object <input checked="" type="radio"/> Presence
Switch On control delay	5 s
Use switch on dimming value	calculate switch on value
Brightness value [Lux] for switch on	<input type="radio"/> use last dimming setpoint <input checked="" type="radio"/> use parameter value
Controller switches the light off	<input type="radio"/> not active <input checked="" type="radio"/> active
<hr/>	
Use Day / Night object	use for next switch on
Setpoint on day	450 lx
Setpoint on night	100 lx
<hr/>	
Cyclical sending of dimming value	5 min
Send dimming value on change of	0,5%
CL behavior at relative dimming	<input checked="" type="radio"/> use new dimming value <input type="radio"/> disable CL control
Relative dimming time	5 s
<hr/>	
Standby / orientation light	<input checked="" type="radio"/> not used <input type="radio"/> used
<hr/>	
Lock object active	<input checked="" type="radio"/> no <input type="radio"/> yes
<hr/>	
Scens	<input checked="" type="radio"/> not used <input type="radio"/> used

Figure 27: Setting options - constant light control

The following tables shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Settings switching behavior/Regulation		
Constant light controlled by	<ul style="list-style-type: none"> external object Presence 	Adjustment of the switch on behavior
Switch On control delay	1s – 5min [5s]	Adjustment of the delay between activation and start of regulation
Use switch on dimming value	<ul style="list-style-type: none"> Parameter (select dimming value) TeachIn (taached dimming value) Calculate switch on value 	Adjustment of the power up value
Brightness value [Lux] for switch on	<ul style="list-style-type: none"> use last dimming setpoint use parameter value 	Adjustment if the last setpoint shall be calculated from relative dimming, the secenes or being load from the parameters
Controller switches light off	<ul style="list-style-type: none"> locked enabled 	Adjustment if the controller may switch the light off at a strong sun radiation
Use Day / Night object	<ul style="list-style-type: none"> not used use for next switch on use directly and for next switch on 	Activates the usage of the day/night switchover. At activated day/night switchover, two setpoints (day and night) are shown otherwise only one setpoint is shown
Setpoint for day	100 – 750 Lux [450 Lux]	Setpoint for day mode
Setpoint for night	100 – 750 Lux [100 Lux]	Setpoint for night mode
Settings for the dimming behavior		
Cyclical sending of dimming value	<ul style="list-style-type: none"> not used 12 s -10 min 	defines the time for the cyclic sending of the dimming value
Send dimming value on change of	0-20% [2%]	defines the minimal change for sending the dimming value
CL behavior at relative dimming	<ul style="list-style-type: none"> use new dimming value Disable CL control 	Adjustment if regulation stays active at relative dimming
Relative dimming time	5 – 60s [20 s]	defines the time for dimming from 0 to 100%

Table 24: Setting options - Constant Light Control / 1

ETS-Text	Dynamic range [Default value]	Comment
Settings standby/orientation light		
Standby/orientation light	<ul style="list-style-type: none"> not used used 	Setting whether the light should continue to run after it has been switched off
Standby setpoint	100 – 750 Lux [100 Lux]	Value for Standby setpoint
Standby time	5s – 60min [15s]	Length of Standby time
Settings lock object		
Lock object active	<ul style="list-style-type: none"> Yes No 	Activates a locking object
Lock object value = 1	<ul style="list-style-type: none"> Off On (100%) No change (hold value) Select value 	Settings what should happen when the lock object is activated
Value set	0-100% [0%]	Defines value for enabled lock object. Only visible if lock object "Select value" is active
Lock object value = 0	<ul style="list-style-type: none"> Off On (100%) No change (hold value) Restore previous state 	Settings what should happen when the lock object is deactivated
Settings scenes		
Scenes	<ul style="list-style-type: none"> not used used 	Setting whether scenes are to be used for constant light control
Scene 1 - 8	100 – 750 Lux [500 Lux]	Adjustable values for the different scenes

Table 25: Setting options - Constant Light Control / 2

The parameters are described below:

- Settings switching behavior/Regulation**

The general settings for constant light control are made here. The "Switch constant light with" parameter can be used to set whether the control is switched via the detected presence or via an external object which can be connected, for example, to a push-button. The "Dimmer switch-on value via" parameter can be used to specify to the presence detector the value with which the control is to be started. It is possible both to define a fixed value and to take the value calibrated during the Teach-In procedure or to have the switch-on value calculated directly internally. The time until the control starts after switching on can also be defined.

