

DACO® Occupancy detectors



Simple, fast, clever, adaptive!

Application description V1

Subject to technical changes.

PD2N-M-DACO-FC
DALI-2

PD4N-M-DACO-FC
DALI-2

PD4-M-DACO-GH-SM
DALI-2

PD9-M-DACO-FC
DALI-2

PD2N-M-DACO-1C-FC
DALI-2

PD4N-M-DACO-1C-FC
DALI-2

PD11-M-DACO-FLAT-FC
DALI-2

All device data can also be found here:



<https://www.swisslux.ch/r/1zS>

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1 About this document

1.1 Other applicable documents

1. Short manuals (including installation instructions) are enclosed with the respective devices and can be viewed or downloaded from the Swisslux homepage.
2. Product data sheets (product photos, dimensional drawings, circuit diagrams, range diagrams, product information, application examples, technical data, ordering data and accessories) can be viewed or downloaded from the Swisslux homepage.
3. Operating instructions of the B.E.G. One (Swisslux) App (help texts integrated in the app). Note: The order and user experience of parameters and commands may differ from the list in this document.

1.2 Means of representation used

	Symbol in case of danger to life due to electric shock
	Symbol for possible danger to persons
	Symbol for possible damage to property
	Symbol for useful information and tips
NOTE	Signal word for possible damage to property
CAUTION	Signal word for possible minor injuries
WARNING	Signal word for possible serious injuries
DANGER	Signal word for possible fatal injuries

2 Safety

The occupancy detectors of the DACO® product family have been developed, manufactured and tested in compliance with the applicable safety standards. They correspond to the state of the art.

2.1 Intended use

The devices are all remote-controlled passive infrared occupancy detectors for indoor applications.

CAUTION

**Observe the intended use!**

The protection of operating personnel and the device is not guaranteed if the device is not used in accordance with its intended use.

→ Only use the device in accordance with its intended use.

B.E.G. Brück Electronic GmbH is not liable for damage caused by improper use.

→ Read these operating instructions before putting the device into operation. Knowledge of the operating instructions is part of the intended use.

NOTE

**Comply with regulations and provisions!**

→ Observe the locally applicable legal regulations and the regulations of the employers' liability insurance associations.

2.2 Foreseeable misuse

Any use other than that specified under „Intended use“ or any use going beyond that is considered improper use.

In particular, the use of the device is not permitted in the following cases:

- in rooms with explosive atmospheres
- in safety-relevant circuits
- for medical purposes

NOTE

**Do not tamper with or modify the device!**

→ Do not tamper with or modify the device. Interventions and modifications to the device are not permitted.

→ The device must not be opened. It does not contain any parts to be adjusted or maintained by the user.

→ Repairs may only be carried out by B.E.G. Brück Electronic GmbH.

2.3 Qualified persons / qualified electricians

Connection, assembly, commissioning and adjustment of the device may only be carried out by competent persons.

Prerequisites for competent persons:

- They have suitable technical training.
- They know the rules and regulations concerning occupational health and safety.
- They know the operating instructions of the device.
- They have been instructed by the responsible person in the installation and operation of the device.

2.3.1 Qualified electricians

Work on electrical systems may only be carried out by qualified electricians or by instructed persons under the direction and supervision of a qualified electrician in accordance with the electrotechnical regulations.

Due to their technical training, knowledge and experience as well as their knowledge of the relevant standards and regulations, qualified electricians are able to carry out work on electrical systems and to recognise possible dangers independently.

In Germany, qualified electricians must comply with the provisions of the accident prevention regulation DGUV Vorschrift 3 (e.g. master electrician). In other countries, corresponding regulations apply and must be observed.

2.4 Disclaimer

B.E.G. Brück Electronic GmbH is not liable in the following cases:

- The device is not used as intended.
- Reasonably foreseeable misuse is not taken into account.
- Assembly and electrical connection are not carried out competently.
- Changes (e.g. structural) are made to the device.

3 What are the advantages of the DACO® product family?

Simple, fast, clever, adaptive - DACO® is designed for simple requirements of a modern lighting control system in combination with DALI luminaires. With DACO® occupancy detectors, energy consumption in buildings can be reduced reliably and quickly, while at the same time increasing comfort and safety. DACO® is a stand-alone solution that can be used in many areas with a slim profile, a variety of lens types, many mounting types and the most important colour matching options.

