Stand 02/2018

Technical Manual

MDT Motion Detector

SCN-BWM55.01
SCN-BWM55.G1

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1 Content

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2 Overview

2.1 Overview devices

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

- **SCN-BWM55.01** Motion detector, 2 Pyro detectors, matt finish
  - 2 Pyro-detectors, Sensitivity separately adjustable for day/night/presence
    2 separate configurable Light channels, HCV and Alarm channel;
    4 Logic functions (And-/Or-/XOR-function) configurable;
    green, white, red LED freely configurable;
    8 scenes activatable and adjustable;
    Motion direction detection
- **SCN-BWM55.G1** Motion detector, 2 Pyro detectors, glossy finish
  - Functions as above

2.2 Usage & possible applications

The MDT motion detector switches depending on the ambient brightness and presence. It can be used for demand-driven switching in order to switch economically and only when required. The motion detector can thus help to reduce unnecessary switching times to a minimum, especially in commercial premises, but also in rooms that are seldom used, such as bathrooms and toilets or rooms that are used as passageways such as hallways.
An additional channel transmits the presence information in the room to other trades such as heating, ventilation, air-conditioning or blind control systems. This means that the motion detector can also be used in other trades.
The MDT motion detector is designed for wall mounting and impresses with its flat design and 180° detection range.

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2.3 Exemplary Circuit Diagram

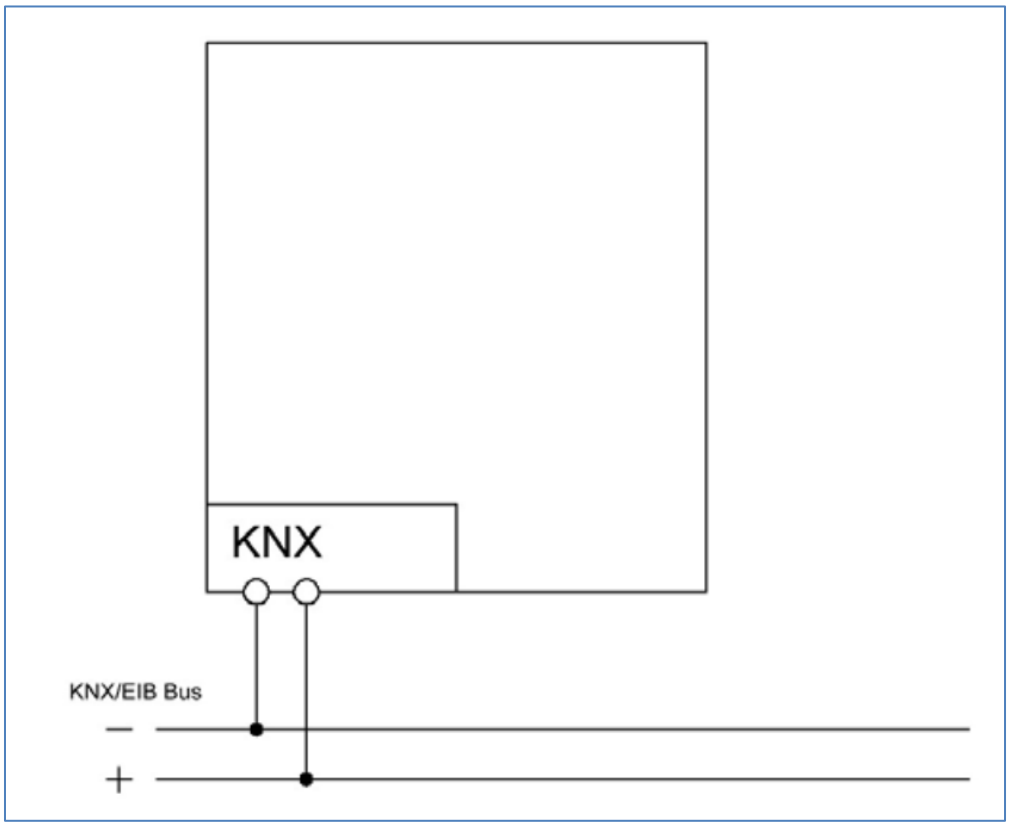

Figure 1: Exemplary circuit diagram

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2.4 Structure & Handling

The following figure shows a motion detector in principle presentation:

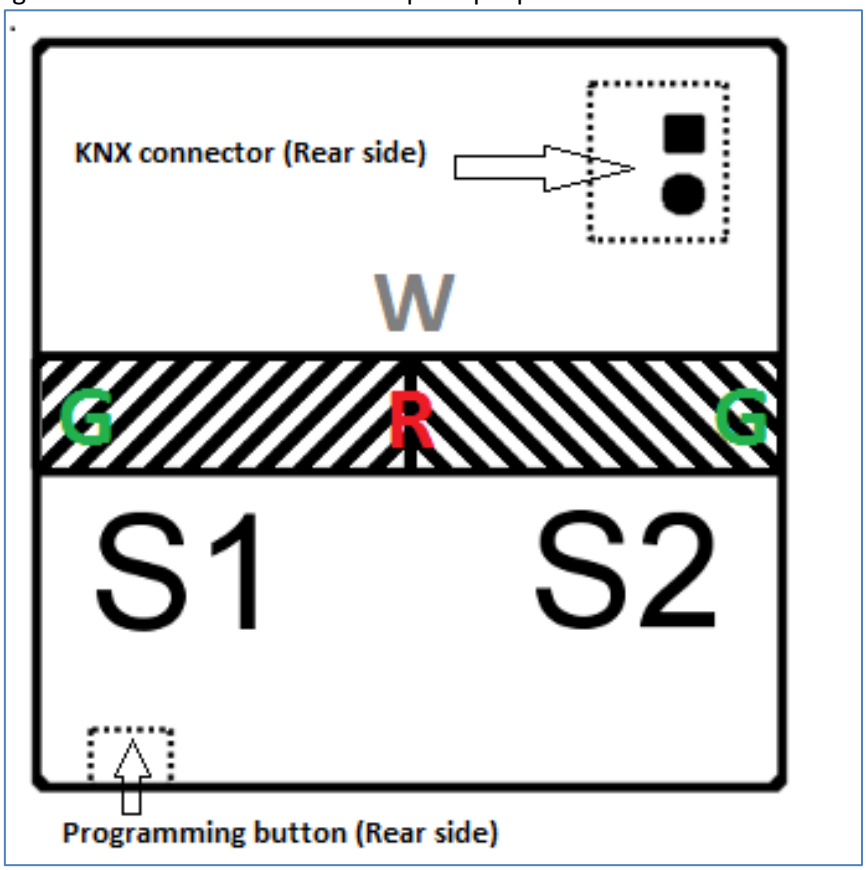

Figure 2: Structure

In addition to the standard elements, programming button and KNX connection, the position of the sensors and the LEDs is shown on the picture above:

S1/S2	sensor 1/sensor 2
R	red LED (Programming-LED)
G	green LEDs
W	white LED

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2.5 Functions

The motion detector functions are divided into the following areas: general settings, light channels 1 and 2, HCV, alarm, logic, LED, scenes and brightness:

- **General Settings**
  The general settings are used for the basic configuration of the motion detector. Basic settings for sensitivity and basic settings for brightness can be made here as well as the follow-up times. In addition, a cyclically sending "In operation" telegram can be activated.

- **Light channel 1 and 2**
  Light channel 1 and 2 can be parameterised and activated/deactivated separately from each other. The active sensors can be parameterised for each light channel. The operating modes fully automatic and half-automatic (manual switching on) are available. Furthermore, different values for day/night (depending on the day/night object) can be sent. A switching object, a scene object or an absolute value (dimming absolute) can be sent as an output object. Each light channel can be given priority by a force control object or a blocking object

- **HCV**
  The heating, climate and ventilation channel is the interface of the motion detector to other systems. In contrast to the light channels, the HCL channel has adjustable monitoring time slots with which the presence in the room can be observed. By using this channel, it is possible to control the ventilation of a room as required or to switch other HCV functions in presence/absence, for example.

- **Alarm**
  The alarm channel is used to detect movements during absence. For this purpose, the channel has a separate sensitivity setting and its own enable/disable object with which monitoring can be started.
  In this menu you can also activate the motion direction detection.

- **Logic**
  Up to 4 different logics can be activated. These can be set with the functions AND, OR, XOR. Each logic block can be activated with up to two internal logic objects and up to four external logic objects. Switching commands, scenes, values or 2-bit priority control objects can be sent as output objects.

- **LED**
  A white, green and red LED are available for display. The green LED can be used to signal movements or the LED can be switched depending on an external object.
  The white LED can be parameterised as night light or motion indicator. Furthermore, the LED can be switched via a separate object. The brightness of the LED is adjustable from 1-100%.
  The red LED can be used either as pure programming LED or switched via a separate object.

- **Scenes**
  Up to 8 scenes can be activated which can cause adjustable actions in the light channels 1/2.

- **Brightness**
  The correction of the measured brightness value and the sending conditions for the light value can be set here.

