Technical Manual

MDT Presence Detector

SCN-P360D1.01

Further Documents:

Datasheet:

https://www.mdt.de/EN_Downloads_Datasheets.html

Assembly and Operation Instructions:

https://www.mdt.de/EN_Downloads_Instructions.html

Solution Proposals for MDT products:

https://www.mdt.de/EN_Downloads_Solutions.html

1 Content

2 Overview

2.1 Overview Devices

The Manual refers tot he following devices (Order ID respectively printed in bold letters):
- **SCN-P360D1.01** Presence Detector, 1 Pyro Detector1
    - 1 Pyro-Detector, controlling options for one light group and one HVC channel, separate communication object for night, Master/Slave function, Standby-/Orientation light

2.2 Usage & Areas of use

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 minimalize the non-essential switching periods. An additional channel transmits informations 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.
Due to its compact frame size, the presence detector can be built in ceilings very easy and nondescript.

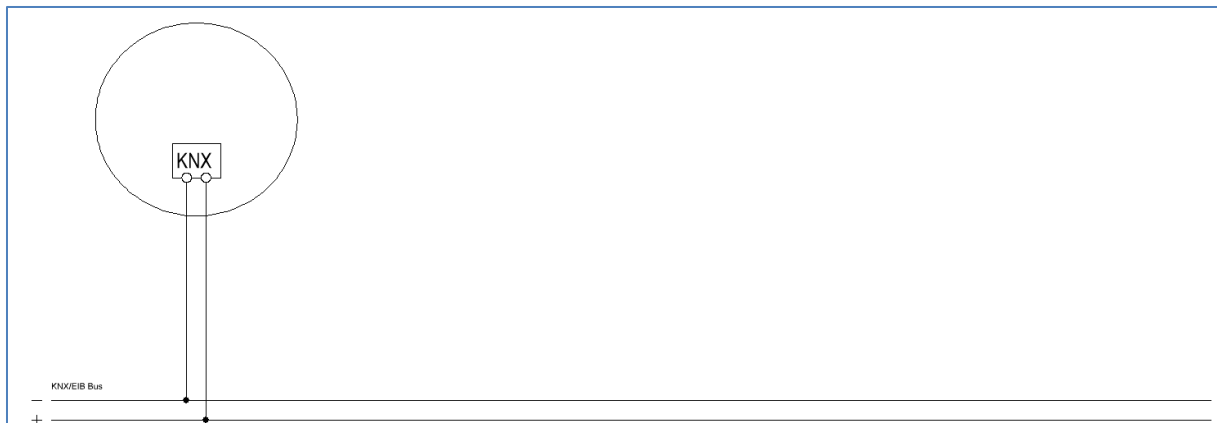## 2.3 Exemplary circuit diagram

KNX

KNX/EIB Bus

+

Figure 1: Exemplary circuit diagram

The presence detector should be placed in the middle of the room and in a height of 2-4metres.
The following figure shows the detection area of the presence detector:

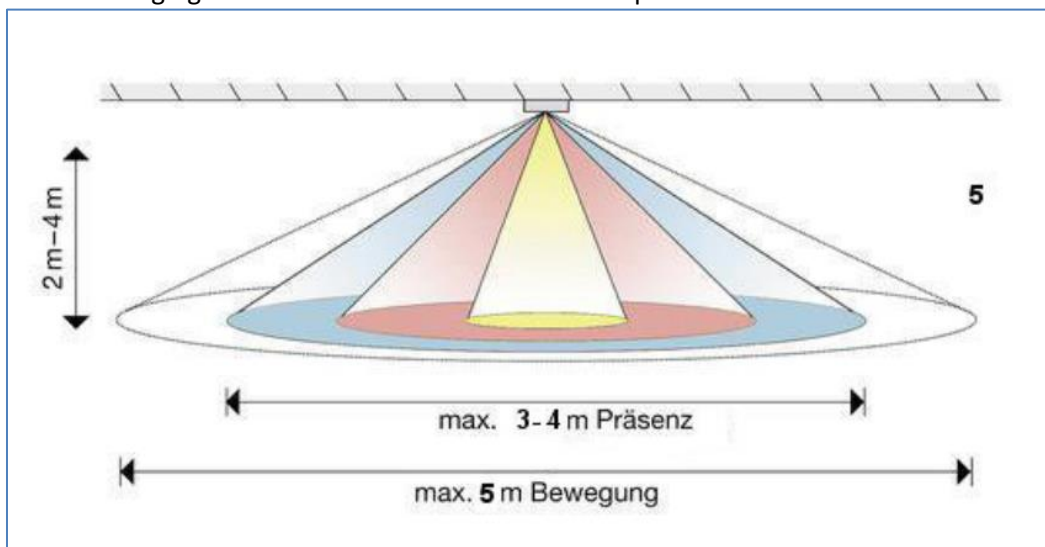2 m – 4 m

5

max. 3- 4 m Präsenz

max. **5** m Bewegung

Figure 2: Detection area SCN-P360x4.01Figure 3: Detection area SCN-P360x3.01

2.4 Functions

The functions of the presence detector are divided in the areas general settings, settings for the light control, the HCV-channel, the sending behavior, the calibration for the brightness value and according to the the hardware type, the constant level light control.
The following menus are shown and can be parametrized further:

- **General**
  The general settings are used for the basic settings of the presence detector. The using of the day/night object, and the presence object as well as the force control release time and a cyclic heartbeat can be configured in this menu.

- **Selection light groups**
  One light group and one HVC channel can be activated in this menu.
  - **Lightgroup 1**
    The settings for the presence mode can be done here. So the operating mode of the light group, the sending behavior and a brightness threshold can be adjusted.

  - **HVC**
    The Heating-, Ventilation-, Clima-channel is the interace of the presence detector to other subsections. The HVC-channel contains of the same options as the light groups.

- **Brightness**
  Settings fort he sending of the measured brightness value and a treshold value can be adjusted here.

- **Calibration brightness value**
  The correction of the measured brightness value can be adjusted by a steady parameter or via the Teach-In object.

2.5.1 Übersicht Funktionen

General settings	general	- cyclic heartbeat telegram - force control release time - Day-/Night-object
Light groups	Detector settings	- Operating mode adjustable - LED-display adjustable - Follow-Up time adjustable - Brightness threshold adjustable - Blocking object/ Force control object
	Sending behavior	- Object type adjustable - Polarity adjustable - Dependency of day/night adjustable - seinding filter adjustable - cyclic sending
HLK	Detector settings	- Operating mode adjustable - LED-display adjustable - Follow-Up time adjustable - Brightness threshold adjustable - Blocking object/ Force control object
	Sending behavior	- Object type adjustable - Polarity adjustable - Dependency of day/night adjustable - sending filter adjustable - cyclic sending
Brightness value	Sending behavior	- at changes - cyclic sending - threshold adjustable - Hysteresis adjustable - Object value adjustable - sending filter adjustable
	Calibration	- via Parameters - via Teach-In

Table 1: Overview functions

2.5 Settings at the ETS-Software

Selection at the product database:

Manufacturer: MDT Technologies
Product family: Presence Detectors
Product type: Ceiling
Medium Type: Twisted Pair (TP)
Product name: addicted to the used type, e.g.: SCN-PM360D1.01, Presence Detector 360° Ceiling CL
                              1 sensor
Order number: addicted to the used type, e.g.: SCN-PM360D1.01

The available parameters depend to the chosen product type. The additional functions for the plus variant are not shown at the normal push buttons.

2.6 Starting up

After wiring the allocation of the physical address and the parameterization of every channel follow:
    (1) Connect the interface with the bus, e.g. MDT USB interface
    (2) set bus power up
    (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 out, as well this process was completed successful)
    (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 Overview

The communication objects are divided into the categories of the submenus.
The objects 0-12 are reserved for the lightgroups. The displayed objects and the length of the objects change in accordance of the adjusted settings.
The object 14 is for the day/night switchover and can be activated via the general settings. Also the object 15 – "Presence" can be activated in the general settings. The objects 16 and 17 refer to the menu brightness in which the specific settings for this object can be done. They contain the current measured brightness value and the threshold value.
After these objects, the objects for the Teach-In function follows. The Teach-In function is for the internal brightness compensation, especially for the constant light function.
Then the objects 20-28 follows, which are responsible for the constant light function. The object 29- "Output Heartbeat" can be parametrized in the general settings.

