B.E.G. LUXOMAT® PD4-M-TRIO-C-3P

Installation and Operating Instruction for B.E.G. – Presence detector PD4-M-TRIO-C-3P-FC

1. Product information

- Present sensor with NC-contacts
- This occupancy detector can be connected to three different phases.
- Ensured lighting even during failure of the detector
- Version as Master
- Extension of the coverage area by slave devices are possible
- Other functions can be adjustable by remote control.
- Manual switching via pushbutton is possible

2. Functionality

The PD4-M-TRIO-3P can be connected to three different electric circuits (phases). The first electric circuit supplies the operating voltage, the other two electric circuits can switched. A lighting system can therefore be split into, two galvanically separated groups.

For increased operational safety the PD4-M-TRIO-3P switches, when the operating voltage fails.

The presence detector controls the light automatically according to people present (movements) and the ambient brightness. The integrated light sensor constantly measures the ambient light and compares it with the brightness level on the detector. If the ambient light is sufficient, lighting will not be switched off. If the ambient light level is below the brightness level, a movement activated the lighting in the room.

The detector switch the light off, if there is enough natural light for 15 min. or until the follow-up time do not recognized any movement in the room.

3. Safety note

⚠ **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 electrotechnical regulations.**

⚠ **Disconnect supply before installing!**

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

⚠ **Mounting the cover ring, after introduction of the power cable (FC version)**

4. Installation
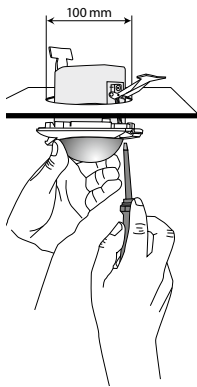
A circular opening of diameter 100 mm must be produced in the ceiling.

⚠ Having connected up the cables in accordance with regulations, the detector is inserted into the opening as shown in the drawing above and fixed by the retaining bracket by means of screws.

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5. Position DIP switch, LEDs and potentiometer
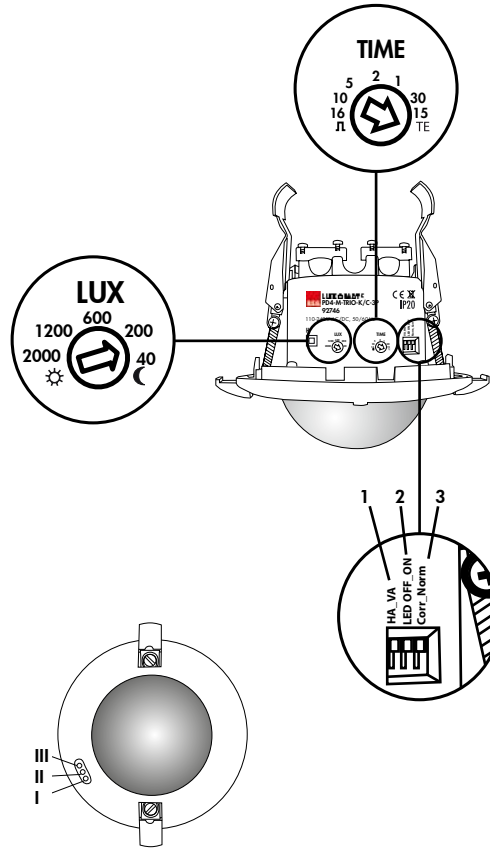
DIP switch functions

DIP 1	Semi automatic mode (HA)	Fully automatic mode (VA)
DIP 2	LED OFF	LED ON
DIP 3	Corridor mode (Corr)	Standard mode (Norm)

Potentiometer A Twilight-switch
Potentiometer B Follow-up time "Light"

LED I red
LED II green
LED III white

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

6. Self test cycle/Startup behavior

The product enters an initial 60-second self-test cycle, when the supply is first connected. During this time the device does not respond to movement and stays on. (INI-ON or INI-OFF)

7. Putting into operation / Settings

Potentiometer 1 - Adjustment follow-up time "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 s and 16 minutes.

Potentiometer 2 - Adjustment twilight-switch
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.
In the position "sun", the detector switches on upon movement irrespective of brightness.
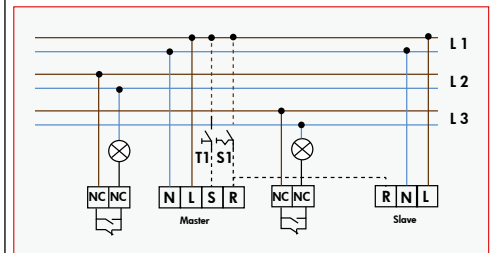
Determining the current brightness
Set potentiometer 1 to the "Test" setting. The green LED lights up permanently as soon as the value set at the potentiometer 2 exceeds the current measured brightness.