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2.6 Settings at the ETS-Software

Selection at the product database

Manufacturer: MDT Technologies
Product family: Presence detector
Product type: Wall mounted
Medium Type: Twisted Pair (TP)
Product name: SCN-BWM55.01 ; Motion detector 180°
Order number: dependent of the used type, e.g. SCN-BWM55.01

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) Switching the power supply
(3) Set bus power up
(4) Press the programming button at the device (red programming LED lights)
(5) 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)
(6) Loading of the application, with requested parameterization
(7) If the device is enabled you can test the requested functions (also possible by using the ETS-Software)

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3 Communication Objects

3.1 Overview and Usage

The following table shows the available objects and their usage:

No.	Name	Object function	Data type	Direction	Info	Usage	Note
Objects per light channel:							
0	Light channel 1 - Output 1	Dimming absolute Switching Scene	DPT 5.001 DPT 1.001 DPT 17.001	send	Light channel sends output telegram	Switch actuator / Dimming actuator	Data point type depends on the parameter "Object type for output - light". Object sends values according to the set parameters.
1	Light channel 1 - Output 1 (night)	Switching	DPT 1.001	Send	Light channel sends switching telegram	Switch actuator	Object is displayed when object is activated via parameter "Separate switch object at night"
2	Light channel 1 - Input	Output 2	DPT 1.001	Send	Light channel sends switching telegram	Switch actuator	Object is displayed when output 2 (additional switching object) is activated
3	Light channel 1 - Input	External push button short	DPT 1.001	receive	Light channel reacts to incoming telegram	External push button	The object is permanently displayed and is used to override the automatic control of the light channel.
4	Light channel 1 - Input	External push button long	DPT 1.001	receive	Light channel reacts to incoming telegram	External push button	The object is permanently displayed and is used to override the automatic control of the light channel.

5	Light channel 1 - Input	External motion (Slave)	DPT 1.001	receive	Light channel reacts to incoming telegram	Additional motion detector configured as slave	Object is permanently displayed and is required for the Master/Slave function
6	Light channel 1 - Input	Force control/ Lock object	DPT 2.001/ DPT 1.003	receive	Light channel reacts to lock command / Force control	External push button for blocking/overriding the motion detector	Object is displayed after activation; DPT depends on parameter settings
7	Light channel 1 - Input	Lock object ON	DPT 1.003	receive	Light channel reacts to lock command	External push-button for blocking the motion detector	Object is displayed after activation
8	Light channel 1 - Status	Status automatic mode	DPT 1.011	send	Light channel sends status	Visu, Diagnostics, Display	Object is permanently displayed and has the value 1 if light channel is in automatic mode.
9	Light channel 1 - Input	Switch dark	DPT 1.001	receive	Light channel reacts to incoming telegram	External button for overriding the brightness dependency	Object is displayed when the parameter "Brightness" is set to "Basic setting or active object ´Dark´"
+10	**next light channel**						

Objects per HCV:							
40	HCV - Output 1	Dimming absolute Switching Scene	DPT 5.001 DPT 1.001 DPT 17.001	send	HCV channel sends output telegram	Switch actuator / Dimming actuator/ Heating actuator	Data point type depends on the parameter "Object type for output – climate (HCV)". Object sends values according to the set parameters.
43	HCV - Input	External push button short	DPT 1.001	receive	HCV channel reacts to incoming telegram	External push button	The object is permanently displayed and is used to override the automatic control of the HCV channel.
44	HCV - Input	External push button long	DPT 1.001	receive	HCV channel reacts to incoming telegram	External push button	The object is permanently displayed and is used for overriding the automatic control of the HCV channel.
45	HCV - Input	External Motion	DPT 1.001	receive	HCV channel reacts to incoming telegram	Additional motion detector configured as slave	Object is permanently displayed and is required for the Master/Slave function
46	HCV - Input	Force control/ Lock object	DPT 2.001/ DPT 1.003	receive	HCV channel reacts to lock command / Force control	External push button for blocking/overriding the motion detector	Object is displayed after activation; DPT depends on parameter settings
47	HCV - Input	Lock object ON	DPT 1.003	receive	HCV channel reacts to lock command	External push-button for blocking the motion detector	Object is displayed after activation

48	HCV	Status automatic mode	DPT 1.011	send	HCV channel sends status	Visu, Diagnostics, Display	Object is permanently displayed and has the value 1 if HCV channel is in automatic mode.
49	HCV	Switch dark	DPT 1.001	receive	HCV channel reacts to incoming telegram	External button for overriding the brightness dependency	Object is displayed when the parameter "Brightness" is set to "Basic setting or active object ´Dark´"
Objects per Alarm:							
50	Alarm - Output 1	Switching	DPT 1.001	send	Alarm channel sends switching command	Switch actuator, Visu, Display, etc.	Object is permanently displayed and sends the value 1 if the Alarm function detects a motion
51	Alarm - Night mode	Switching	DPT 1.001	send	Alarm channel sends switching command	Switch actuator, Visu, Display, etc.	Object is displayed when object is activated via parameter "Separate switch object at night"
56	Alarm - Input	Lock/Enable	DPT 1.003	receive	Alarm channel reacts to incoming telegram	Push button for switching presence/absence, etc.	Object is permanently displayed; The type of the object is set via parameter "Lock object or enable object"; Object is used to lock/enable the alarm function.

General objects/ LEDs /Scene/ Motion direction:							
60	Day/Night toggle	Day = 0 / Night = 1 Day = 1 / Night = 0	DPT 1.001	receive	Motion detector reacts to incoming telegram	Push button, Time-switch etc.	Object is activated in the general settings and switches between day/night operation
61	LED Green	Switching	DPT 1.001	receive	Motion detector reacts to incoming telegram	Push button etc.	Object can be activated in menu LED and switches the green LED
62	LED Red	Switching	DPT 1.001	receive	Motion detector reacts to incoming telegram	Push button etc.	Object can be activated in menu LED and switches the red LED
63	LED White	Switching	DPT 1.001	receive	Motion detector reacts to incoming telegram	Push button etc.	Object can be activated in menu LED and switches the LED
64	Scene	Input	DPT 17.001	receive	Motion detector reacts to incoming telegram	Push button etc.	Object is permanently displayed and calls up the adjusted settings in light channel 1/2
65	Output heartbeat	Status	DPT 1.001	send	Motion detector sends Status	Visu, Diagnostics, Failure detection etc.	Object can be activated in the general settings and sends cyclically a "1" telegram if device is on the bus.

67	Brightness sensor	Status	DPT 9.004	Send	Motion detector sends measured value	Visu, Diagnostic, etc.	Object is permanently displayed and sends the currently measured brightness value
70	Motion direction 1	Switch at motion from right to left	DPT 1.001	Send	Motion detector sends switching command	Switch actuator, etc.	Motion direction detection can be activated in the menu “Alarm”
71	Motion direction 2	Switch at motion from left to right	DPT 1.001	Send	Motion detector sends switching command	Switch actuator, etc.	Motion direction detection can be activated in the menu “Alarm”

Logic functions:							
80-83	Logic 1	Input C-F	DPT 1.001	receive	Motion detector reacts to incoming telegram	Any 1 bit value from the KNX system	Objects are displayed when the external inputs are activated for this logic
84	Logic 1	Output 1	DPT 1.001/ DPT 17.001/ DPT 5.001/ DPT 2.001	send	Logic sends output telegram	actuator technology	Object is permanently displayed when logic is active; DPT according to the setting "Output object"
+5	**next logic**						

Table 1: Overview and Usage of the communication objects

3.2 Default settings of the communication objects

Default settings									
No.	**Name**	**Function**	**Length**	**Priority**	**C**	**R**	**W**	**T**	**U**
0	Light channel 1 - Output 1	Dimming absolute Switching Scene	1 Byte/ 1 Bit/ 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	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	1 Bit	Low	X		X		
5	Light channel 1 - Input	External Motion (Slave)	1 Bit	Low	X		X		
6	Light channel 1 - Input	Force control/ Lock object	2 Bit/ 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	
9	Light channel 1 - Input	Switch dark	1 Bit	Low	X		X		
+10	**next light channel**								
40	HCV - Output 1	Dimming absolute Switching Scene	1 Byte/ 1 Bit/ 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	1 Bit	Low	X		X		
45	HCV - Input	External Motion	1 Bit	Low	X		X		
46	HCV - Input	Force control/ Lock object	2 Bit/ 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	
49	HCV - Input	Switch dark	1 Bit	Low	X		X		
50	Alarm - Output 1	Switching	1 Bit	Low	X	X		X	
51	Alarm - Night mode	Night mode	1 Bit	Low	X	X		X	
56	Alarm - Input	Lock/Enable	1 Bit	Low	X		X		
60	Day/Night toggle	Switching	1 Bit	Low	X		X		
61	LED green	Switching	1 Bit	Low	X		X		
62	LED red	Switching	1 Bit	Low	X		X		
63	LED white	Switching	1 Bit	Low	X		X		
64	Scene	Input	1 Bit	Low	X		X		
65	Output heartbeat	Status	1 Bit	Low	X	X		X	
67	Brightness sensor	Status	1 Bit	Low	X	X		X	

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70	Motion direction 1	Switch at motion from right to left	1 Bit	Low	X		X		
71	Motion direction 2	Switch at motion from left to right	1 Bit	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**								

Table 2: Communication objects - Standard settings

The pre-set 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.

