B.E.G. LUXOMAT® PD2-M-2C-11-48V

EN

Installation and Operating Instruction for **B.E.G.** - occupancy detector PD2-M-2C-11-48V-3A-SM/-FC and PD2-M-2C-11-48V-RR-SM/-FC

1. Mounting preparation

Work on the 230 V mains supply may only be carried out by qualified professionals or by instructed persons under the direction and supervision of qualified skilled electrical personnel in accordance with electrical regulations.

Disconnect supply before installing!

The device is not suited for safe disconnection of the mains supply.

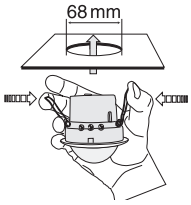
When in Master/Slave mode of operation, the Master-appliance must always be installed at the location where there is least daylight.

2a. Installation LUXOMAT® PD2-M-2C-11-48V-SM

The detector must be installed on a solid and level surface. There is no need for frames.
For mounting remove lens (turn anticlockwise). Fasten the mounting pod to the ceiling.

Having connected up the wires in accordance with regulations, secure the detector with 2 screws as per the illustration above. In order to assemble the detector outside, the PD2-IP54 base-plate, which is available as an accessory, must be mounted between the detector and the surface on which it is to be installed.

2b. Installation LUXOMAT® PD2-M-2C-11-48V-FC

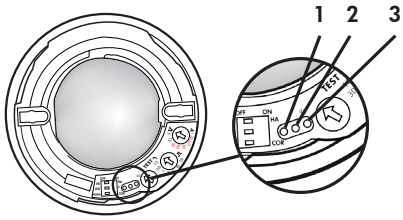


A circular opening of diameter 68 mm must first of all be produced in the ceiling.

Having connected up the cables in accordance with regulations, the detector is inserted into the opening as shown in the drawing opposite and fixed into position with the assistance of the spring clip.

3a. Hardware configuration SM

Position LED's

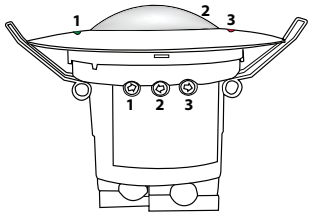


LED 1 green
LED 2 red
LED 3 white

3b. Hardware configuration FC

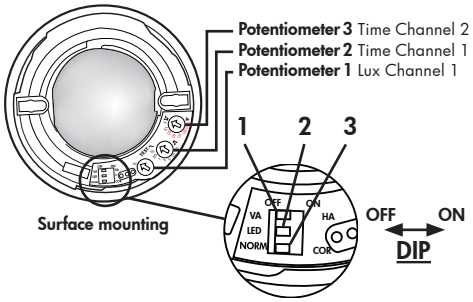
Position LED's and potentiometer

LED 1 green
LED 2 white
LED 3 red



Potentiometer 1	Lux Channel 1
Potentiometers 2	Time Channel 1
Potentiometers 3	Time Channel 2

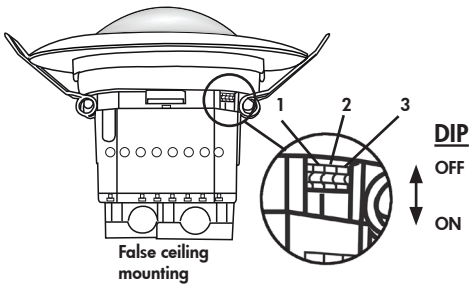
4a. Position potentiometers and DIP-Switches SM



DIP 1	Fully automatic/semi automatic mode
DIP 2	LED ON/OFF
DIP 3	Change between corridor mode and standard mode

The DIP switch settings are overriden using the remote control.

4b. Position DIP-Switches FC

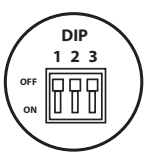


DIP 1	Fully automatic/semi automatic mode
DIP 2	LED ON/OFF
DIP 3	Change between corridor mode and standard mode

The DIP switch settings are overriden using the remote control.

5. DIP-Switch functions

DIP-switch	ON	OFF
1	Semi automatic mode	Fully automatic mode
2	LED OFF	LED ON
3	Corridor mode	Standard mode



Corridor function: After deactivation by an external push button, the detector switches off and returns to automatic mode after 5 sec.

The DIP settings are enabled again by:

- Adjusting the DIP switches when closed
- Reset with test sun setting at the potentiometers
- Reset when open

6. Putting into operation / Settings

Self test cycle
After an initial 60-second self-test cycle, the **LUXOMAT®** PD2-M-2C-11-48V is ready for operation.