The "Behaviour on switch-on" parameter defines whether the control should always work with the parametrised value or load the last setpoint which was read in, for example, via absolute/relative dimming or the scene function.

The control can also be configured here to different values for day and night, which is defined by the parameter "Use day/night changeover".

The parameter "Controller switches light off" defines whether the controller can regulate the light to 0% in strong sunlight and thus switch it off. If the parameter is set to disabled, the outputs are not set to 0%, but maintain a minimum value which prevents the lamps from being switched off. This setting makes sense in office/workrooms, as switching off the lighting is usually perceived as annoying. Nevertheless, when dimming down to e.g. 20%, 80% of the energy is still saved.

- **Settings dimming behavior**

The dimming value can be sent as well cyclical as at a fixed percental rate of change.

The parameter "CL behavior at relative dimming" defines if the regulation shall be switched off at relative dimming or work with the new value.

- **Settings standby/orientation light**

The standby/orientation light defines shading of the room after cutout of the constant light control. That means, that the controller does not switch the lights off, but switches to the adjusted value.

- **Settings lock object**

This parameter activates an additional lock object, which locks the constant level light control and switches the output in a fixed state.

The following states are available:

- Off: The output is switched off (0%).
- On: The output is switched on (100%):
- No change (hold value): The current absolute value is held.
- Select value (only at lock): The adjusted absolute value is called.
- Restore previous state (only at unlock): The absolute value which had the constant light before locking is called again.

The following table shows the relevant communication objects for the constant light control:

Number	Name	Length	Usage
100	Switch on/off	1 Bit	external object for activating the regulation
101	Dimming relative	4 Bit	manual adjustment of the current brightness
102	Dimmin absolute	1 Byte	Adjustment current brightness of new absolute value
104	Lock object	1 Bit	Locking the regulation
105	Scenes	1 Byte	Call up of scenes
106	Output dimming absolute main	1 Byte	Output for main group
107	Output dimming absolute wall	1 Byte	Output for wall group
108	Output dimming absolute window	1 Byte	Output for window group

Table 26: Communication objects - constant light control

4.9 Logic

4.9.1 Activation of the logic function

The following figure shows the activation of the logic functions 1-4:

Logic function 1	<input type="radio"/> not active	<input checked="" type="radio"/> active
Logic function 2	<input type="radio"/> not active	<input checked="" type="radio"/> active
Logic function 3	<input checked="" type="radio"/> not active	<input type="radio"/> active
Logic function 4	<input checked="" type="radio"/> not active	<input type="radio"/> active
Request inputs after bus power reset	<input type="radio"/> not active	<input checked="" type="radio"/> active

Figure 28: Activation of Logic function

After activating the logic function, a submenu for the corresponding logic function is displayed in which the logic can be further parameterized accordingly.

The parameter "Request inputs after bus power reset" defines whether the external inputs of the logic should be queried after a restart.

4.9.2 Logic 1-4

The following figure shows the submenu for a logic:

Short description of function	<input type="text"/>
Function	AND ▼
Output object	Switching ▼
Send condition	at output change ▼
Output	<input checked="" type="radio"/> normal <input type="radio"/> inverse
<hr/>	
Internal input A	normal ▼
Object number	0 ▲▼
Internal input B	not active ▼
<hr/>	
External input C	normal ▼
Initialise logic input with ... after reset	<input checked="" type="radio"/> value 0 <input type="radio"/> value 1
External input D	not active ▼
External input E	not active ▼
External input F	not active ▼

Figure 29: Submenu - Logic

The following table shows the parameter settings for logic function:

ETS-Text	Dynamic range [Default value]	Comment
Short description of function		Here you can insert a name of the function (max. 40 bytes allowed)
Function	<ul style="list-style-type: none"> • AND • OR • XOR 	Setting of the logic function
Output object	<ul style="list-style-type: none"> • Switching • Scene • Value • Force 2bit 	Setting the output object for the logic

Send condition	<ul style="list-style-type: none"> • At input telegram • At output change • Send only 0 at output change • Send only 1 at output change • Send only 0 at input telegram • Send only 1 at input telegram 	Setting the Sending Condition: At input telegram: The output value is sent with every input telegram, regardless of whether the output value has changed or not At output change: The output value is only sent if the output has changed. Send only 1 at output change: The output value is only sent if the output changes and the logic has the corresponding value (0/1). Send only 0/1 at input telegram: Output value is sent with each input telegram if the logic has the corresponding value (0/1)
Output	<ul style="list-style-type: none"> • normal • inverse 	Defines how the output object is sent.
Internal Input A/B	<ul style="list-style-type: none"> • not active • normal • inverse 	Activation of an internal object as logic input
Object number	0-99 [0]	Selection of the internal object - Attention: Only bit values are evaluated correctly!
External Input C-F	<ul style="list-style-type: none"> • not active • normal • inverse 	Activation of an external object as logic input
Initialize logic input with... after reset	<ul style="list-style-type: none"> • Value 0 • Value 1 	Setting of a preassignment of the logic after a bus voltage recovery

Table 27: Parameter settings - logic function

Different objects can be logically linked using the logic function. Each logic function can link and evaluate up to 2 internal objects and up to 4 external objects. The transmission behaviour of the output can be adapted via the sending condition.

The following table shows the corresponding communication objects for Logic 1 (others +5):

Number	Name	Length	Usage
80	Logic 1 – Input C	1 Bit	External Input for the logic function
81	Logic 1 – Input D	1 Bit	External Input for the logic function
82	Logic 1 – Input E	1 Bit	External Input for the logic function
83	Logic 1 – Input F	1 Bit	External Input for the logic function
84	Logic 1 – Output 1	1 Bit/ 2 Bit/ 1 Byte	Output of the logic function; size and DPT dependent on the parameter “Output object”

Table 28: Communication objects - Logic

4.10 Temperature

Only for Glass-Presence detectors: SCN-G360D3.02, SCN-G360K3.02

The following picture shows the available settings:

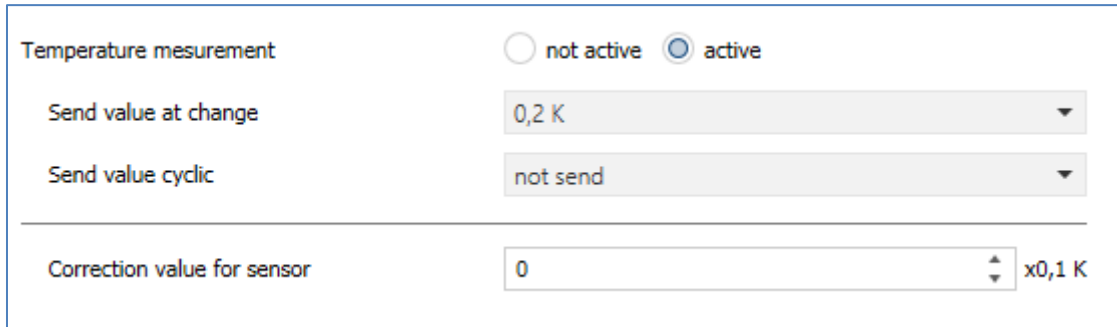


Figure 30: Settings - Temperature measurement

The temperature measurement can be used to measure the temperature in the room and send it to the bus. The temperature can be sent to the bus either at an adjustable change or cyclically (at fixed intervals).

The measured temperature can be shifted up or down using the "Correction value for sensor" parameter..