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4 Reference ETS-Parameter

4.1 General Settings

The following figure shows the submenu for general settings:

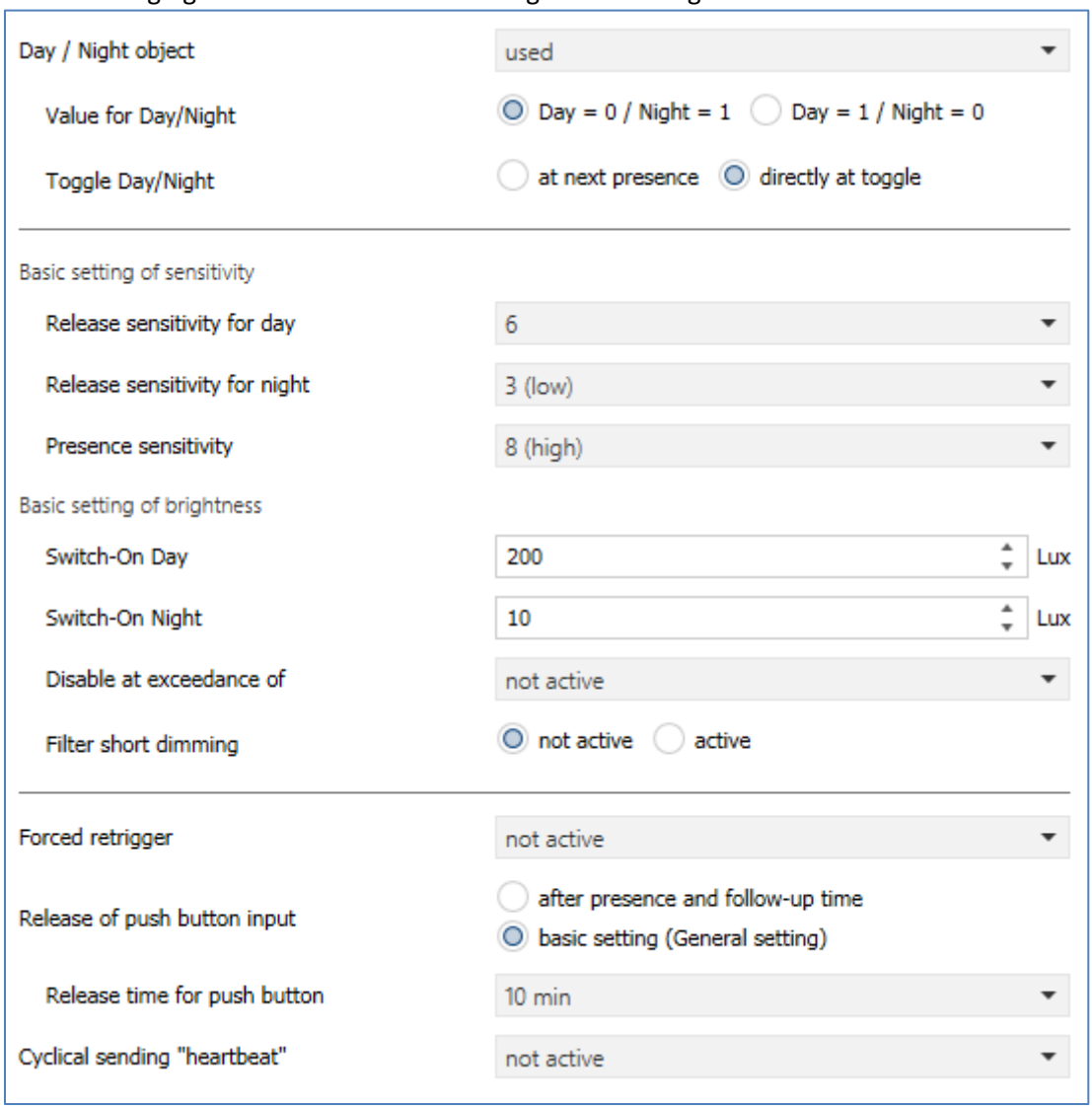

Figure 3: General Settings

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The following table shows the possible settings for this menu:

ETS-Text	Dynamic range **[Default value]**	Comment
Day/Night Object	• 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	• **Day = 0 /Night = 1** • Day = 1 /Night = 0	Polarity of the Day/Night object
Toggle Day/Night	• 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 setting of brightness		
Sensor activation below (day)	10-2000Lux **[200]**	Setting of the brightness threshold below which the sensor is activated in day mode
Sensor activation below (night)	10-2000Lux **[10]**	Setting of the brightness threshold below which the sensor is activated in night mode
Switch-off when exceeding	• **not active** • 10-2000Lux	Setting of the brightness threshold from which the sensor is deactivated
Filter short-term darkening	• **not active** • active	Activation of a filter for short-term brightness fluctuations
Forced retrigger	• **not active** • After presence and follow-up time • after fix time	Activation of a release time from forced control
Follow-up time for force/ Release time for force	30s-12h	Setting the release time
Release of push button input	• **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 force/ Release time for force	30s-12h	Setting the release time
Cyclical sending “heartbeat”	• **not active** • 1min – 24h	Activation of a cyclic "heartbeat" telegram

Table 3: Parameter - General Settings

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The following table shows the general communication objects:

Number	Name	Length	Usage
60	Day/Night toggle	1 Bit	Switchover between day and night mode
65	Output heartbeat	1 Bit	Sending of a cyclic “heartbeat” telegram

Table 4: Communication objects - General Settings

4.2 Light Channel 1/2/HCV

4.2.1 General Settings

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

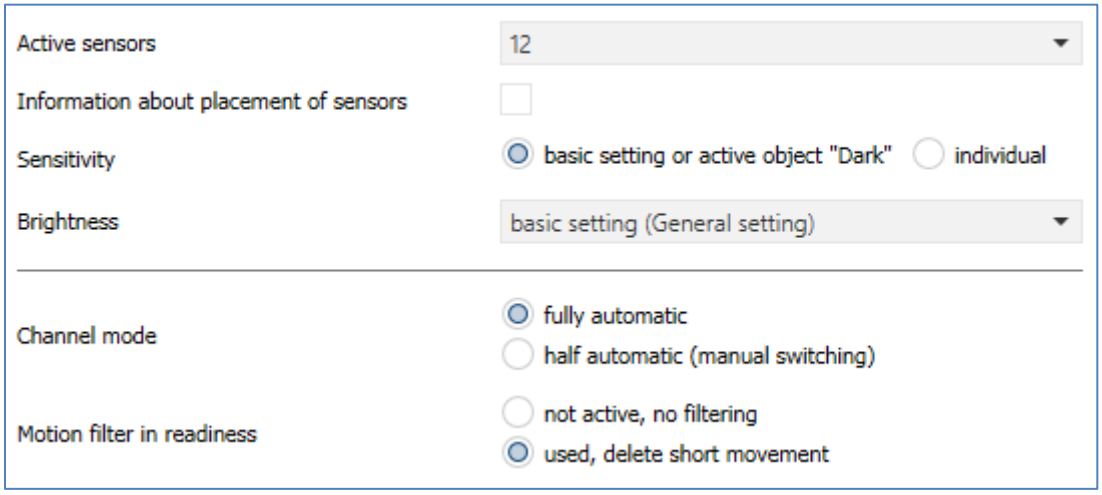

Figure 4: Basic settings - light channel

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Active sensors	• -- • 1- • -2 • **12**	Setting which sensors are active for the selected channel
Information about placement of sensors		Parameter displays a sketch with information about the sensors S1 and S2
Sensitivity	• **Basic setting (General setting)** • individual	**Basic setting:** The sensitivity settings from the menu "General settings" are used. **Individual:** Individual values can be set for the sensitivity of this light channel.

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Brightness (only light channel 1/2)	• **Basic setting (General setting)** • Basic setting or active object “Dark” • Independent of brightness	**Basic setting:** The light channel uses the brightness settings of the general settings. **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" on the object "Dark". **Independent of brightness:** The light channel switches independently of the measured brightness
Motion filter in standby	• **not active, no filtering** • active, delete 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)	0-32 **[3]**	Definition of how many movements have to be detected before switch-on
Length of monitoring time slot (only for HCV)	0-3000s **[30s]**	Determination of the length for a monitoring time slot

Table 5: Basic settings - light channel

The parameters brightness and monitoring time slot are explained in more detail as follows:

- **Brightness (only light channel 1/2)**
  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..

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4.2.3 Follow-up time

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

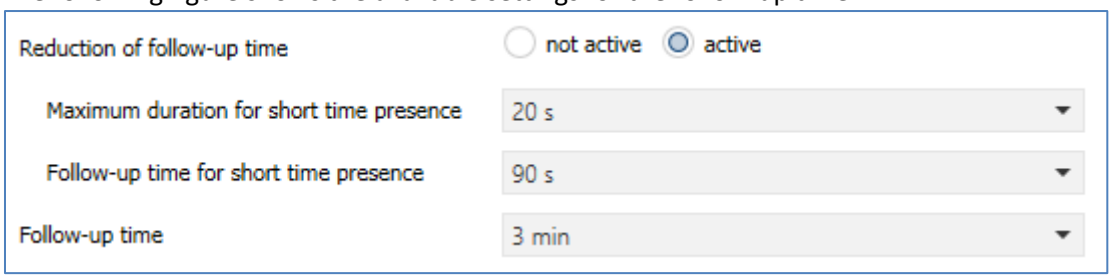

Figure 5: Follow-up time

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.