3.1 Easy installation with careful planning

After careful planning, installation is very easy and can also be carried out by qualified assistant electricians or qualified but inexperienced (with respect to DALI) electricians.

3.2 Quick commissioning and maintenance

Due to the product feature „Broadcast only“, luminaires only have to be connected to the DALI bus and must not be addressed, which generally shortens commissioning.

The „send packet“ function in the „B.E.G. One (Swisslux)“ app, which is available free of charge and is used in combination with the B.E.G. BLE/IR adapter for commissioning and maintenance, enables lean commissioning processes even in large projects.

3.3 Clever factory settings

The factory settings of all DACO® devices are designed to balance energy saving, safety, comfort and well-being.

Activated regulation to approx. 500 lux (calibration is required to realise more precise regulation) and the full automatic mode (presence-dependent, automatic switching on and off) ensure that energy is already saved, safety is provided and comfort is guaranteed immediately after installation.

If a push-button (NO) is connected to the corresponding input of the device, control of the status of the luminaires immediately after installation ensures well-being.

3.4 Adaptive appearance and installation

Thanks to coloured accessories for all devices except PD4-GH, the low height of the model PD9 and the super-flat model PD11, the appearance of sensor technology on the ceiling can be adapted to a wide variety of conditions.

Models PD4N and PD2N are also suitable for recessed ceiling mounting (as supplied), and with additional accessories also for surface mounting, flush mounting and wall mounting with an optional surface-mounted base.

4 Process descriptions

In general, processes are highly dependent on individual working methods, which B.E.G. cannot depict within the scope of this document. The process descriptions listed below therefore serve as a recommendation, not an obligation. In addition, some of the parameters or commands required within the process descriptions are only hinted at. More detailed information on the required commands and parameters can be found in the chapter Functions.

4.1 Planning

A prerequisite for an easy installation is carefully carried out planning with the basic understanding that a DALI-2 certified device from one manufacturer cannot necessarily be used in an application with another DALI-2 certified device from the same or another manufacturer. This applies in particular to DALI-2 control devices (application controller or input device), which according to the certification process may have very many different product characteristics.

With DALI-2 control gear (luminaires), on the other hand, the situation with regard to interoperability between DALI-2 certified devices is relatively uncritical, since mainly additional functions are affected, such as the function of being able to read out operating hours or energy data. However, there are also more critical special cases with DALI-2 operating devices, such as D4i certified devices that may also have integrated DALI bus voltage supplies as an additional feature, which makes a combination with non-D4i certified devices more complex.

Every device in the DACO® family is a DALI-2 certified control device (parts 101 and 103) and has the following product characteristics in relation to certification:

- **Single-master application controller:** no other DALI-2 control device (such as a KNX/DALI or BACnet/DALI gateway, a DALI bus terminal of a higher-level automation system, a DALI push-button or DALI rotary dimmer) may be connected to the DALI bus. For manual operation, a 230V line with the same outer conductor must be laid to a conventional push-button (NO).
- **Broadcast only:** Addressing of luminaires is not possible or necessary. Therefore, only one luminaire group can be addressed with one DALI line.
- **Supported operating devices:** The following device types (DT) can be connected to the DALI bus: DT0 (fluorescent lamp, 201), DT5 (1-10V converter, 206), DT6 (LED, 207) and DT7 (relay, 208). No additional functions are supported, such as reading out operating hours or energy data, etc. (251, 252, 253).

 CAUTION	
	„Touchdim“ is not supported and destroys the DACO® device!

- **Integrated bus power supply:** 80mA guaranteed, 125mA maximum, switch-off mechanism.

In addition, further information is provided for planning and operational safety:

- **Number of DALI luminaires** can be reliably determined within seconds via the B.E.G. Online DALI Line Planner. The tool can be used free of charge on the B.E.G. homepage.
- **Additional bus voltage supplies:** The B.E.G. Online DALI Line Planner can also be used to reliably determine within a few seconds whether an additional bus power supply from B.E.G. needs to be planned. Third-party bus power supplies or those integrated in luminaire drivers (D4i, „Intra-Luminaire“ concepts) are not permitted with DACO®.
- **Recommended wiring of the DALI bus cable:** at least 1.5mm² NYM cable and a maximum length of 300m. No attention needs to be paid to the polarity - with the exception of any additional bus voltage supply that may be required.
- **Wiring topology of the DALI bus:** LINE, TREE, STAR - No RING!
- **Wiring recommendation of 230V inputs:** At least 1.5mm² NYM cable and maximum 20m (push-button) / 100m (slave) length via the same outer conductor of the supply voltage of the DACO® device
- **Number of slave devices:** Maximum 8.
- **Using different outer conductors** for the supply voltage of a group of luminaires to be controlled is permissible, but not recommended, as this makes fault analyses more difficult.