3.2 Default-settings oft he communication objects

The following table shows the default settings of the communication objects:

Nr.	Name	Function	Length	Priority	C	R	W	T	U
	Default settings								
0	Output – Lightgroup 1	Switch	1 Bit	Low	X	X		X	
0	Output – Lightgroup 1	Dimming absolute	1 Byte	Low					
0	Output – Lightgroup 1	Scene	1 Byte	Low					
1	Output – Lightgroup 1 night mode	Switch	1 Bit	Low	X	X		X	
2	External Input – Lightgoup 1	Switch	1 Bit	Low	X		X		
3	Input external Movement – Lightgoup 1	Switch	1 Bit	Low	X		X		
4	Input – Lightgroup 1	Force control	2 Bit	Low	X		X		
5	Input – Lightgroup 1	Lock	1 Bit	Low	X		X		
6	Input – Lightgroup 1	Lock object On	1 Bit	Low	X		X		

7	Output – HLK	Switch	1 Bit	Low	X	X		X	
7	Output – HLK	Dimming absolute	1 Byte	Low	X	X		X	
7	Output – HLK	Scene	1 Byte	Low	X	X		X	
9	External Input – HLK	Switch	1 Bit	Low	X		X		
10	Input external Movement – HLK	Switch	1 Bit	Low	X		X		
11	Input – HLK	Force control	2 Bit	Low	X		X		
12	Input – HLK	Lock	1 Bit	Low	X		X		
13	Input – HLK	Lock object On	1 Bit	Low	X		X		
14	Input Day/Night	Switch	1 Bit	Low	X	X		X	
15	Presence	Switch	1 Bit	Low	X	X		X	
16	Threshold switch brightness	Switch	1 Bit	Low	X	X		X	
17	Brightness value	Brightness value	2 Byte	Low	X	X		X	
18	Input TeachIn	Start calibration	1 Bit	Low	X		X		
29	Output heartbeat	Status	1 Bit	Low	X	X		X	

Table 2: Default settings communication objects

You can see the default values for the communication objects from the upper chart. According to requirements the priority of the particular communication objects as well as the flags can be adjusted by the user. The flags allocates the function of the objects in the programming thereby stands C for communication, R for Read, W for write, T for transmit and U for update.

4 Reference ETS-Parameter

4.1 General

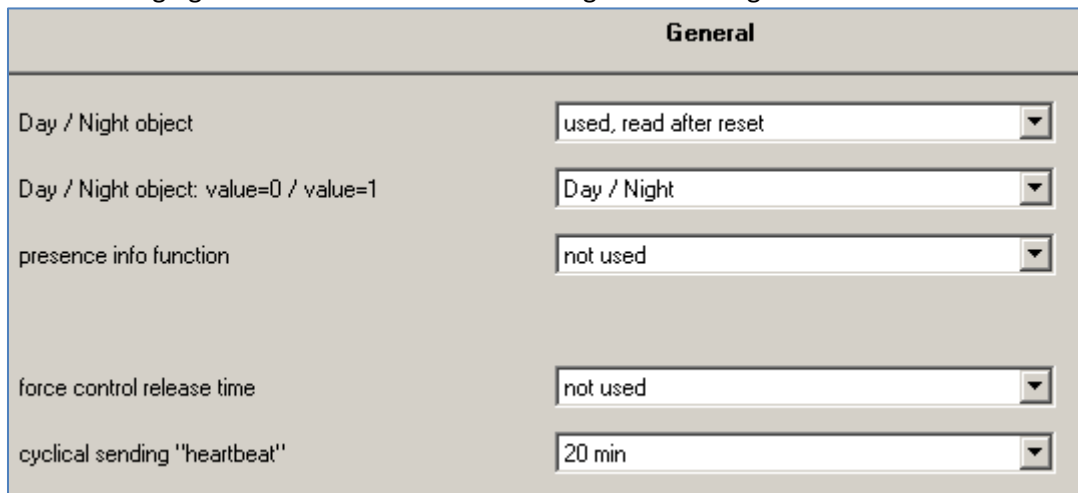The following figure shows the submenu for the general settings:

Figure 3: General settings

The following table shows the available settings for this submenu:

ETS-Text	Dynamic range [Default value]	Comment
Day/Night object	• not used • use • **use, read after reset**	Adjustment if a day/night object shall be used and definition of the usage after reset
Day/Night object value = 0/ value = 1	• **Day/Night** • Night/Day	Polarity of the day/night object
Presence info function	• **not used** • send on day only • send on night only • send on day and night	Activates the notification if a presence was detected
cyclical sending of presence	• **not used** • 5min -12h	Adjustment if the presence shall be send cyclically
Force control release time	• **not used** • 5 min – 12 h	Time which must ran out until the detector changes tot he automatic mode again
Cyclical sending "heartbeat"	• **not used** • 2min -24h	shows object for the cyclic observation of the detector

Table 3: Dynamic range general settings

The functions are described at the following pages:

- **Day/Night object**
  By using the day/night object, the presence detector can be switched into a day or night mode. So extended functions in the submenus are available for configuring the presence detector for a day and a night mode. For example different dimming levels can be adjusted for day (e.g. 100%) and night (e.g. 30%) or a orientation light can be switched on via a second switching object at night.