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4.2.4 Force or lock object

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

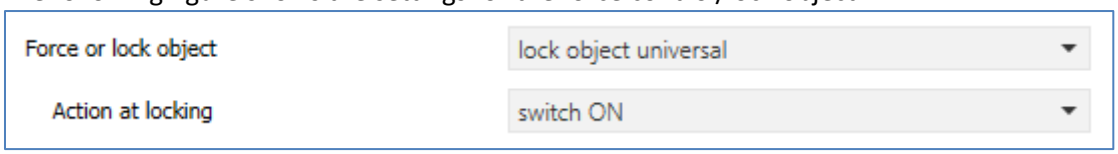

Figure 6: Settings - Force control/lock object

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range **[Default value]**	Comment
Force or lock object	• **Force control object** • Lock object universal • Lock object universal and force object ON	Select whether a force control object or a lock object is to be used
Action at locking	• **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 6: Settings - Force control/lock object

The motion 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 universal:

- 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..

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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 7: Communication objects - Force control/lock object

4.2.5 Output object

The following figure shows the settings for the output object:

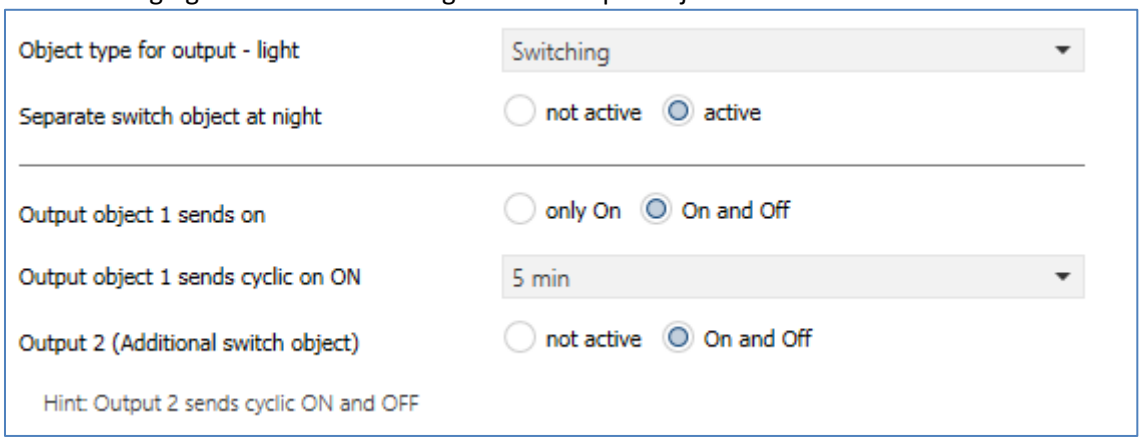

Figure 7: Settings - Output object

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range **[default value]**	Comment
Object type for output – light	• **Switching** • Dimming absolute • Scene	Selection of the output object to be triggered with the light channel

Table 8: 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 during daytime operation and a small orientation light can be switched on during night time operation.
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 night operation
2	Light channel 1 – Output 2	1 Bit	Second switching function of the light channel

Table 9: Communication objects - Output object "switching"

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Output object: Dimming absolute

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

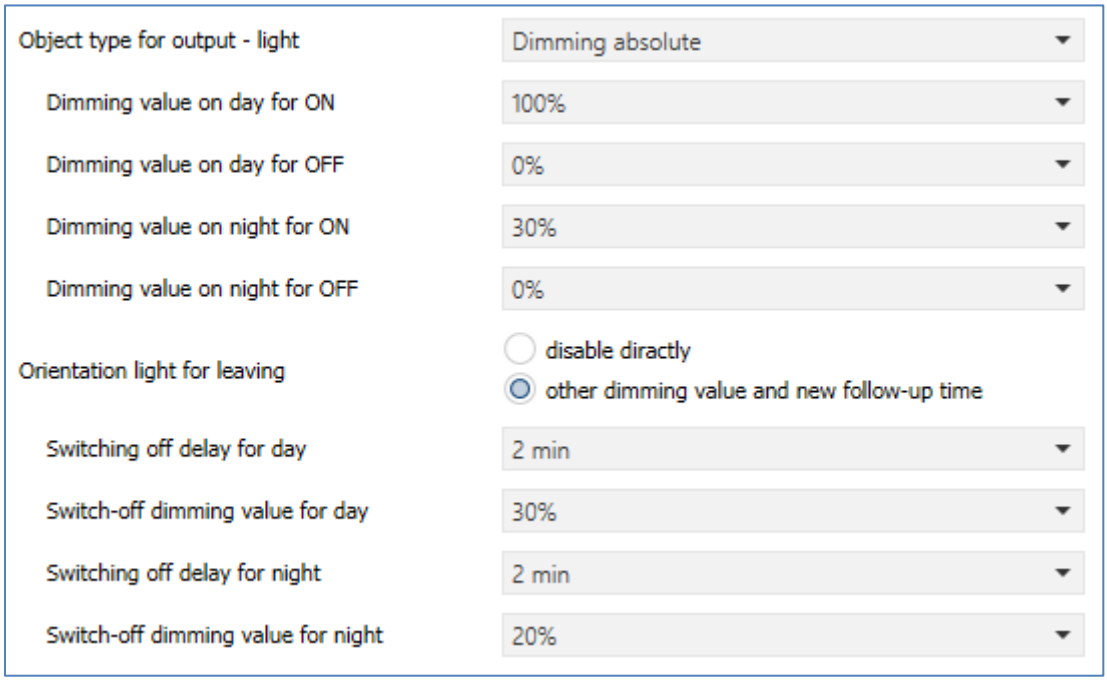

Figure 8: Settings - Output object “Dimming absolute”

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	1 Bit	Second switching function of the light channel

Table 10: Communication objects - Output object "Dimming absolute"

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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	1 Bit	Second switching function of the light channel

Table 11: 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.

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4.2.6 External Push Button Input

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

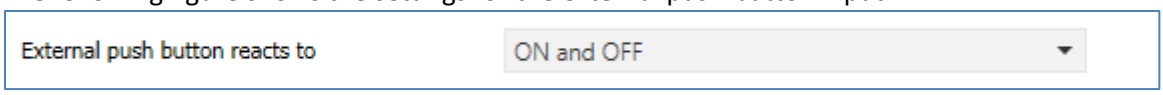

Figure 9: Settings - External push button input

The following table shows the possible settings for these parameters:

ETS-Text	Dynamic range **[default value]**	Comment
External push button input reacts to	• **only ON** • ON and OFF	Selection whether the external push-button input can switch the light channel only ON or ON and OFF.

Table 12: Setting - External push button input

With the external push-button input, the motion detector can be switched on independently of movement detection..
The object for the "external push-button short" switches the motion detector to the next state (see also 4.2.7 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 of the light channel

Table 13: Communication objects - External push button input

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4.2.7 Process Diagram

Fully automatic without orientation light:

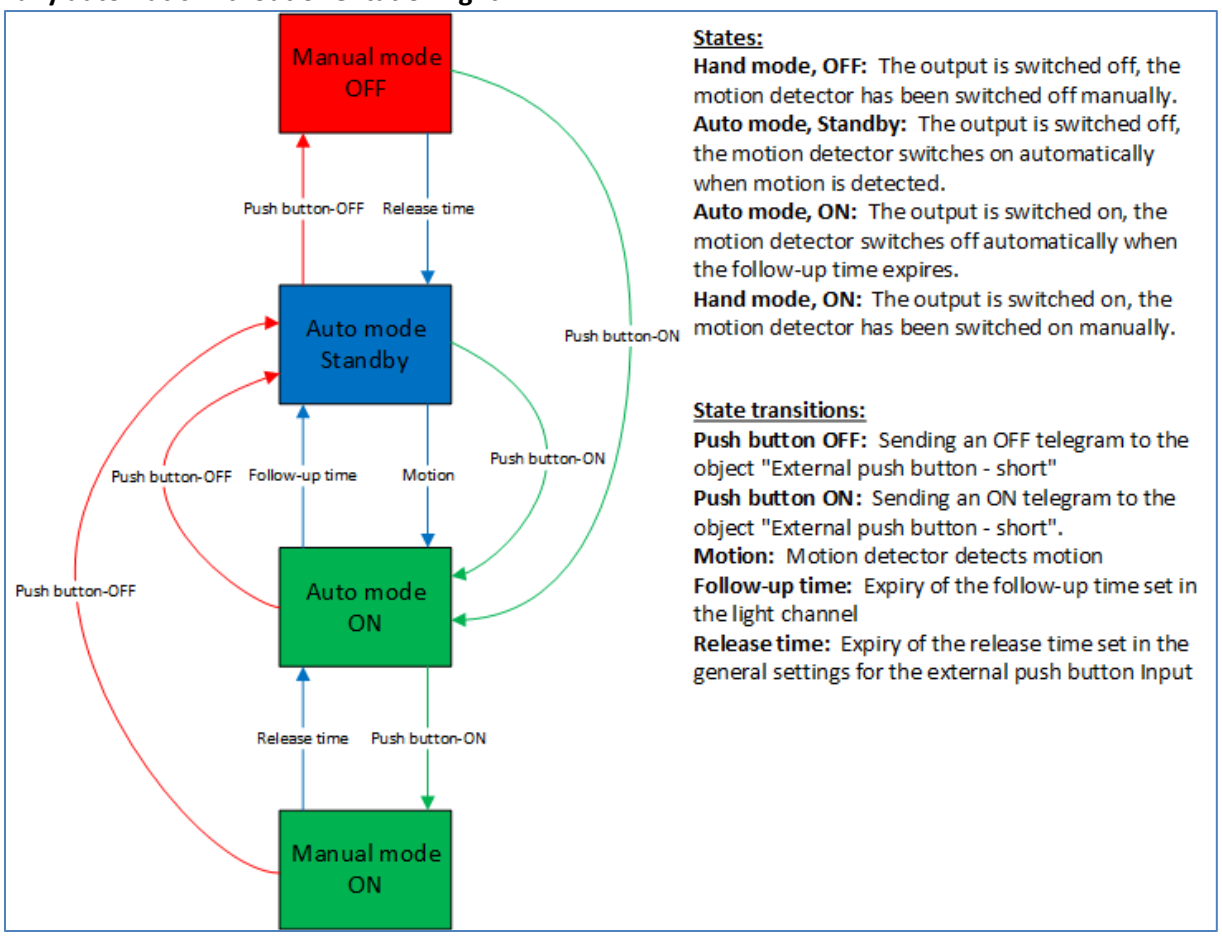

Figure 10: Process diagram - Fully automatic without orientation light

In the operating mode "Fully automatic", the motion 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 motion 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.

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Fully automatic within orientation light:

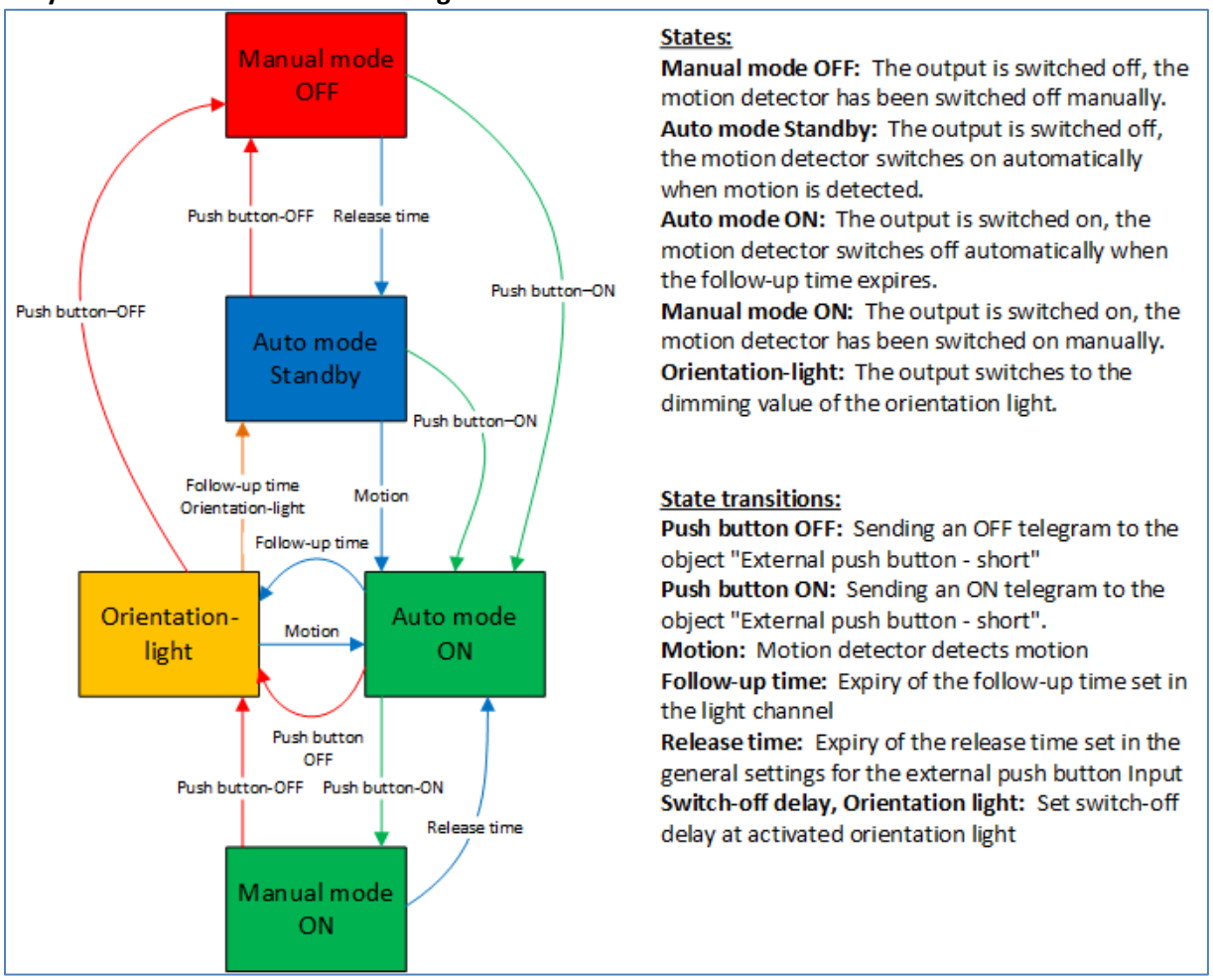

Figure 11: Process diagram - Fully automatic within orientation light

The fully automatic mode with orientation light extends the fully automatic mode of operation by the orientation light status. The orientation light can be activated as soon as the parameter "Object type for output - light" is set to absolute dimming.
The orientation light is switched on as soon as the follow-up time of the light channel has expired. The output is then switched to the orientation light state and can thus dim the light to a darker level in order to be able to leave the room safely.

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Half automatic without orientation light:

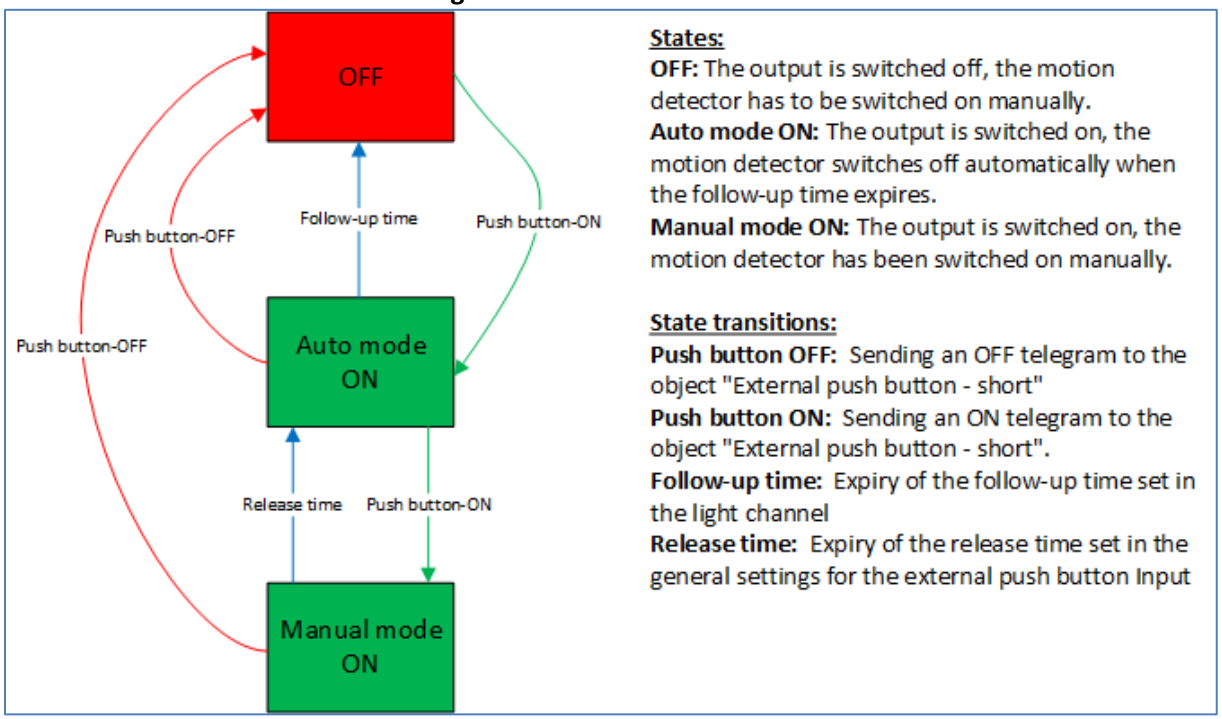

Figure 12: Process diagram - Half automatic without orientation light

In the "half-automatic" operating mode, 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 has expired (= no motion detection for the set follow-up time).
The object "External push button short" can additionally override the light channel. The motion detector can be switched to manual mode by pressing twice.