- **Switching off via circuit breaker:** Switching off one or more DACO® lighting control systems (detectors and luminaires at the same time) can be realised by disconnecting the voltage supply via respective circuit breakers with a good supply network. However, this is generally not recommended.

⚠ CAUTION



Heat sources in the immediate vicinity!

If the detector is located in the immediate vicinity of ventilation slots or other heat sources, for example, the resulting warm air currents can trigger motion detection.

→ Place the detector at a sufficient distance from potential sources of interference such as ventilation slots, etc.

NOTE



Possible additional costs for commissioning and maintenance of DACO® devices depend on the following factors:

→ **Mounting height:** The bi-directional communication between the BLE/IR adapter and the DACO® device is realised with the low-cost infrared technology, which is influenced by heat radiation (for example incident sunlight). At a mounting height greater than 5 metres, it may be necessary to use additional climbing aids, depending on the ambient conditions.

→ **Spacing of master devices** from each other in large rooms: In general, the use of DACO® is ideal for small or large enclosed rooms with only one control zone. If it is taken into account when planning large rooms with several control zones that master devices should have a minimum distance of approx. 15m metres from each other, DACO® can also be used as a cost-effective energy-saving measure with lean commissioning processes. The bi-directional communication between the BLE/IR adapter and the DACO® device is realised with low-cost infrared technology which, however, does not allow a targeted point-to-point connection due to unavoidable reflections. Therefore, if several DACO® master devices are used in large rooms with too little distance between them, it can happen that a parameter change for one detector is also carried out for neighbouring detectors. If the distances between them are too small, it may therefore be necessary to disconnect neighbouring devices from the supply network in the course of commissioning and maintenance. Furthermore, in the case of closed-loop operation, it should be noted that if the distances between master devices are too small, oscillatory behaviour may occur.

→ **Scope of parameterisation:** In addition to the automation and control settings that are usually required, extended parameter settings may also be necessary depending on the application, which increases the duration of commissioning.