Potentiometer 1 - Adjustment twilight-switch for channel 1
The switch-on value for the light can be set at between 10 and 2000 Lux. Using the potentiometer, the luminance set points can be set as desired.

Symbol ☾: Night operation
Symbol ☼: Day/Night operation

Determining the current brightness
Set potentiometer 2 to the „Test" setting. The green LED lights up permanently as soon as the value set at the potentiometer "Lux" dropps below the current measured brightness.

Potentiometer 2 - Adjustment follow-up time channel 1 "Light"
Symbol **TEST**: Test mode, reacts on motion only. Every movement switches on the light for a period of 2 seconds, switching it off for a period of 2 seconds. The time can be set infinitely variably at between 15 sec. and 16 minutes.

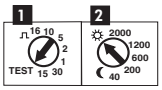
The potentiometer settings are overriden using the remote control.

Potentiometer 3 - Follow-up time for appliance-control
The time can be set infinitely variably at between 5 minutes and 120 minutes. After 15 minutes the switch-on delay is activated. This is around 5 min. If there are not detected any further movements within this period, the switch-on delay starts again.

Symbol ⎍: Impulse = 2.5 sec.
Symbol **A**: Alarm impulse = 2 sec.

Alarm impulse
In order to set off an alarm impulse, at least 3 movements within 9 sec. have to be detected.

7. Reset and default settings



1. Default settings

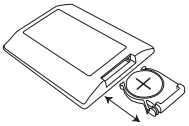
If the potentiometers are in the "Test" and "Sun" position and the detector is unprogrammed, the factory program is activated: 500 Lux and 10 min.

2. Reset

If both potentiometers are returned to the "Test" and "Sun" setting from any other position, a reset is executed. All values programmed with the remote control are deleted.

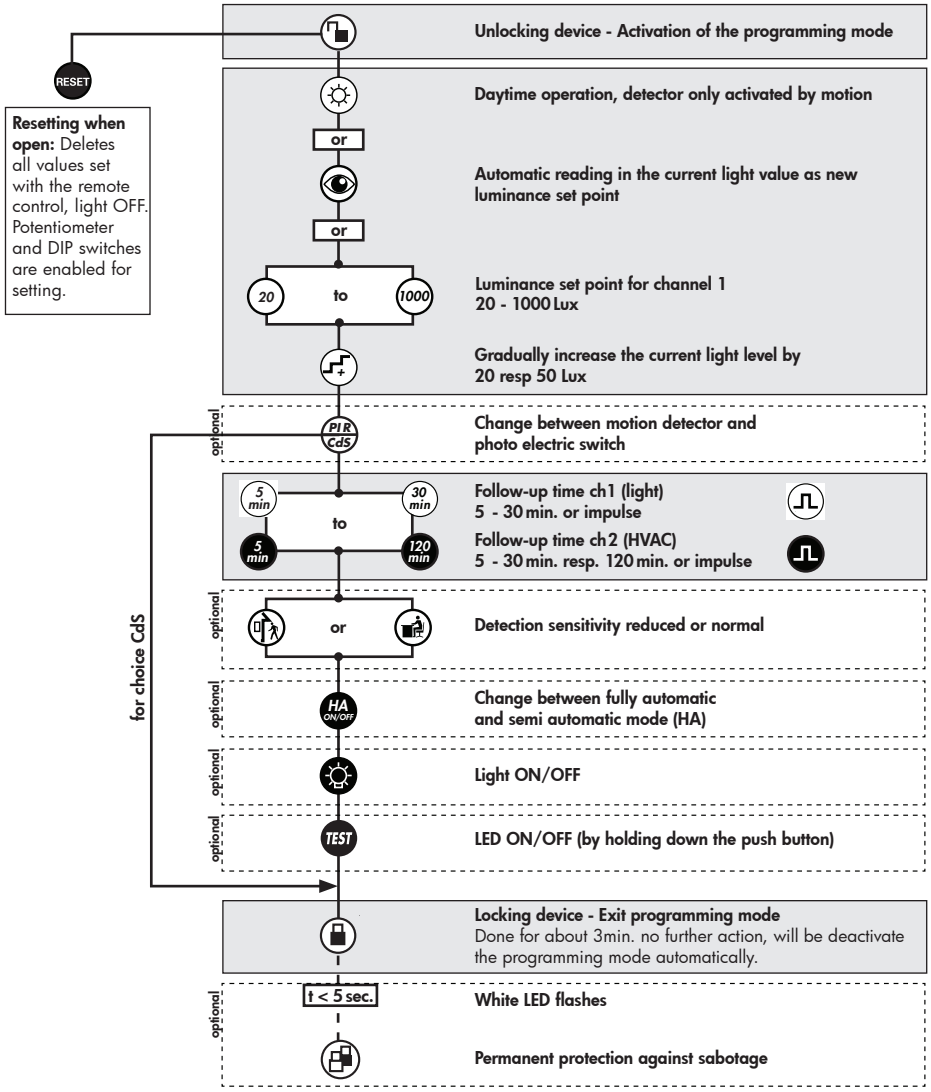
8. Putting into operation of the remote control IR-PD-2C (optional)