- **Presence info functiom**
  The presence info function can show an additional object for notificating presence. If the day/night object is active, a relation between these both objects can be adjusted.
  The presence info function can trigger an alarm function or being used for statistic purpose.

- **Force control release time**
  The force control release time defines the time wihich must expirate until the presence detector changes from the manual mode into the automatic mode.

- **Cyclical sending "heartbeat"**
  The function Cyclical sending "heartbeat" shows an object, which can be used for the cyclically observation of the presence detector. By using a superior control, it can be supervised if the presence detector is still on the bus or not. Especially in complex systems, the cancellation of lines or devices can be detected automatically.

4.2 Light / HCV

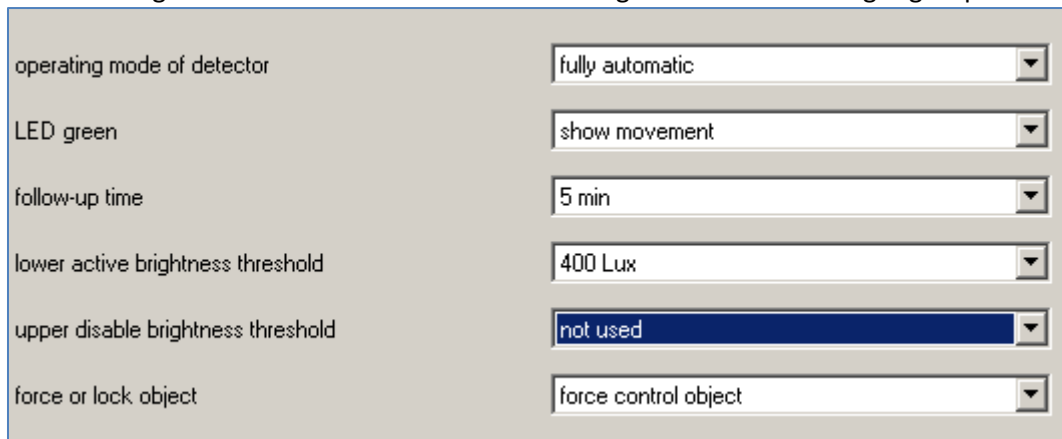One lightgroup and one Heating, Cooling, Ventilation (HVC) can be switched by the presence detector.

Die nachfolgende Tabelle zeigt die möglichen Einstellungen:

ETS-Text	Dynamic range [Default value]	Comment
Selection Group	• **One light group/zone** • One light group and climate HCV	defines which groups shall be switched from the presence detector

Table 4: Selection Lightgroups

4.2.1 Detector configuration

The following illustration shows the available settings for detector at a light group:
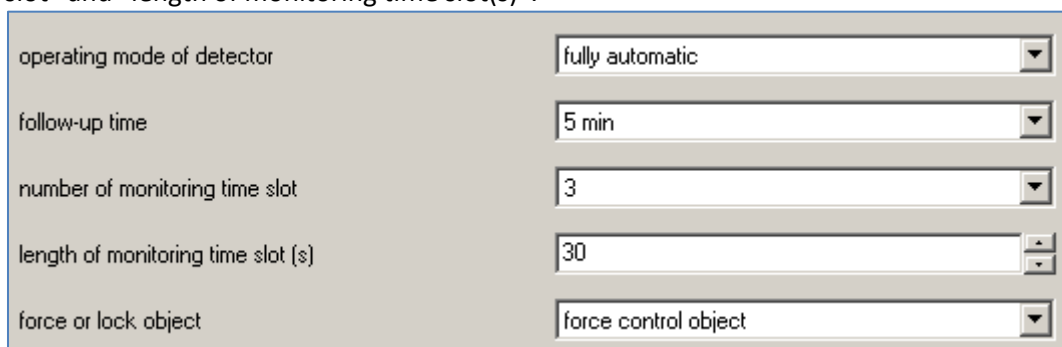

Figure 4: Settings light group

At the HVC Mode the brightness treshold is replaced by the parameter "number of monitoring time slot" and "length of monitoring time slot(s)":