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Half automatic within orientation light:

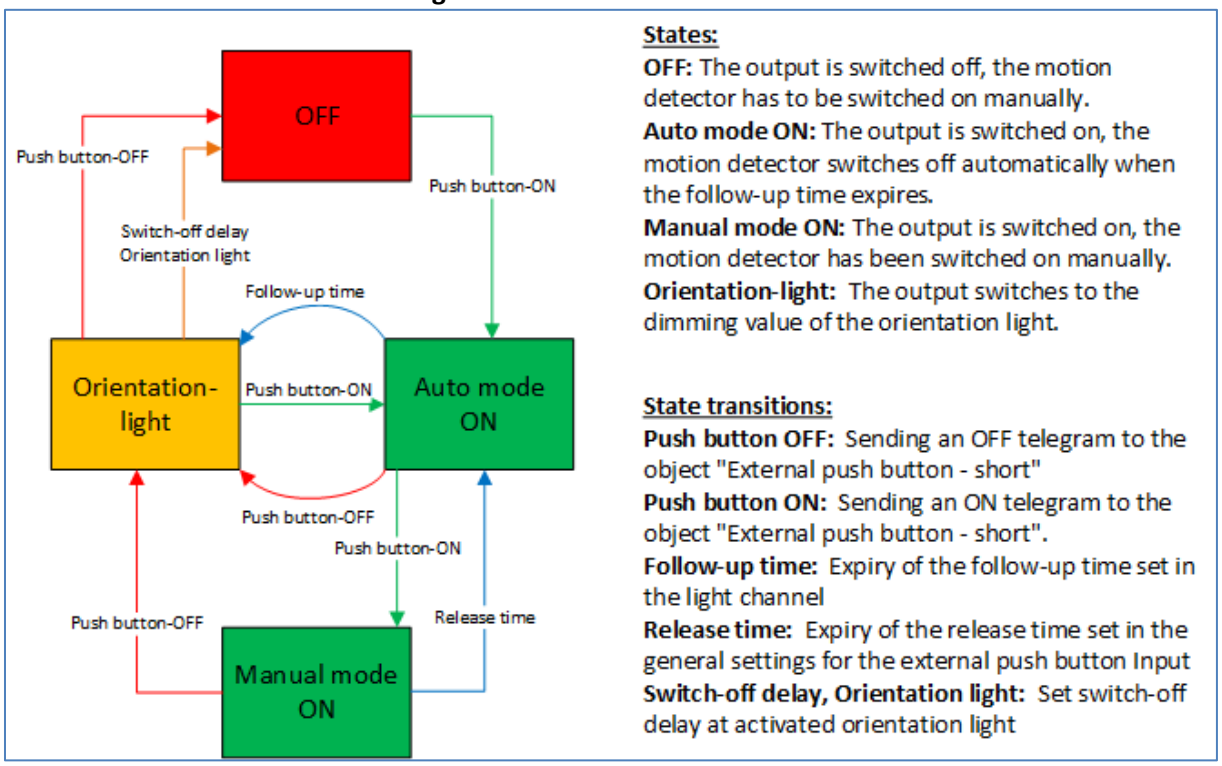

Figure 13: Process diagram - Half automatic within orientation light

The half-automatic mode of operation with orientation light extends the half-automatic mode by the orientation light status. The orientation light can be activated as soon as the parameter "Object type for output - light" is set to absolute dimming.
The orientation light is switched on as soon as the follow-up time of the light channel has expired. The output is then switched to the orientation light state and can thus dim the light to a darker level in order to be able to leave the room safely.

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4.2.8 Master/Slave Operation

4.2.8.1 Light channel

In larger rooms often more than one motion detector is required. For detecting presence all over the room, motion detectors have to 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 an arbitrary number of motion detectors work as Slave.
The settings for the Master/Slave mode can be made 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 to the same value as the Master
- Set object type for output - light to “Switching”
- Activate cyclic sending for the output object
    - Parameter: Output object 1 sends cyclic at ON
    - Guide value: 1min; for longer follow-up times, e. g. at 15min the cyclic sending can be increased to e. g. 5 min in order to reduce the bus load.
- Set Brightness parameter to brightness independent

The Master is parameterized as 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:

- All output objects of the Slaves (Object 0) have to be connected with the object external motion - Slave (Object 5) of the Master.

The master now evaluates every 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 motion..

4.2.8.2 HCV

The Master/Slave control can also be applied to the HCV channel. The settings for the slave are the same as for the slaves for the lighting groups. However, the settings for the brightness values do not apply to the HCV channel. The observation windows must be set according to individual requirements.
The objects have to be connected as follows:

- All output objects of the slaves (Object 40) have to be connected to the object External motion (Object 45) of the master.

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4.3 Alarm/Motion Direction

4.3.1 Alarm

The following figure shows the settings for the alarm function:

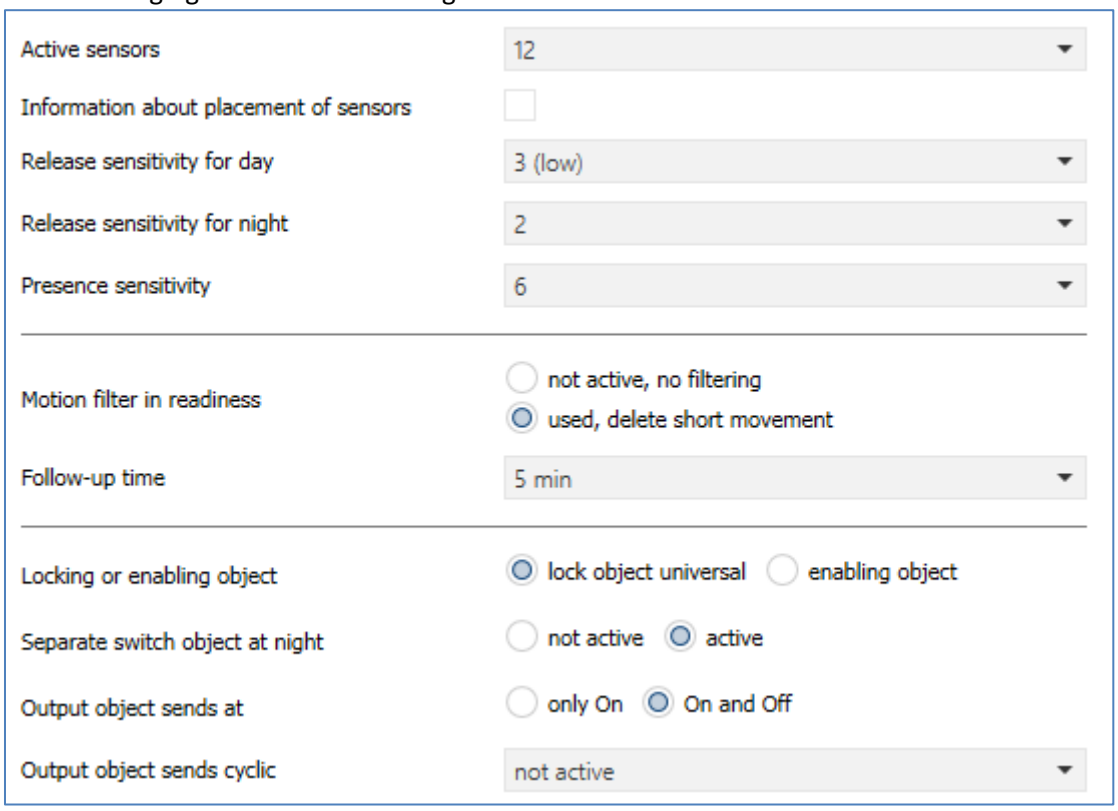

Figure 14: Settings - Alarm function

The following table shows the parameter settings for alarm detection:

ETS-Text	Dynamic range **[default value]**	Comment
Active sensors	• -- • 1- • -2 • **12**	Setting which sensors are active for alarm detection
Information about placement of sensors		Parameter displays a sketch with information about the sensors S1 and S2
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 in Standby	• **not active, no filtering** • active, filter short motion	Activation of a motion detector at standby (= output is switched off)

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Follow-up time	1s-4h **[5min]**	Setting the follow-up time
Locking or enabling object	• **Lock object universal** • Enabling object	Setting whether a locking or enabling object is to be used
Separate switch object at night	• **not active** • active	Displays a separate object for night mode
Output object sends at	• only On • **On and Off**	Output filter for the first output object
Output object sends cyclic	• **not active** • 10s-60min	Activation of cyclic sending for the first output object

Table 14: 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.

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".