Check Battery:
Open battery compartment by pressing the plastic springs together and removing the battery-holder.

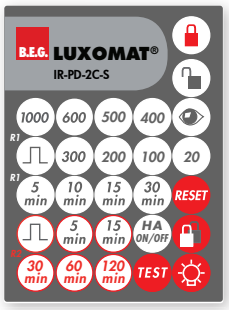


Caution: Settings with remote control supersede the settings by potentiometers.

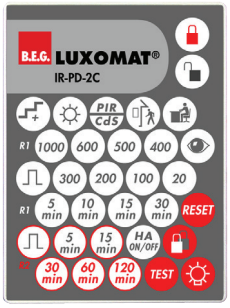
9. Settings by remote control IR-PD-2C



Option: Remote control IR-PD-2C



Film IR-PD-2C-S



IR-PD-2C - 92475

Wall bracket for remote control IR-PD-2C

An adhesive film for the surface of the IR-PD-2C-S is included with the device. If required, this can be used for any **B.E.G.** remote control with 27 keys.

In order to benefit from the whole range of functions of the PD2-M-2C-11-48V, please order separately the remote control IR-PD-2C.

10. Key functions in closed state

Permanent protection against sabotage
This function blocks the **LUXOMAT®** PD2-M-2C-11-48V permanently. This operating mode can only be activated during the period of 5 seconds (white LED flash) after pressing the "lock" button. The procedure for leaving this mode is as follows:

1. Switch off the current
2. Apply current for 31 - 59 seconds
3. Switch of the current again
4. Apply current, wait for selftest cycle
5. Open detector

Light ON/OFF during the detection of motion plus follow-up time;
Activation of the 12 h-ON/OFF-function by holding down the push button

Activation/Deactivation of the test function
After 3 minutes the test mode will be automatically closed.

Switches channel off and is immediately active again, exits all timers, interruption of light measurement

Confirmation

Changes to "open" state

11. Explanation of the remote control button functions

11a. In the initialisation period

12 h Light ON/OFF (party function)
Activated by "Light" - push button
Deactivated by "Reset"- push button (default)

Corridor function (see point 14a)
Activated by „30 min."- push button / channel 2
Deactivated by „60 min."- push button / channel 2 (factory setting)

Forced shutdown (see point 14c)
Activated by „Pulse"- push button / channel 2
Deactivated by „5 min."- push button / channel 2 (factory setting)

11b. In opened state

This push button opens the detector and the following functions can then be programmed.
Attention: The detector is closed automatically:
- after every voltage recovery
- after 3 minutes

The state changes to "closed".
In the first 5 seconds, the white LED flashes every 0.5 seconds. During this time, sabotage protection can be activated.

The device distinguishes between 2 procedures:
- **Reading in with lighting switched on:**
  The switch-on value is determined automatically.

Determining the switch-on value:
1. Press the "eye" push button
2. Switch off the light (2 seconds later)
3. Read in the brightness
4. Switch-on value = Read brightness

- **Reading in with lighting switched off:**
  When the push button is pressed, the current brightness is specified as the switch-on value. The switch-off value is determined automatically.

If the brightness has been modified, the switch-off threshold is recalculated.

Each time the push button is pressed, the device increases the current switch-on value in increments of 20 Lux for a current switch-on value of < 100 Lux and in increments of 50 Lux for a current switch-on value of > 100 Lux.