Figure 5: Settings HVC

The following chart shows the avalibale settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
Operating mode of detector	• **fully automatic** • semi automatic	Adjustment oft he operating mode
LED green (only at light group 1&2)	• Off • **show movement** • show movement on day only	Definition oft he switching behavior oft he green LED
Follow-up time	1s – 4h **[5 min]**	Definition of the On-period
Lower active brightness treshold (only at light groups)regelung	0-2000 Lux **[400 Lux]**	Adjustment below the detctor shall work; the sensor is not active at greater brightness values
Upper disable brightness treshold (only at light groups)regelung	**not used**, 10-2000 Lux	Adjustment at which upper value the detector is disabled
Number of monitoring time slots (only at HCV)	0-32 **[3]**	Definition how much motions must be detected before the presence detecor switches on
Length of monitoring time slot (only at HCV)	0-3000s **[30s]**	Adjustment oft he length of the monitoring time slot
Force or lock object	• **Force control object** • Lock object universal • Lock object universal and force object ON	Adjustment if a force control object or a lock object shall be used

Table 5: Setting detector

The parameters are described in detail as follows:
- **Operating mode**
  The operating mode is divided into fully automatic and semi automatic. So the presence detector can be configured for greater rooms as Maser/Slave. The Master/Slvae mode is described in detail in an extra chapter.
    - **fully automatic**
      If the presence detector is configured as fully automatic, every detected presence causes power-on of the output.

    - **semi automatic**
      At the semi automatic mode, the output is only switched on if the detector detects a presence and the object External Input – light group 1/2 /HCV receives an on-signal at the same time.

- **Follow-up time**
  The follow-up time defines the power-on time. The detector switches on at detected presence until the adjusted follow-up time runs out.

- **Sensor activation/-deactivation**
  The sensor activation/deactivation is only available at light groups. By using this setting, the detector can get a determined working zone. The parameter "Lower active brightness threshold" defines the brightness threshold below the detector works as normal presence detector. If the brightness is higher than this threshold, no motion will be detected. The sensor is not switched off upper this brightness threshold. This behavior can be achieved by using the parameter "Upper disable brightness treshold". This value should not be adjusted to low, because this could effect a steady switching of the output.

- **Monitoring time slots**
  The Monitoring time slots are only available fort he HCV channel. This setting causes that a longer detzection is necessary for switching the detector on. For switching the channel on, in every time slot a at least one motion must be detected.

- **Force control /Lock object**
  The object can be used as well as force conbtrol object or as lock object. The force control object has 3 different states:
  - Force control ON (control = 1, value = 1)
    At this mode an on-command is sent to the output. The evaluation is stopped and the follow-up time starts. If no command is received at the force control object after the follow-up time, the detector switches back into the normal mode.
  - Force control OFF (control = 1, value = 0)
    At this command an off-command is sent to the output. The evaluation is stopped and the follow-up time starts. If no command is received at the force control object after the follow-up time, the detector switches back into the normal mode.
  - Force control AUTO (control = 0 value = 0)
    After sending this command, the normal mode of the detector starts.

  The lock object can be used with the following settings for the activation and deactivation:
  - Force control ON
    Same functionality as described at Force Control ON.
  - Force control OFF
    Same functionality as described at Force Control OFF.
  - Automatic mode
    The detector switches again tot he automatic mode.
  - Lock (actual state)
    The detector is locked in the current state.

  Additional a second lock object can be shown fort he lock object, the lock object ON. This object switches the output continuous ON.

4.2.2 Communication object settings

The following chart shows the available settings for the communication objects of the light groups/HCV group:

Das nachfolgende Bild zeigt die Einstellmöglichkeiten für die Kommunikationsobjekte für die Lichtregelung/HLK:

Objekttyp für Ausgang - Licht	Schalten
Objektwert bei Tag für EIN	EIN
Objektwert bei Tag für AUS	AUS
Objektwert bei Nacht für EIN	EIN
Objektwert bei Nacht für AUS	AUS
Bei Nacht 2. Schaltobjekt verwenden	Nein
Schaltobjekt kann senden	EIN und AUS
Objektwert zyklisch senden	nicht senden
Externer Taster kann senden	EIN und AUS
Totzeit nach Ausschalten	10 s

object type for output - light	Switching
object value on day for On	On
object value on day for Off	Off
object value on night for On	On
object value on night for Off	Off
use 2. switch object for night	No
switching object send at	On and Off
cyclical sending of object value ON	not used
external input reacts on	On and Off
idle time after switch off	10 s