The following table shows the available communication object:

Number	Name	Length	Usage
110	Temperature – Measured value	2 Byte	Sending the measured value

Table 29: Communication object - Temperature measurement

4.11 Miscellaneous/Application examples

In this chapter some suggestions / application possibilities of the presence detector are presented. However, the respective examples are only suggestions and may have to be adapted to the current situation.

4.11.1 Blackboard light via 2nd light channel

A presence detector for classroom lighting is used to switch the light in a classroom according to demand. However, since additional table light is often required in school and conference rooms, a 2nd lighting group is used here. However, this panel light only needs to be switched on on request and switched off automatically when the teacher/lecturer leaves the panel area. Only one detector is required for smaller rooms. For larger rooms, the use of a second detector as a slave can be useful.

The first presence detector for the blackboard light has to be parameterized as follows:

Selection of lightgroups:	2 light groups
1. <u>light group:</u>	
Operating mode:	fully automatic
Active sensors:	1234
other parameters:	according to usage
2. <u>light group:</u>	
Operating mode:	semi automatic
Active sensors:	1234
other parameters:	according to usage

The output objects of the light group need to be connected to the switching objects of these light groups.

The object “external input” of the second light group needs to be connected to the push button, which sends the requirement for the blackboard light. The push button has to send an 1-signal to the object.

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6 Attachment

6.1 Statutory requirements

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals or material assets.

Do not let the packaging lying around careless, plastic foil/ -bags etc. can be a dangerous toy for kids.

6.2 Routine disposal

Do not throw the waste equipment in the household rubbish. The device contains electrical devices, which must be disposed as electronic scrap. The casing contains of recyclable synthetic material.

6.3 Assemblage



Risk for life of electrical power!

All activities on the device should only be done by an electrical specialist. The county specific regulations and the applicable EIB-directives have to be observed.

MDT Presence Detector, flush mounted

Version		
SCN-P360D4.02	Presence Detector, 4 pyro detectors	Light sensor (Presence max. 8m)
SCN-P360K4.02	Presence Detector, 4 pyro detectors	Light sensor, constant level light intensity (Presence max. 8m)
SCN-P360D3.02	Presence Detector, 3 pyro detectors	Light sensor (Presence max. 5m)
SCN-P360K3.02	Presence Detector, 3 pyro detectors	Light sensor, constant level light intensity (Presence max. 5m)
SCN-G360D3.02	Glass Presence Detector, White, 3 pyro d.	Light sensor, (Presence max. 5m)
SCN-G360K3.02	Glass Presence Detector, White, 3 pyro d.	Light sensor, constant level light intensity (Presence max. 5m)
SCN-P360D1.01	Presence Detector, 1 pyro detectors	Light sensor (Presence max. 3-4m)

The MDT Presence Detector is available in several versions, with light sensor and with light sensor plus constant level light intensity. The Presence Detectors captures the smallest movements with 1-4 pyro detectors and a high resolution lens. The illuminance value is measured by a sensor and can be read out directly in lux. After presence detection a 1-bit or dimming value (0...100%) is sent to the bus, the sensitivity is adjustable in 10 steps. The light sensor releases a telegram if the brightness value differs from the programmed value. Additionally the MDT Presence Detector has block objects for light and HVAC channel and offers a module for scene control. The MDT Presence Detector with constant level light intensity can control up to 3 light rows (SCN-P360K3.01: 1 light row).

The MDT Presence Detector is a installation device for fixed installation in dry rooms, the preferred installation height is 2 up to 4 meters.

4 pyro detectors: Covered area for movement max. 16m (Diameter), the covered area for presence max. 8m (Diameter).

3 pyro detectors: Covered area for movement max. 11m (Diameter), the covered area for presence max. 5m (Diameter).

1 pyro detector: Covered area for movement max. 5m (Diameter), the covered area for presence max. 3-4m (Diameter).

For project design and commissioning of the MDT Presence Detector it is recommended to use the ETS.