Standard sensitivity for most applications
Reduced sensitivity for outdoor applications

When the pulse function of channel 1 is active, a pulse of 1 sec. is generated every 9 sec. If the pulse function is activated via remote control, the pause between 2 pulses can be modified. After activating the function via the "Pulse" push button, select the desired time within 5 sec.:
5 min = 9 sec., 10 min = 10 sec., 15 min = 15 sec., 30 min = 30 sec.

The impulse function of channel 2 depends only on motion ! After each movement the HVAC channel is activated for 2.5 sec.; time delay starts afterwards for 9 sec.

The "Test" push button can be used to set the LED ON/OFF function. To do this, hold down the push button for 3 sec.
Please note that in the open state and in test mode, the LED indicators are always ON.

Twilight switch function (CdS)
If the CdS function is active, the detector acts as a simple twilight switch. Only the brightness can be set in this mode. Movements are no longer indicated by the red LED.

Push button acknowledgement:
Each push of a button is indicated by lamp acknowledgement and by the white LED.
"Light ON" status: OFF/ON (approx. 0.5 sec. each)
"Light OFF" status: ON/OFF (approx. 0.5 sec. each)

12. Indication of brightness by contact 1 in terms of a resistor value

(for button see point 22, page 4)

When required contact 1 can be switched into delivery of light proportional resistor value.
By means of this a suitable external circuit can deduct the actual brightness value at the mounting place of the occupancy sensor and can put it as variable on a LON or EIB bus. The value of that resistor will be delivered in function of:
approx. 1 kOhm for bright / approx. 15 MOhm for dark

For the selction of the function the toggle switch on the back of the sensor to be put into the desired position:

1: no function at all
2: dry contact, NO
3: delivery of resistor value

13. Switch-off threshold brightness

1. If the switch-on threshold has been modified by the potentiometer or remote control, the switch-off threshold stored in the EEPROM is deleted and is then recalculated on the next activation.

   Determining the switch-off value
   1. Switch on for 5 min. with dark and motion
   2. Light OFF for 2 sec.
   3. Internal calculation of the switch-off value

2. If the eye push button is pressed, the switch-off threshold is recalculated. See also Remote control –> Eye section

3. Switch-off delay
   If the determined switch-off threshold is exceeded during operation, the detector only switches off after a delay of approx. 15 minutes. This compensates for any brief fluctuations in the brightness.

14a. Behaviour of external push button/IR "Light"

The "Corridor" and "Light ON/OFF" functions are mutually exclusive. If both are activated, the detector performs the corridor function.

The behaviour when the push button is pressed is defined as follows:

Corridor function activated

Light ON:
Push button pressed briefly: Light OFF -> Active after 5 sec.
Push button held down: Light OFF -> Active after 5 sec.

Light OFF:
Push button pressed briefly: Light ON as long as motion + Lag time
Push button held down: Light ON as long as motion + Lag time

14b. Behaviour of external push button/IR "Light"

12 h Light ON/OFF activated

Light ON:
Push button pressed briefly: Light OFF -> Active after 5 sec.
Push button held down: 12 h OFF

Light OFF:
Push button pressed briefly: Light ON as long as motion + Lag time
Push button held down: 12 h ON

12 h Light ON/OFF deactivated

Light ON:
Push button pressed briefly: Light OFF as long as motion + Lag time
Push button held down: Light OFF as long as motion + Lag time

Light OFF:
Push button pressed briefly: Light ON as long as motion + Lag time
Push button held down: Light ON as long as motion + Lag time

14c. Behaviour of external push button/IR "Forced shutdown"

Forced shutdown active

Light OFF:
Light OFF: Push button pressed briefly: Light ON for approx. 30 min., then forced shutdown if the set brightness is still exceeded.

15. Other functions

Activation of light for 12 h via mains interruption

1. Interrupt current
2. Apply current for 2 to 5 sec.
3. Interrupt current again
4. Apply current
5. Detector is now ON for 12 h

Exiting sabotage

1. Interrupt current
2. Apply current for 30 to 60 sec.
3. Interrupt current again
4. Apply current
5. Detector is in simple closed state

11-48 V AC/DC for 1 - 3 sec. at push button connection S

If 11-48V AC/DC is applied for 1 - 3 sec. at push button connection S, this is interpreted as a slave signal at slave connection R. This ensures that the detector is compatible with previous versions.