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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 15: Communication objects - Alarm function

4.3.2 Motion Direction

The following figure shows the parameters for motion direction detection:

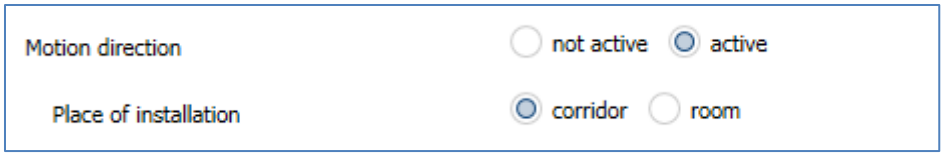

Figure 15: Settings - Motion direction

The following table shows the parameter settings for motion direction detection:

ETS-Text	Dynamic range **[default value]**	Comment
Motion direction	• **not active** • active	Activation of motion direction detection
Place of installation	• **Corridor** • Room	Setting where the motion detector is mounted

Table 16: Settings - Motion direction

The motion direction detection allows to detect in which direction a person is moving.
With the setting "place of installation", the behaviour of the detection is set. For example, frontal movements are filtered out more strongly with the setting "Place of installation - room" than with the setting "corridor". For elongated rooms, the setting "corridor" should be used. In this location and configuration, motion direction detection shows the best results.

The following table shows the corresponding communication objects:

Number	Name	Length	Usage
70	Motion direction 1 – right to left	1 Bit	Object sends a 1 if the right sensor has detected a motion first and then the left sensor
71	Motion direction 1 – left to right	1 Bit	Object sends a 1 if the left sensor has detected a motion first and then the right sensor

Table 17: Communication objects - Motion direction

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4.4 Logic Function

4.4.1 Activation of the Logic function

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

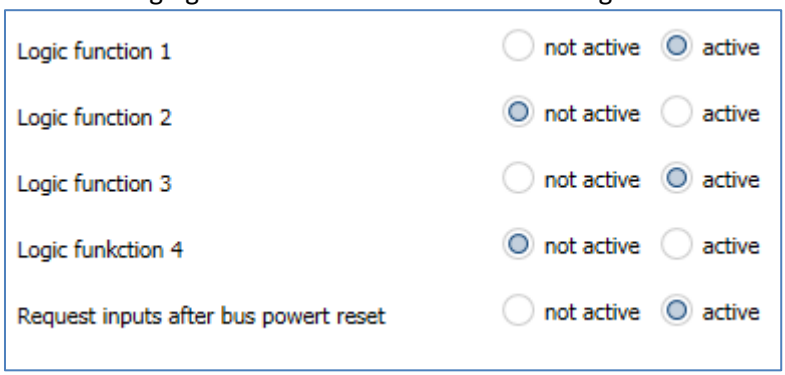

Figure 16: Activation - Logic function

After activating the logic function, a submenu is displayed for the corresponding logic function in which the logic can be further parameterized accordingly.
The parameter "Request inputs after bus voltage reset" defines whether the external inputs of the logic are to be queried after a restart..

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4.4.2 Logic function 1-4

The following figure shows the submenu for a logic block:

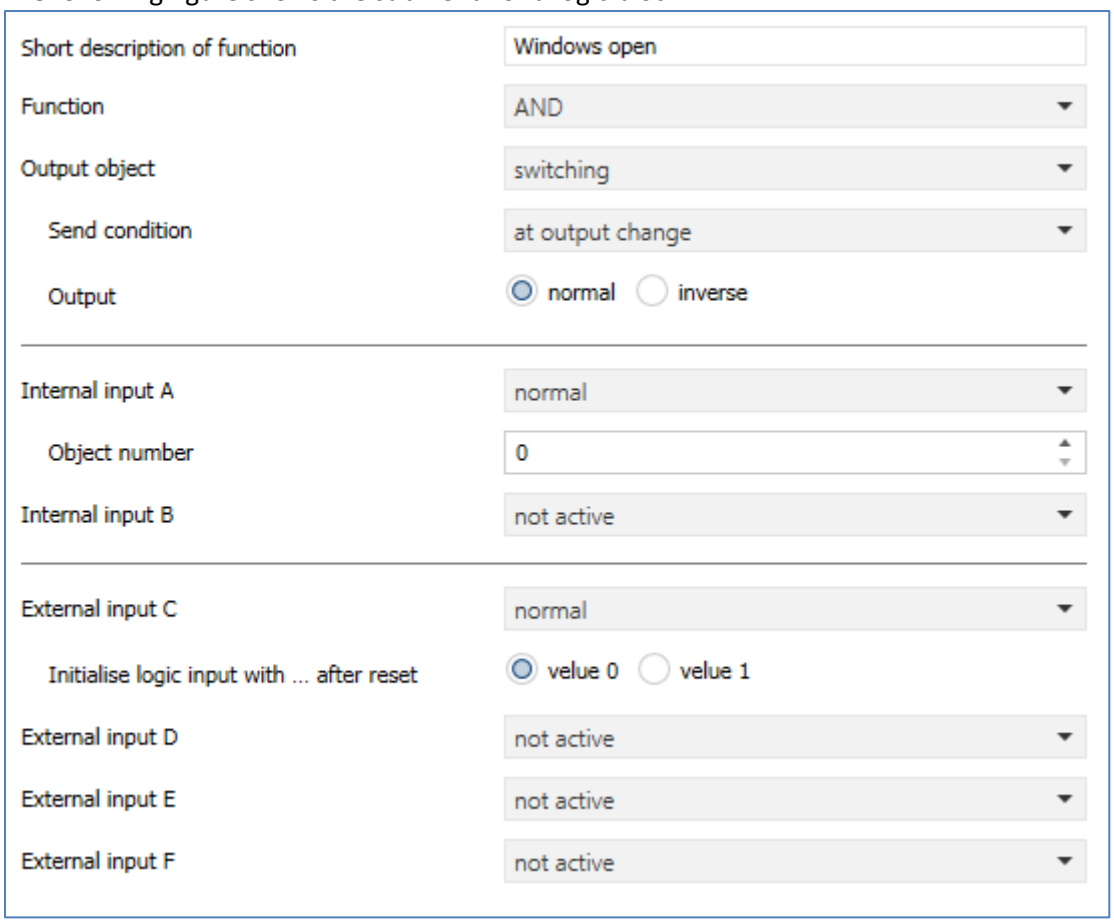

Figure 17: Submenu - Logic function

The following table shows the parameter settings for the logic function:

ETS-Text	Dynamic range **[default value]**	Comment
Function	• **AND** • OR • XOR	Setting the logic function
Output object	• **Switching** • Value • Scene • Force 2bit	Setting the output object for logic

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Send conditions	• 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 each input telegram, regardless of whether the output value has changed or not. **At output change:** The output value is only transmitted if the output has changed. **Send only 0/1 at output change:** The output value is only transmitted if the output changes and the logic has the corresponding value (false/true). **Send only 0/1 at input telegram:** The output value is sent with each input telegram if the logic has the corresponding value (false/true).
Internal input A/B	• **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	• **not active** • normal • inverse	Activation of an external object as logic input
Initialise logic input with… after reset	• **Wert 0** • Wert 1	Setting of a pre-assignment of the logic after a bus voltage reset

Table 18: Submenu - Logic

The logic function can be used to logically link different objects. Each logic function can link and evaluate up to 2 internal objects and up to 4 external objects. The sending condition can be used to adjust the transmission behaviour of the output.
The following table shows the corresponding communication objects:

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

Table 19: Communication objects - Logic

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4.5 LED

The following figure shows the submenu LED:

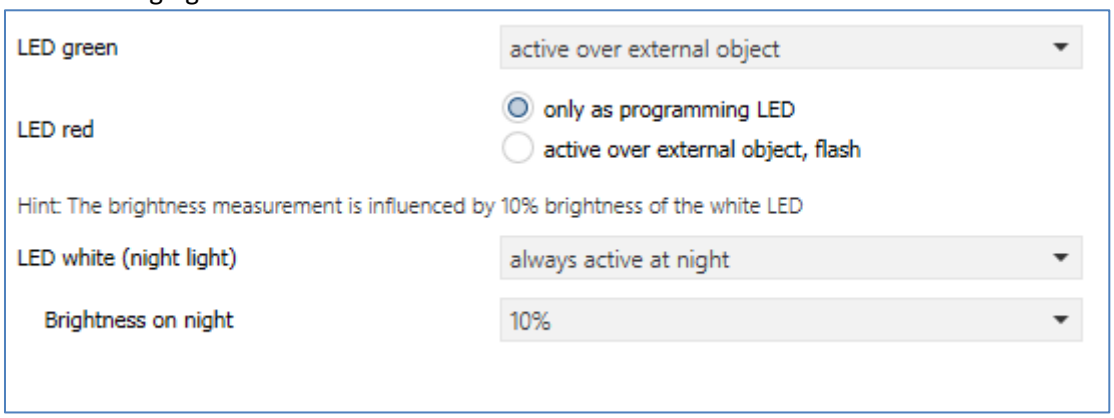

Figure 18: Submenu - LED

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

ETS-Text	Dynamic range **[default value]**	Comment
LED green	• not active • **active at motion** • active at motion, only during the day • active over external object • active over external object, flashing	Setting the lighting behaviour of the green LED
LED red	• **only as programming-LED** • active over external object, flashing	Setting the lighting behaviour of the red LED
LED white (night light)	• **not active** • active at night when motion (Light channel 1) • active at night when motion (Light channel 2) • active at night when motion (Light channel 1 and 2) • active at night over external object „Switching“ • always active at night	Setting the lighting behaviour of the white LED
Brightness at night	0-100% **[10%]**	Setting the brightness of the white LED in night mode

Table 20: Submenu LED

The motion detector has 2 green, one white and one red LED..
The lighting characteristics of the LEDs can be adjusted according to the parameters listed above. A typical application for the use of the white LED would be e. g. the use as night light.

