B.E.G. LUXOMAT® PD4-M-2C-DUO

Installation and Operating Instruction for B.E.G. - Occupancy detector PD4-M-2C-DUO-FC/FM

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 electredechnical 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 of the LUXOMAT® PD4-M-2C-DUO-SM
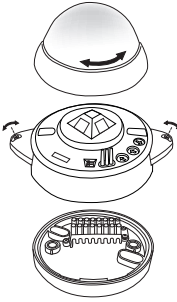
The detector must be installed on a solid and level surface. The circular cover ring must be removed prior to assembly. To do this, twist the lens anticlockwise through approximately 5° and lift off.

Having connected up the wires in accordance with regulations, secure the detector with 2 screws. After installation replace the lens and lock (turn clockwise). Mains to be connected.

2b. Installation of the LUXOMAT® PD4-M-2C-DUO-FC
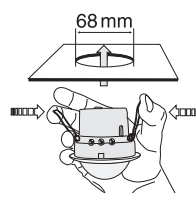
68 mm

The detector has been designed and developed specifically for installation in suspended ceilings.

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.

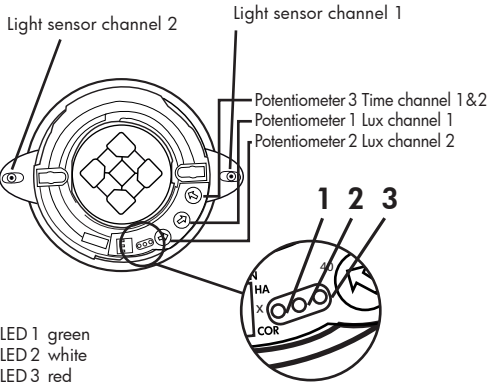### 2c. Installation of the LUXOMAT® PD4-M-2C-DUO-FM
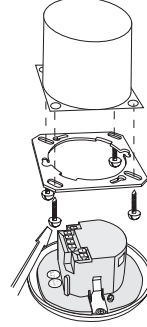
The detector can be installed in conventional inlet-sockets mounted on the ceiling.

The assembly plate enclosed must be stripped off prior to installation and secured to the ceiling using 2 or 4 screws and ensuring that it is not laterally transposed.

(For connections please see pt. 21!)

3a. Hardware configuration SM
Position light sensor LED's and potentiometers

Light sensor channel 2
Light sensor channel 1

Potentiometer 3 Time channel 1&2
Potentiometer 1 Lux channel 1
Potentiometer 2 Lux channel 2

1 2 3

LED 1 green
LED 2 white
LED 3 red

3b. Hardware configuration FM and FC
Position light sensor LED's and potentiometers

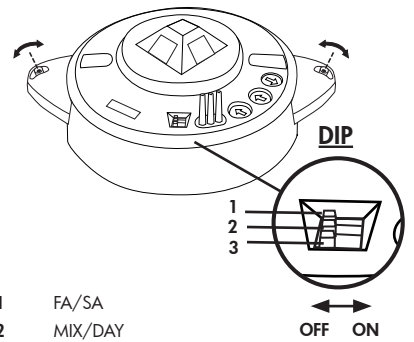Light sensor channel 1   Light sensor channel 2
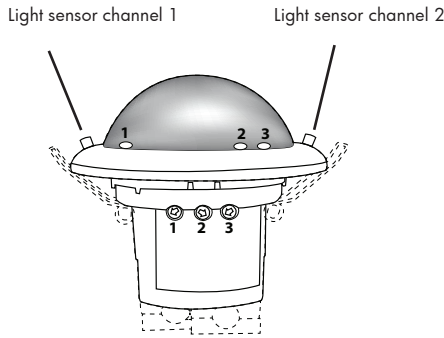
LED 1 green
LED 2 white
LED 3 red

Potentiometer 1 Lux channel 1
Potentiometer 2 Time channel 1 & 2
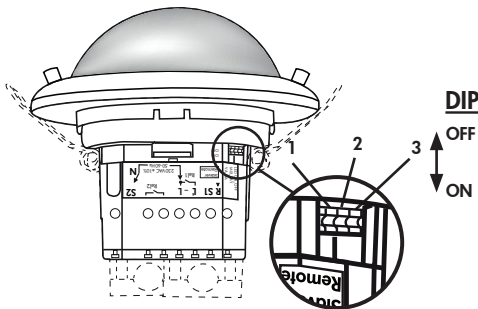Potentiometer 3 Lux channel 2