16. Fully automatic and semi automatic mode

(see functions IR-PD-2C)

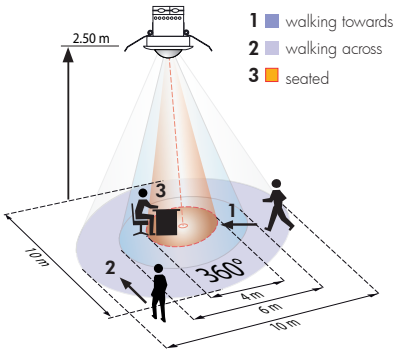
Fully automatic operation
In this operating mode, the lighting switches automatically on and off for increased comfort, depending on presence and brightness.
Channel 1 switches on in the event of motion if "dark" is detected.

Semi automatic operation
In this operating condition, in order to gain increased savings, the lighting is energized only after being manually switched on.
Switch-off takes place automatically or manually.

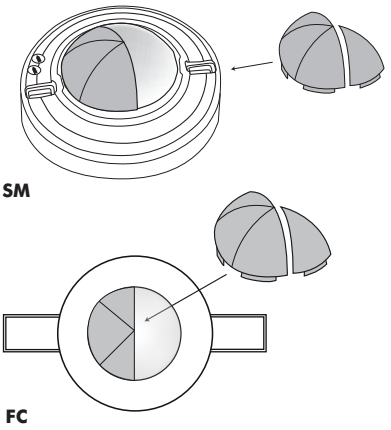
The semi automatic mode basically behaves like the fully automatic one. However, the difference is that switching-on must always be carried out manually!
As many (NO-contact) buttons as desired can be wired in parallel on the "S" button input (ON/OFF).

Triggering in semi automatic mode: If the detector switches off in semi automatic mode (lag timer elapsed), the detector is switched on again within 10 sec. by motion (despite semi-automatic mode).

17. Range of Coverage



18. Exclude sources of interferences



In case the sensing area of the **LUXOMAT®** PD2-M-2C-11-48V is too large or areas are being covered that should not be monitored, the range can be reduced or limited through use of the enclosed masking clips.

19. Technical data PD2-Master-2C-11-48V

Sensor and power supply in one case

Power supply: 11-48 VAC/DC
Power consumption: < 1 W
Ambient temperature: -25 °C to +50 °C
Degree of protection/class: AP IP20 wit accessory socket IP54, FC IP20 / II
Settings: Potentiometer, DIP-switch and by remote control
Light values – IR-PD-2C: 10 - 2000 Lux
Extension of the detection area: with PD2-M-2C-11-48V-RR
Area of coverage: circular 360°
Range of coverage Ø H 2,50 m / T = 18 °C:
seated 4 m / tangential 10 m / radial 6 m
Recommended height for mounting: 2 - 3 m
Light measurement: mixed light, daylight + artificial light
Light values potentiometer: 10 - 2000 Lux
• Channel 1 and 2: each a potential-free contact NO

Contact load:
Version 3A 11-48VAC/DC, 3 A cos φ=1
Version RR with Reed-relay 11-48VAC/DC, 100 mA for extra low-noise switching, cos φ=1
Time settings (Channel 1): 15 sec. - 16 min. (30 min. with remote control) / Test
Time settings (Channel 2): alarm-impulse with 3 impulses per 10 sec.

Dimensions H x Ø [mm]	SM	FC
PD2-M-2C-11-48V	50 x 98	84.5 x 80

Visible portion when built into ceiling: 34 x 79 mm

CE **Declaration of Conformity:** The product complies with the low voltage recommendation 2006/95/EC and the EMV recommendation 2004/108/EC.

20. Article / Part nr. / Accessory

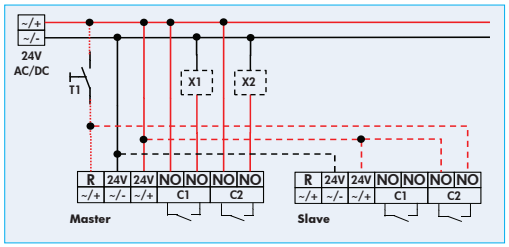
Typ	SM	FC
PD2-M-2C-11-48V-3A	92154	92164
PD2-M-2C-11-48V-RR	92305	92306