Figure 6: Communication object settings light groups/HCV group

The following table shows the available settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
Object type for output - light	• **Switching** • Dimming absolute • Scene	Adjustment oft he switching object of the light group output
Object type for output – climate(HCV)	• **Switching** • Send value • Scene	Adjustment oft he switching object of the HCV output
Object value on day for On	• **On**/Off • 0-100% **[100%]** • Scene 1-32 **[5]**	Adjustment of the sending at this state
Object value on day for Off	• On/**Off** • 0-100% **[0%]** • Scene 1-32 **[6]**	Adjustment of the sending at this state
Object value on night for On	• **On**/Off • 0-100% **[100%]** • Scene 1-32 **[7]**	Adjustment of the sending at this state
Object value on night for Off	• On/**Off** • 0-100% **[0%]** • Scene 1-32 **[8]**	Adjustment of the sending at this state
Use 2. switch object at night (only at light groups and object type switch)	• Yes • **No**	shows a second switching object fort he night mode, e.g. for switching an orientation light
Standby/Orientationlight (only at light groups and object type dimming absolute)	• used • **not used**	Activation of a standby function, which starts after expiration of the follow-up time
Standby time on day/night	• **no delay** • 1s – 60min	Adjustment of the duration of the standby time
Standby dimming value on day/Night	1- 100% **[1%]**	Adjustment of the dimming value for the standby function
Switching object send at (only at object type switching)	• send nothing • only ON • only OFF • **ON and OFF**	Sendefilter für das Ausgangsobjekt
Cyclical sending of object value ON	• **not used** • 1min – 60min	Activation of cyclic sending
External input reacts on	• send nothing • only ON • only OFF • **ON and OFF**	Input filter for the object External Input – light group 1/2/HCV
Idle time after swtitch off	1s – 60s **[10s]**	Time, which must expire after swiotching off for detecting a new movement

Table 6: Communication object setting presence function

The following chart shows the relevant communication objects for the light group:

Number	Name	Length	Usage
0	Output – light group 1	1 Bit/ 1Byte	Output for the first light group; Length and type depends to the parameter Object type for output
1	Output – light group 1 night mode	1 Bit	Output for the orientation light at night mode
2	External Input – light group 1	1 Bit	External input for Push Buttons/Indication object of an actuator for switching the light
3	Input external movement – light group 1	1 Bit	External input for second detector
4	Force control	2 Bit	Force control object; switches the detector as described above
4	Lock	1 Bit	Lock object; switches the detector as the adjusted settings
5	Lock object ON	1 Bit	Lock object, which switches the detector on with a 1-command

Table 7: Communication objects light

If a second light group is activated, the same communication objects with the same functionality are shown.

The following table shows the relevant communication objects for a HCV channel:

Number	Name	Length	Usage
7	Output – climate (HCV)	1 Bit/ 1Byte	Output for the HCV group; Length and type depends to the parameter Object type for output
8	External Input – climate (HCV)	1 Bit	External input for Push Buttons/Indication object of an actuator for switching the HCV group
9	Input external movement – climate (HCV)	1 Bit	External input for second detector
10	Force control	2 Bit	Force control object; switches the detector as described above
11	Lock	1 Bit	Lock object; switches the detector as the adjusted settings
12	Lock object ON	1 Bit	Lock object, which switches the detector on with a 1-command

Table 8: Communication objects HCV

4.3 Brightness

The following figure shows the available settings for the brightness detection:

Figure 7: Settings brightness

The following table shows the available settings for these parameters:

ETS-Text	Dynamic range [Default value]	Comment
Send brightness on change of	• not used • 20 Lux – 1800 Lux **[50 Lux]**	Minimum rate of change for sending the current brightness
Cyclical sending of light value	• **not used** • 5s – 30min	Adjustment of a determined time span for sending the current brightness
Value for switching the threshold switch	60Lux – 1000 Lux **[30 Lux]**	Adjustment of the threshold for switching
Hysteresis of threshold switch	5 Lux– 200 Lux **[30 Lux]**	Distance between value for switching ON and OFF
Object value on day for On	• **ON** • OFF	Adjustment of the polarity
Object value on night for On	• **ON** • OFF	Adjustment of the polarity
Object value for off	• ON • **OFF**	Adjustment of the polarity