Impuls function
The impulse function can be used to control external HVAC systems.
All 9 s will be set a 2.5 s.

8. Wiring diagram

Standard operation Master/Slave

⚠ Slaves such as pushbuttons / switches must have the same phase as the supply voltage of the detector (L-Connection)

9. Manual switching / slave connection

S-terminal

By pressing the pushbutton, the phase can be given to the S terminal.
To turn on or off, press the light briefly. The light will remain on or off, as people are detected plus the follow-up time.
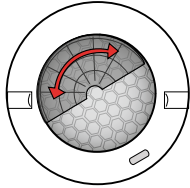
R-terminal

The R terminal is used for connecting the slave to the master. Alternatively, the phase can be set by a switch on the R terminal. If the phase is longer then 10 s. on, the detector switches to permanent mode, as long as the pushbutton is closed.

10. Range of coverage
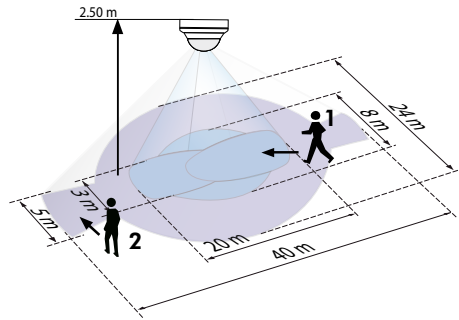
1 ■ Walking towards
2 ■ Walking across

11. Exclude sources of interferences

In case the sensing area of the detector 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.

12. Article / Part nr. / Accessory

Type	Part no.
PD4-M-TRIO-C-3P-FC	92746

LUXOMAT® Remote control:
IR-PD-1C (incl. wall bracket)   92094

Accessory:
Recommended slave: PD4-S-C-FC   92444
BSK Ball basket guard   92199

13. Technical data

Power supply: 110 -240 V~, 50/60 Hz
Power consumption: ca. 0,5 W
Ambient temperature: -25°C to +50 °C
Degree of protection/class: IP20 / II
Switch load/ -contact
(both channels):   2300 W, cos φ=1 /
                           1150 VA, cos φ= 0.5, μ-Contact
                           open contact (bistable relay)

Recommended height
for mounting: 2 - 3 m
Range of coverage
H 2,50 m / T = 18°C: tangential 40 m / frontal 20 m
Area of coverage: circular 360°
Dimension: H 100 x Ø 117 mm
Visible portion: H 37 x Ø 117 mm

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

14. LED function indicators in master-configuration (default)

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 10sec., 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
12h 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 <u>no</u> 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 1sec. and OFF 4 sec.
Corridor and semi-automatic mode active	White ON 4 sec. and OFF 1sec.
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

15. Settings with remote control (optional)

⚠️ The DIP switch settings are overriden using the remote control.

The DIP settings are enabled again by:
- Reset with test sun setting at the potentiometers
- "RESET" when open

LUXOMAT® IR-PD-1C
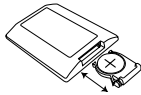
1. Check Battery:
Open battery compartment by pressing the plastic springs together and removing the battery-holder.

2. Note:
The operable distance of the remote control depends on the brightness. The brighter the less distance the remote could reach the occupancy detector. The setting for "SUN" could only be set with the potentiometer.
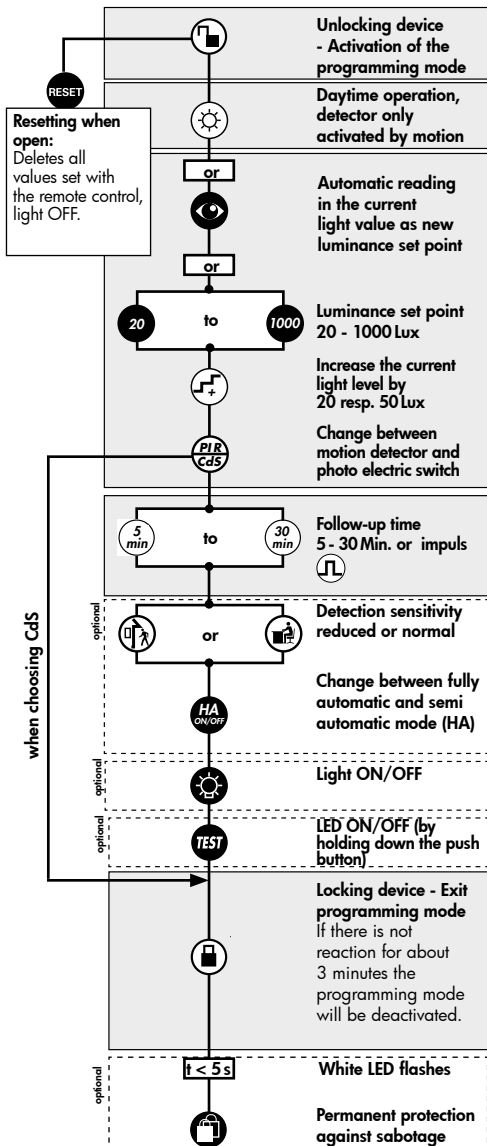
By using the remote control IR-PD-1C, we recommend to set potentiometer 2 on "SUN". Pushing the RESET button (remote control) would reset the brightness independence of the occupancy detector (SUN).
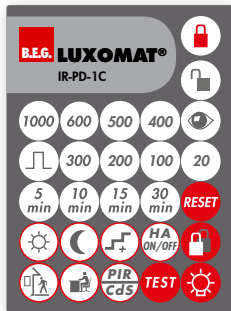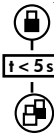
IR-PD-1C