LUXOMAT® Remote control:
IR-PD 92160
IR-PD-2C (incl. wall bracket) 92475

Accessory:
BSK Ball basket guard 92199

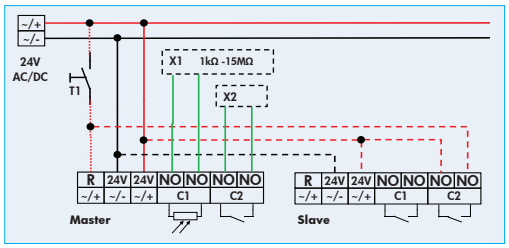
21. Wiring diagram

Standard operation with Master-2 channels-11-48 V-detector



Wiring diagram for
- PD2-M-2C-11-48V-3A
- PD2-M-2C-11-48V-RR

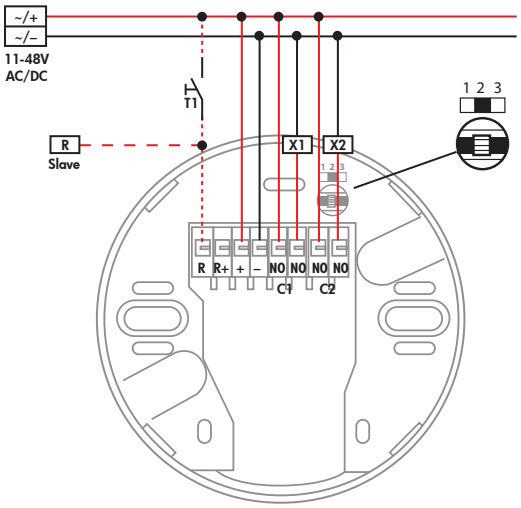
Light sensor operation with Master-2 channel-11-48V-occupancy detector with Reed-relay



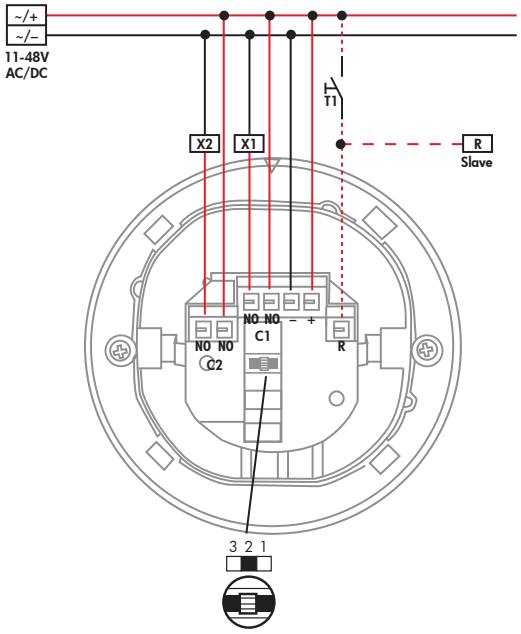
Wiring diagram for
- PD2-M-2C-11-48V-RR
  X1 = light sensor

Optional
T1 = T1 = NO button for semi-automatic mode
As Slave please use PD2-M-2C-11-48V-RR!
C2 in the pulse mode

22a. PD2-M-2C-11-48V-SM – Connections



22b. PD2-M-2C-11-48V-FC – Connections



23. LED function displays

LED function indicators after each mains recovery (60 sec. initialisation period)			
Operating state	**LED function indicators**		
Factory program active	White, red and green flash in quick succession for 10 sec., then initialisation indicators, see below		
Double-locked	white and green shines for 5 sec. all 20 sec., afterwards initialising notification		
	Indicator unprogrammed	Indicator programmed	Indicator also when forced shutdown is activated
Standard mode	Red flashes	Red flashes quickly	Every 5 sec., 4 x white, red and green in quick succession
12 h ON/OFF active	Red and green flash	Red and green flash quickly	Every 5 sec., 4 x white, red and green in quick succession
Corridor active	Red and white flash	Red and white flash quickly	Every 5 sec., 4 x white, red and green in quick succession
12 h ON/OFF & corridor active	Red, green and white flash	Red, green and white flash quickly	Every 5 sec., 4 x white, red and green in quick succession
CdS active	–	Red and white flash	Then no red LED for motion detection

LED function indicators during operation	
Process	**LED function indicators**
Motion detection	Red flashes on each detected movement
Semi-automatic mode active	White is ON
Impulse active	red and green flash one time all 4 sec.
Corridor active	White ON 1 sec. and OFF 4 sec.
Corridor and semi-automatic mode active	White ON 4 sec. and OFF 1 sec.
Too bright detected	Green flashes
Light measurement active	Green flashes once every 10 sec.
12 h ON/OFF function active	Red and green flash alternately
Duration ON active (by slave)	Red flashes quickly
IR command	White flashes once
IR command „Open" and sabotage active	White and green flash once slowly