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The following table shows the corresponding communication objects:

Number	Name	Length	Usage
61	LED green	1 Bit	Switching the green LED via external object
62	LED red	1 Bit	Switching the red LED via external object
63	LED white	1 Bit	Switching the white LED via external object

Table 21: Communication objects - LED´s

4.6 Scenes

The following figure shows the submenu Scene:

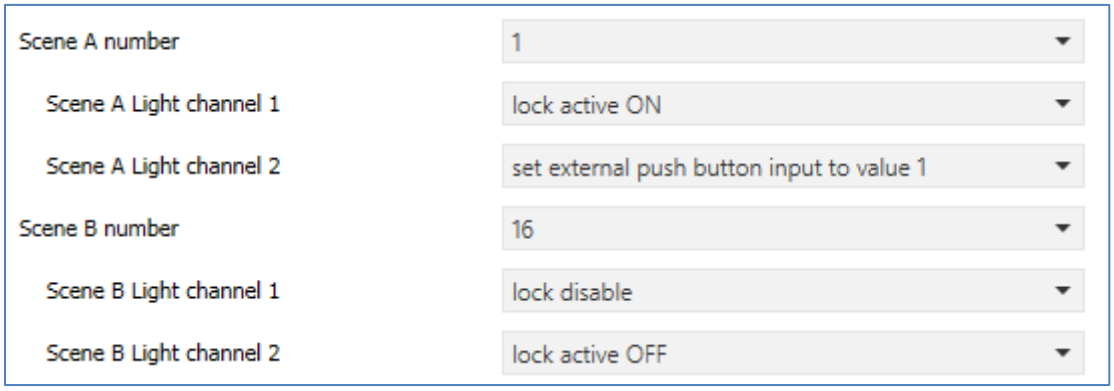

Figure 19: Submenu - Scenes

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 1/2	• **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 • Enable Day • Enable Night	Setting the action for light channel 1/2 for calling up the scene

Table 22: 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.

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The following table shows the corresponding communication objects:

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

Table 23: Communication objects - Scene

4.7 Brightness

The following figure shows the submenu for Brightness:

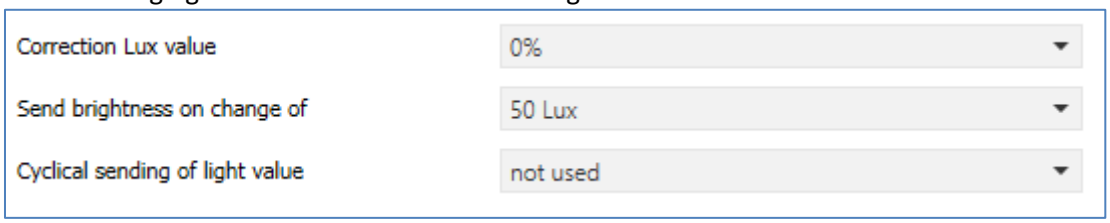

Figure 20: Submenu - Brightness

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

ETS-Text	Dynamic range **[default value]**	Comment
Correction Lux value	-50% - 50% **[0%]**	Setting the correction of the lux value
Send brightness at change of	• **not send** • 10 - 1200Lux	Setting the transmission condition for sending the light value in case of change
Cyclical sending light value	• **not used** • 5s - 30min	Activation of cyclic sending of the light value

Table 24: Submenu - Brightness

In the menu "Brightness" the brightness measurement value can be corrected in percent. To make a correction, proceed as follows:

- Measure the actual lux value at the installation location of the motion detector with a lux meter
- Reading out the measured value of the motion detector
- Calculate the deviation: $1 - \frac{Measured\ value\ of\ motion\ detector}{Measured\ value\ of\ luxmeter}$
- Enter the deviation as correction for the lux value

In addition, the transmission behaviour of the light value can be adjusted. The light value can be transmitted either cyclically or in the case of changes..

The following table shows the corresponding communication objects:

Number	Name	Length	Usage
67	Brightness sensor – Status	2 Byte	Sending the state of the brightness value

Table 25: Communication object - Brightness

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5 Index

5.1 Register of illustrations

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5.2 List of tables

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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.

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MDT Motion Detector

MDT Motion Detector, flush mounted

Version		
SCN-BWM55.01	Motion Detector, 2 pyro detectors and 1 light sensor	Flush mounted, white matt finish
SCN-BWM55.G1	Motion Detector, 2 pyro detectors and 1 light sensor	Flush mounted, white shiny finish

The MDT Motion Detector with light sensor captures the smallest movements with its built in pyro detectors and high resolution lens. After motion detection and below an adjusted brightness value a 1Bit („1“) telegram or 1Byte dimming value (0...100%) is send to the bus. The sensitivity is adjustable in 10 steps. If there is no movement a 1Bit („0“) telegram or 1Byte dimming value (0...100%) is send to the bus after an adjustable follow up time.

Fits 55mm systems:

- GIRA Standard 55, E2, Event, Esprit
- BERKER S1, B3, B7
- JUNG A500, Aplus, Acreation, AS500
- MERTEN 1M, M-Smart, M-Plan, M-Pure

The MDT Motion Detector is a flush mounted device for fixed installations in dry rooms. For project design and commissioning of the Motion Detector it is recommended to use the ETS. Please download the application software at www.mdt.de/downloads.html

SCN-BWM55.x1

- Production in Germany, certified according to ISO 9001
- Fits 55mm systems:
  - GIRA Standard 55, E2,E22, Event, Esprit
  - BERKER S1, B3, B7
  - JUNG A500, Aplus, Acreation, AS500
  - MERTEN 1M, M-Smart, M-Plan, M-Pure
- **Motion detector with light sensor and 2 pyro detectors**
- Motion detection angle H 180° / V 15°, covered area 6-10m
- **Suitable for pets up to 12kg**
- Sensitivity separately adjustable for day/night/presence
- 2 light channels, 1 channel for HVAC and alarm
- **Detection of moving direction**
- Short time presence to reduce stopping time
- Master/slave function, scenes and logical functions
- **Objects for integrated night light**, green/red LED and brightness value
- Day/night function, orientation light function
- Block and forced setting functions with release time
- Input object for external button with release time
- Integrated bus coupling unit
- 3 years warranty

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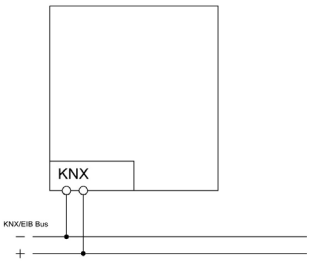
Stand: 0217

MDT Motion Detector

Technical Data	SCN-BWM55.01 white matt finish	SCN-BWM55.G1 white shiny finish		
Covered area (Diameter)				
Movement *	6 - 10m	6 - 10m		
Sensitivity	adjustable in 10 steps	adjustable in 10 steps		
Angular coverage horizontal	180°	180°		
Angular coverage vertical	15°	15°		
Dynamic range of light sensor	5 - 1000 Lux	5 - 1000 Lux		
Recommended mounting height	1,05 - 1,20m	1,05 - 1,20m		
Specification KNX interface	TP-256	TP-256		
Available application software	ETS 4/5	ETS 4/5		
Permitted wire gauge				
KNX busconnection terminal	0,8mm Ø, solid core	0,8mm Ø, solid core		
Power supply	KNX bus	KNX bus		
Power consumption KNX bus typ.	<0,3W	<0,3W		
Operation temperature range	0 to + 45°C	0 to + 45°C		
Enclosure	IP 20	IP 20		
Dimensions (W x H)	55mm x 55mm	55mm x 55mm		
Installation depth in socket	12mm	12mm		

Examplary circuit diagram SCN-BWM55.x1



Compatible to 55mm programs

Manufacturer	Series
Berker	B.7 Glas polarweiss
Berker	B.3 Alu polarweiss
Berker	S.1 polarweiss
Berker	B.1 polarweiss matt
Berker	B.7 Glas Alu
Berker	S.1 polarweiss matt
Gira	Standard 55 reinweiss seidenmatt
Gira	E2 reinweiss seidenmatt
Gira	Esprit Glas mint
Gira	Esprit Glas weiss
Gira	Event Alu
Gira	Event reinweiss matt
Merten	M-Smart polarweiss brillant
Merten	M-Plan polarweiss edelmatt
Merten	M-Arc polarweiss edelmatt
Merten	M-Pure
Merten	M-Plan Echtglas brillantweiss
Merten	M-Smart polarweiss
Jung	AS500 alpinweiss
Jung	A500 alpinweiss
Jung	A500 alpinweiss
Jung	Aplus Alu
Jung	A500 Alu

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