Wall bracket for remote control IR-PD-1C

16. Settings with remote control IR-PD-1C in opened state

🔓	**Unlocking device - Activation of the programming mode**
RESET	**Resetting when open:** Deletes all values set with the remote control, light OFF.
☀️	**Daytime operation, detector only activated by motion**
or	
👁	**Automatic reading in the current light value as new luminance set point**
or	
20 *to* 1000	**Luminance set point 20 - 1000 Lux**
⌁₊	**Increase the current light level by 20 resp. 50 Lux**
PIR CdS	**Change between motion detector and photo electric switch**
5 min *to* 30 min ⎍	**Follow-up time 5 - 30 Min. or impuls**
🚶 *or* 🏢	**Detection sensitivity reduced or normal**
HA ON/OFF	**Change between fully automatic and semi automatic mode (HA)**
☀️	**Light ON/OFF**
TEST	**LED ON/OFF (by holding down the push button)**
🔒	**Locking device - Exit programming mode** If there is not reaction for about 3 minutes the programming mode will be deactivated.
t < 5 s	**White LED flashes**
🔒	**Permanent protection against sabotage**

when choosing CdS

17. Key functions in closed state

🔒 t < 5s 🗂 **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.

☀️ **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**

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

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

🔒 **Confirmation**

🔓 **Changes to "open" state**

18. Explanation of the remote control button functions

19a. In the initialisation period

☀️ **12 h Light ON/OFF (party function)**
Activated by "Light" - push button

RESET Deactivated by "Reset"- push button (default)

🚶 **Corridor function (see pt. 21a)**
Activated by "outside"- push button

🏢 Deactivate by "inside"- push button (default)

☀️ **Forced shutdown (see pt. 21c)**
Activated by "sun" - push button

🌙 Deactivate by "moon"- push button (default)

19b. 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

HA ON/OFF **Change between fully automatic and semi automatic mode (HA)** see pt. 17

🌙 **Adjustment twilight-switch**
Smallest adjustable value of 10 lux twilight

☀️ When set to "sun", the detector switches independently of the brightness with every movement.

🔒 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.

20 Lux / 1000 Lux • **Setting a fixed switch-on value:**
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 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.:

$$\left(\frac{5}{min}\right) = 9\,s, \quad \left(\frac{10}{min}\right) = 10\,s, \quad \left(\frac{15}{min}\right) = 15\,s, \quad \left(\frac{30}{min}\right) = 30\,s$$

TEST 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.

PIR CdS **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)

19. 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.

20a. Behaviour of external push button/ IR "Light" ☀️

A long button press is supported by devices in master configuration. 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 again after 5 sec.
Push button held down: Light OFF -> Active again 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

Party functions (12 h light ON/OFF) activated

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

Corridor and party function (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 + Lagtime
Push button held down: Light ON as long as motion + Lag time

20b. 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.

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21. Fully automatic and semi automatic mode (HA ON/OFF)
(see functions IR-PD-1C)

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 (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 10sec. by motion (despite semi automatic mode).

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22. Reset of the detector

If the permanent sabotage protection is activated, the detector can be released again as follows:

- Switch off the current
- Apply current for 31 - 59 seconds
- Switch off the current again
- Apply current, wait for selftest cycle
- Open detector

With this procedure, the remote control programmed values are not deleted (before activation of the sabotage protection).

Alternatively, the detector can be reset in this way:
- Switch off the power supply
- Set potentiometer 1 to "test" and potentiometer 2 to "SUN"
- Apply operating voltage

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.

Pushing the "RESET" button on the remote control, in opened mode, will delete all of the values which was set by the remote control.