4a. Position DIP-switches SM

DIP

1
2
3

OFF   ON

DIP 1 FA/SA
DIP 2 MIX/DAY
DIP 3 LED ON/OFF

Default: VA, MIX and LED ON

The DIP switch settings are overriden using the remote control.
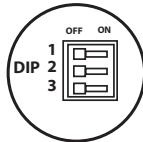
4b. Position DIP-switches FM and FC

DIP
OFF

1   2   3

ON

DIP 1 FA/SA
DIP 2 MIX/DAY
DIP 3 LED ON/OFF

Default: VA, MIX and LED ON

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	daylight	mixedlight
3	LED OFF	LED ON

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 of the remote control LUXOMAT® IR-PD-DUO
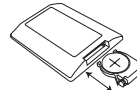
Check Battery:
Open battery compartment by pressing the plastic springs together and removing the battery-holder.

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

Option: 92092

IR-PD-DUO

Wall bracket for remote control IR-PD-DUO

7. Putting into operation / Settings

Self test cycle
After an initial 60-second self-test cycle, the **LUXOMAT®** PD4-M-2C-DUO is ready for operation.

Potentiometer 1 - Adjustment twilight-switch for light control
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 exceeds the current measured brightness.

Potentiometer 3 - Adjustment twilight-switch for light control
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 exceeds the current measured brightness.

9. Key functions in closed state

Permanent protection against sabotage
This function blocks the unit 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/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

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 30 minutes.

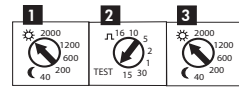The potentiometer settings are overriden using the remote control.

Pulse spacing PD-Slave
2 or 9 seconds can be set for the pause between 2 pulses sent to the master. The setting can be made with activated (✹) or deactivated (○) LED indicator.
For devices with a separate slave input, 2 sec. can be set.

8. 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.
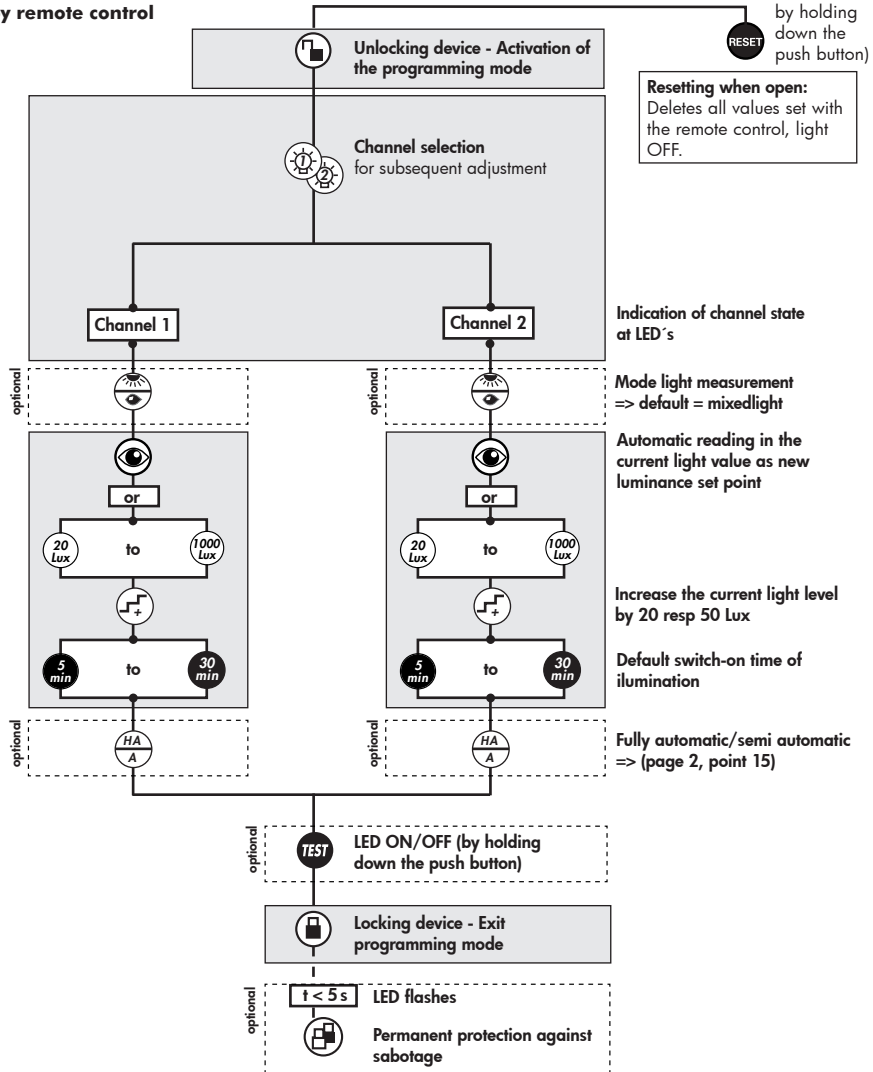
2. Reset
If both potentiometers are returned to the "Test" and "Sun" setting from any other position, a reset is executed. All values programmed with the remote control are deleted.