Please download the application software at www.mdt.de/Downloads.html

SCN-P360D4.02



SCN-P360D3.02



SCN-P360D1.01



SCN-G360D3.02



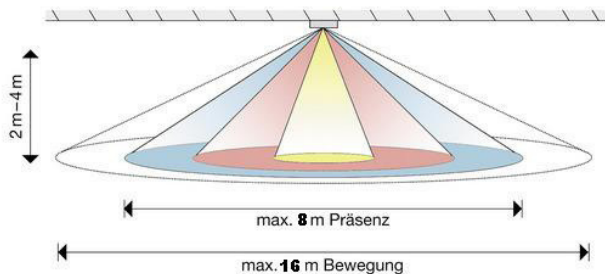
- Production in Germany, certified according to ISO 9001
- New application
- White Glass front, integrated temp. sensor (SCN-G360x3.02 only)
- 1, 3 or 4 pyro detectors with lens for presence detection
- Adjustable presence and presence sensitivity for day, night and alarm *
- Up to 4 light channels, sensors can be individually analyzed
- 1 HVAC and 1 alarm / notification channel
- Short time presence to reduce the after-running time *
- Input for an external push button with reset time *
- Intelligent switching function for automatic and manual operation *
- Blocking and forced function with release time *
- Extensive day / night function with 2nd switching object
- Orientation light (brightness and time adjustable)
- Avoiding of false reports for the alarm channel by reducing the sensitivity and adjustable observation window
- 3 years warranty

* not SCN-P360D1.01

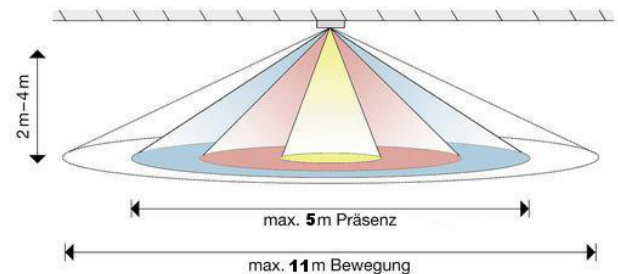
Technical Data	SCN-P360D4.02 SCN-P360K4.02	SCN-P360D3.02 SCN-P360K3.02	SCN-G360D3.02 SCN-G360K3.02	SCN-P360D1.01
Covered area (Diameter)				
Movement *	16m	11m	11m	5m
Presence *	8m	5m	5m	3-4m
Sensitivity	adjustable in 10 steps	adjustable in 10 steps	adjustable in 10 steps	fixed, not adjustable
Angular coverage	360°	360°	360°	360°
Range of light sensor	5 - 1000 Lux	5 - 1000 Lux	5 - 1000 Lux	5 - 1000 Lux
Measurement range temperature	-	-	-10 to +50C	-
Specification KNX interface	TP-256	TP-256	TP-256	TP-256
Available application software	ETS 4/5	ETS 4/5	ETS 4/5	ETS 4/5
Permitted wire gauge				
KNX busconnection terminal	0,8mm Ø, solid core	0,8mm Ø, solid core	0,8mm Ø, solid core	0,8mm Ø, solid core
Power supply	KNX bus	KNX bus	KNX bus	KNX bus
Power consumption KNX bus typ.	<0,3W	<0,3W	<0,3W	<0,3W
Operation temperature range	0 to + 40°C	0 to + 40°C	0 to + 40°C	0 to + 40°C
Enclosure	IP 20	IP 20	IP 20	IP 20
Dimensions (W x H x D)	85mm x 85mm x 38mm	75mm x 75mm x 35mm	92mm x 92mm x 32mm	43mm x 43mm x 30mm

* at maximum mounting height of 4m (See images below).

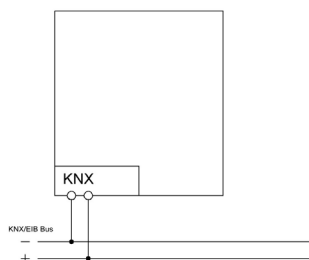
Covered area SCN-P360x4.02



Covered area SCN-x360x3.02



Exemplary circuit diagram SCN-x360xx.02



Covered area SCN-P360x1.01