Send on day only	• send nothing • only ON • only OFF • **ON and OFF**	Sending filter at day mode
Send on night only	• send nothing • only ON • only OFF • **ON and OFF**	Sending filter at night mode

Table 9: Settings brightness

At the Menu brightness the sending behavior for the measured brightness value can be adjusted. The measured brightness value can be send at determined changes or at determined times.
Additional a treshold can be defined. This threshold can be adjusted with a hysteresis for preventing of frequently switching. The effect of the hysteresis shows the following figure:
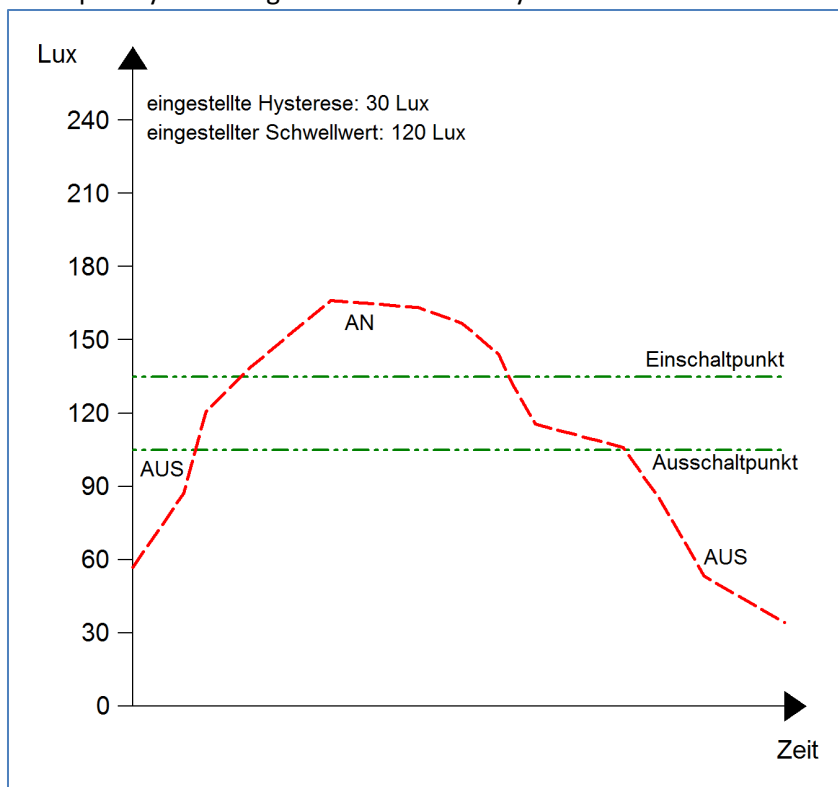

Figure 8: Hysteresis brightness threshold

Further more the polarity and the sending behavior can be adjusted by the parameters Object value for day/night/off and "Send on day/night only".

The following table shows the relevabt communication objects:

Number	Name	Length	Usage
16	Threshold switch brightness	1 Bit	sends the adjusted value at exceedance or undercut
17	Brightness value	2 Byte	measured brightness value

Table 10: Communication objects brightness

4.4 Calibration brightness value

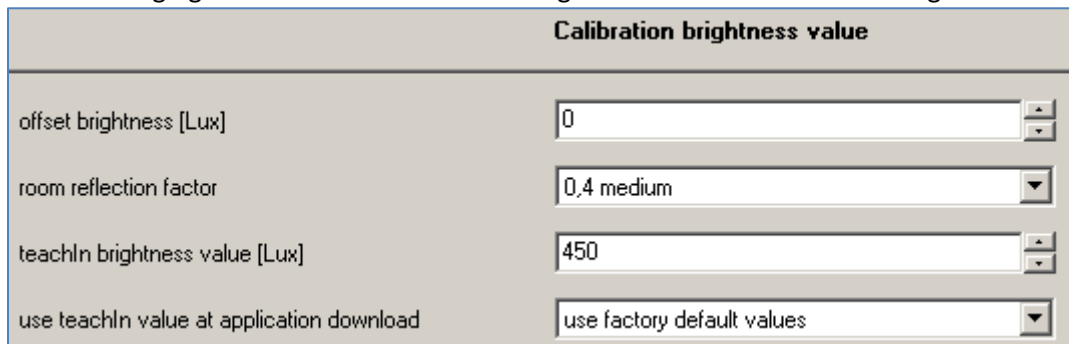The following figure shows the available settings for the calibration oft h e brightness value:

Figure 9: Calibration brightness value

The following chart shows the availbale settings for this parameter:

ETS-Text	Dynamic range [Default value]	Comment
Offset brightness [Lux]	-100 – 100 [0]	Increasing/Decreasing by the adjusted value
Room reflection factor	• 1 • 0,7 very high • 0,5 high • **0,4 medium** • 0,3 low • 0,25 low • 0,2 very low	Reflection factor of the environment; indicates how much light is reflected bach (1=100% / 0=0%)
TeachIn brightness value[Lux]	200-1000 [450]	Comparison value for external import
Use TeachIn value at application download	• hold TeachIn values • **Use factory default values**	Adjustment if the presence detector shall keep the TeachIn values after a download or use the factory default values

Table 11: Calibration brightness value

Consecutively the parameters are described in detail:
- **Offset brightness**
  The correction of the brightness value is a simple offset of the measured brightness value. So at a value of -50, the measured value is reduced by 50. By this setting the presence detector would send at a value 0f 400 at measured value of 450.

- **Reflection factor**
  The reflection factor indicates how much of the emitted light is reflected by the environment back to the light source. The value 1 means that 100% of the emitted light is reflected back to the light source. At dark floors, a value of 0,25, is recommended.
  Die nachfolgende Tabelle dient als Orientierung um den Reflexionsfaktor an Ihren Raum anzupassen:

Metalle, Farbanstriche, Baustoffe	Reflexionsgrad
Aluminium, hochglänzend	0,80-0,85
Aluminium, mattiert	0,50-0,70
Stahl, poliert	0,50-0,60
Weiß	0,70-0,80
Hellgelb	0,60-0,70
Hellgrün, hellrot, hellblau, hellgrau	0,40-0,50
beige, ocker, orange, mittelgrau	0,25-0,35
Dunkelgrau, dunkelrot, dunkelblau	0,10-0,20
Putz, weiß	0,70-0,85
Gips	0,70-0,80
Beton	0,30-0,50
Ziegel, rot	0,10-0,20
Glas, klar	0,05-0,10

Table 12: List of reflection factors

If no TeachIn is performed, the measured brightness can be corrected with the reflection factor. If a TeachIn is performed, the brightness value is corrected automatically. The TeachIn must not be changed after the TeachIn process.
The Adjsutment via TeachIn is especially for the constant light function important. The approach is described at the following chapter.Oft werden in der Lichtplanung folgende Standardwerte verwendet: Decke: 0,7 Wand: 0,5 Boden: 0,3

4.4.1 Approach at Teach-In

For using the whole advantages oft he intelligent constant light control, the presence detector must 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.
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.

4.6 Master/Slave

4.6.1 Light groups

In larger rooms often more than one presence detector is required. For detecting presence all over the room, presence detectors must be allocated in the whole room. But also in this case a detected presence shall cause always the same settings independent of the place of detection. In this case one detector operates as Master and a arbitrary number of presence detectors work as Slave.
The settings for the Master/Slvae mode can be done in the submenu "light groups".
The Slaves must be configured as follows:

- Adjustment to fully automatic (every movement shall be sent)
- Set follow-up time tot he same value as the Master
- Activate cyclic sending for the output
  - Parameter: Cyclical sending of object value ON
  - Guidance value: 1min, at greater Follow-up time, e.g. 15min, the cyclical sending can be set up to a greater value, e.g. 5min, for minimzing the bus load
- Brightness value for "lower active brightness threshold" to maximum value
- Brightness value for "upper disable brightness threshold" to not used

The Master can be parameterized as desired as fully automatic or semi automatic.
For the follow-up time a value of 10 min is recommended.

The connection of the objects must be done as follows:
- all output objects of the Slaves (object 0) must be connected withe the object external movement (object 3) of the Master.

Now the Master evaluates every degtected presence of itself and the detected presence of every Slave and switches the light according to its settings, regardless which presence detector has detected a movement.

4.6.2 HVC

The Master/Slave circuit can alos be used for HCV channels. In this case, the slave must be adjusted in the same way as the slaves for the light groups. But the settings for the brightness values have not to be applied. The settings for the monitoring time slots must be maded according to the individual desires.
The connection of the communication objects must be done as follows:
- All output objects of the slaves (object 0) must be connected to the object external movement (object 10) of the Master.

5 Index

5.1 List of illustrations

5.2 List of tables

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.

6.4 Datasheet