3. 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.

10. Settings by remote control

Unlocking device - Activation of the programming mode (by holding down the push button)

Resetting when open: Deletes all values set with the remote control, light OFF.

Channel selection for subsequent adjustment

Channel 1 — **Channel 2**

Indication of channel state at LED´s

Mode light measurement => default = mixedlight

Automatic reading in the current light value as new luminance set point

20 Lux — to — 1000 Lux

Increase the current light level by 20 resp 50 Lux

5 min — to — 30 min

Default switch-on time of ilumination

HA/A — Fully automatic/semi automatic => (page 2, point 15)

TEST — LED ON/OFF (by holding down the push button)

Locking device - Exit programming mode

t < 5 s — LED flashes

Permanent protection against sabotage

11. Explanation of the remote control button functions

11a. In the initialisation period

Corridor function
Activated by „switching light measurement"- push button
Deactivated by „HA/VA"-push button (default)

Forced shutdown
Activated by "5 min" - push button
Deactivate by "10 min"- push button (default)

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.

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.

12. 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.

13a. Behaviour of external push button/IR "Light"

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

Corridor function 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

13b. 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.

14. Other functions

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

230 V AC permanently at the slave input
If 230 V AC is applied at the slave input for longer than 10 sec., the light is switched on permanently. When the 230 V is removed, the light is switched off and automatic mode is activated.

230 V AC for 1 - 3 sec. at push button connection S
If 230 V AC 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.

15. Fully automatic and semi automatic mode
(see functions IR-PD-DUO)

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 manuelly.
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 (closer-contact) buttons as desired can be wired in parallel on the "S" button input (ON/OFF).
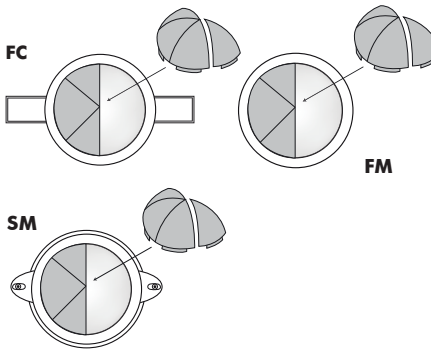
Triggering in semi automatic mode: If the detector switches off in semi automatic mode (lag timer elapsed), the detector is switched on again within 10 sec. by motion (despite semi automatic mode).

16. Range of Coverage

1 ☐ walking across
2 ☐ walking towards
3 ☐ seated
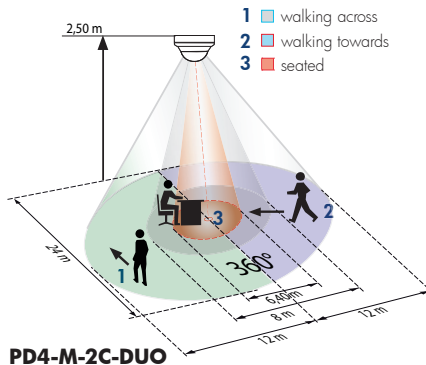
PD4-M-2C-DUO

17. Exclude sources of interferences

FC

FM

SM

In case the sensing area of the **LUXOMAT® LUXOMAT®** PD4-M-2C-DUO 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.

18. Article / Part nr. / Accessory

Typ	SM	FC	FM
PD4-M-2C-DUO	92158	92251	92252
PD4-S (Slave)	92142	92254	92163

LUXOMAT® Remote control:
IR-PD-DUO (incl. wall bracket) 92092

Accessory:
BSK Ball basket guard 92199
Wall bracket for remote control as replacement 92100

19. Technical data PD4-M-2C-DUO

Sensor and power supply in one case
Power supply: 230 V~ ±10 %
Power consumption: < 1W
Ambient temperature: -25°C to +50°C
Degree of protection/class: SM=IP54/II - FC/FM=IP20/II
Settings: Potentiometer, DIP-switch and by remote control
Light values:
20 - 1000 Lux (with remote control)
10 - 2000 Lux (with potentiometer)
Extension of the detection area: with Slave-devices
Area of coverage: circular 360°
Range of coverage Ø H 2,50 m / T = 18°C:
seated 6,40 m / tangential 24 m / radial 8 m
Recommended height for mounting: 2 - 3 m
Light measurement: mixed light, daylight + artificial light
• Channel 1 for light control
Type of contact: NOC/with pretravel tungsten contact
Contact load: 2300 W cos φ=1 /
1150 VA cos φ= 0.5, μ-Contact
• Channel 2 for light control
Type of contact: NOC/with pretravel tungsten contact
Contact load: 2300 W cos φ=1 /
1150 VA cos φ= 0.5, μ-Contact
Time-settings:
5 sec. - 16 min./ test with potentiometer
5 min. - 30 min./ test with remote control
Dimension H x Ø [mm]:
FC   FM   SM
97 x 103   84 x 97   76 x 101
Visible portion when built into ceiling FC: 97 x 34 mm

Technical data PD4-Slave
Power supply: 230 V~ ±10 %
Impulse output: Optocoupler max. 2 W
**Impulse duration:** 2 sec. or 9 sec.
Dimensions: see above

C€ **Declaration of Conformity:** The product complies with the low voltage recommendation 2006/95/EC and the EMV recommendation 2004/108/EC.
Solum abo. Itam et est perum veliquias maio officat aut as quossun ditiunt.
Us debitaecum, qui tem latem nobis escid que molora volorum sitis de sam a sum idiaspic to ipsa aut lis sintem quid moluptat.
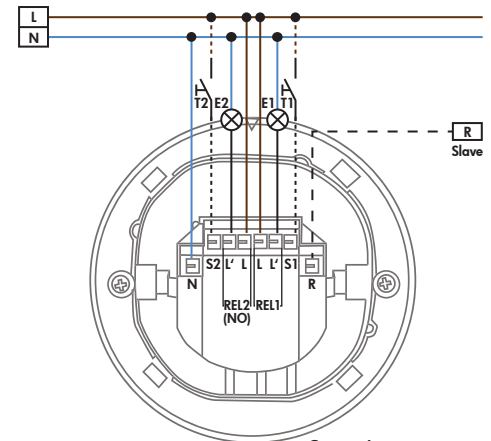
20. Wiring diagrams

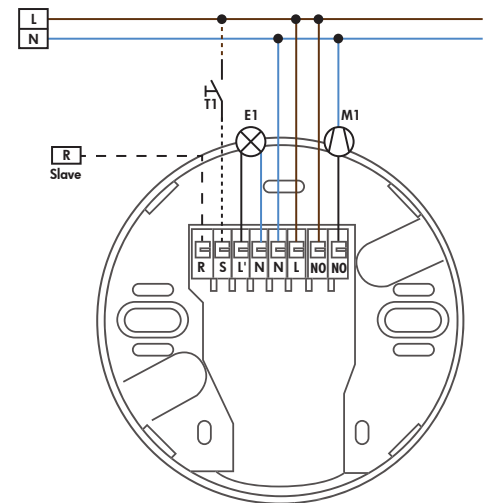**Standard mode with master 2-channel DUO occupancy detectors**

Master **Slave**
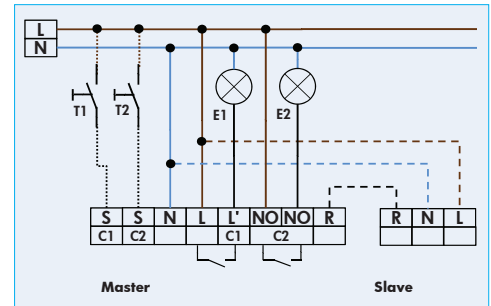
optional
T1&2 = NO button for semi-automatic mode
Slave for enlargement of detection area

21. PD4-M-2C-DUO – Connections

Connections
PD4-M-2C-DUO-FC/-FM

Connections
PD4-M-2C-DUO-SM

22. 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
Corridor active	Red and white flash	Red and white flash quickly	Every 5 sec., 4 x white, red and green in quick succession

LED function indicators during operation	
Process	**LED function indicators**
Motion detection	Red flashes on each detected movement
Semi-automatic mode active	White is ON
Too bright detected	Green flashes
Light measurement active	Green flashes once every 10 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.
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

* Indication for channel 1 and/or 2. By pushing ⊕₁₂ during open state can each be evaluated for which channel the indication is valid.

IR command	
Process	**LED function indicators**
Semi-automatic mode (HA) active	red, green and white LED flashe once
Fully-automatic mode (VA) active	white LED flashes once
Mixedlight measurement (MIX) active	white LED flashes once
Daylight measurement (DAY) active	red, green and white LED flashes once