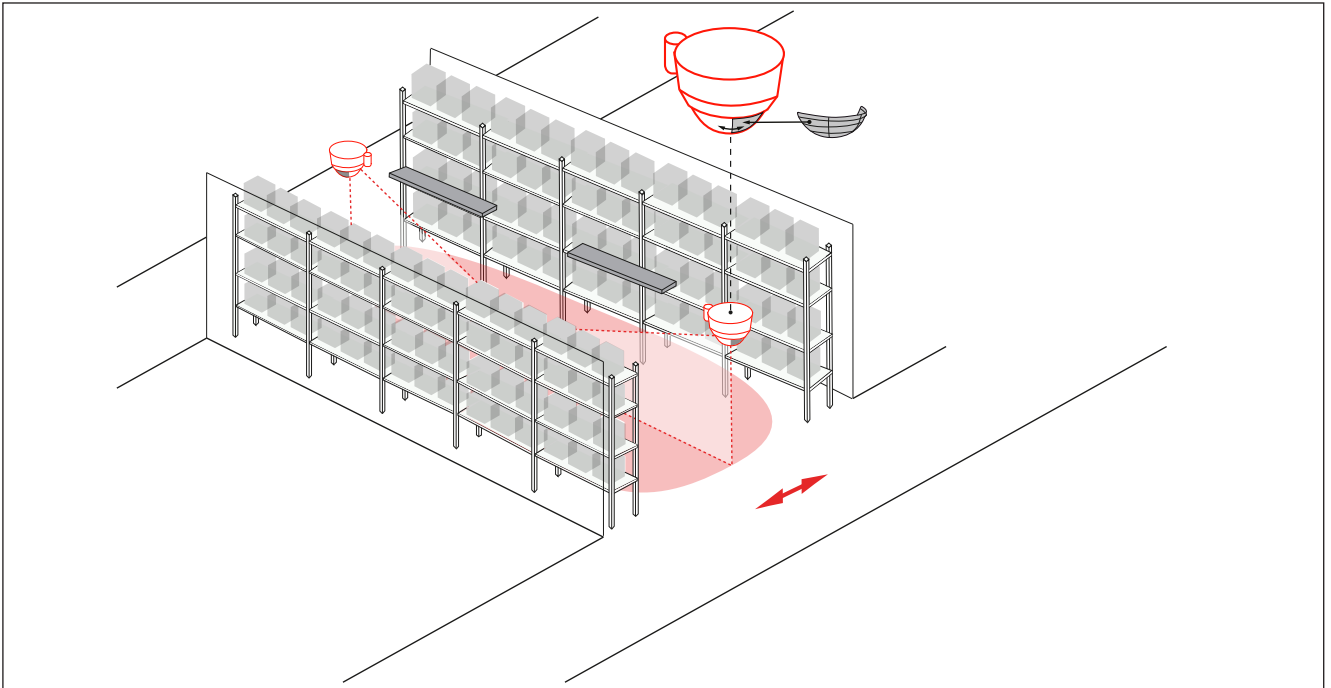
INFO



In master/slave operation, the master device must always be mounted in the location with the least amount of daylight.

NOTE**Ends of rack aisles!**

→ When used in high-bay warehouses, it must be ensured that detectors are installed at the ends of the shelf aisles which, due to blinds or mounting arrangement, only detect movement in the desired shelf area.



4.2 Electrical connection

DANGER



Danger to life from electric shock!

Work on electrical installations may only be carried out by qualified electricians or by instructed persons under the direction and supervision of a qualified electrician in accordance with the electrotechnical regulations.

Disconnect the power supply before installation!
This device is not suitable for disconnecting!

WARNING

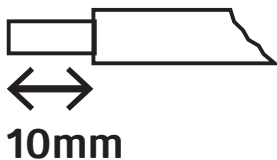



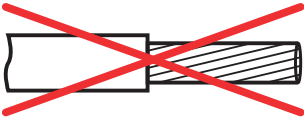

DALI connection!

DALI is not SELV - The installation regulations for low voltage apply.

→ The DALI screw terminals must not be connected to 230 V AC!

Preparation of the connection cable



- | | | |
|----------|--------------------------------------------------------------------------------------|-----------------------------------|
| 1 |  | 0.5 ... 2.5 mm² |
| 2 |  | |
| 3 |  | 0.5 ... 1.5 mm² |

- 1** Solid conductors
- 2** Stranded conductors
- 3** Stranded conductors with ferrule

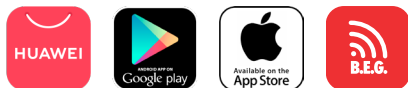
4.2.1 Installation check

The factory programme of each DACO® device contributes to a reliable installation test immediately after installation. The fact that DACO® can only address the entire line simplifies troubleshooting in case of malfunctions of individual luminaires. If a push-button (NO) is connected, the light can be switched on and off approx. 60 seconds after power is supplied. When switching off it is important to note that the automatic mode is not active again until the follow-up time (factory setting 10 minutes) has elapsed. The follow-up time expires if no movement is detected.

4.3 Commissioning

4.3.1 Step 1: Preparation for commissioning

The first step is to install the B.E.G. One (Swisslux) app, which is available free of charge in the respective app stores.



In the second step, a connection to the BLE/IR adapter must be established by selecting the BLE/IR adapter in the app and briefly pressing the control button on the device. The integrated battery of the BLE/IR adapter has to be charged.



4.3.2 Step 2: Reading out the device

To read out the device, the BLE/IR adapter must first be placed as accurately as possible under the detector in the corresponding stand or held steady in the hand. The „Read“ button can now be pressed in the app.

4.3.3 Step 3: Set the automation

The automation can be influenced by setting the operating mode. Depending on the operating mode, further parameters are available, which are explained in more detail in the respective chapter.

In full automatic mode (factory setting), the light switches on automatically when motion is detected, taking into account the brightness set value (factory setting 500 lux), and switches off again after elapse of the follow-up time (factory setting 10 minutes). The automatic system can be overridden by means of a push-button.

The semi-automatic mode is like the full automatic mode with the difference that the light is not switched on automatically. A push-button for switching on is absolutely necessary for this operating mode.

In twilight switch mode, the motion sensors are deactivated. Only the brightness set value is used to determine which state the luminaires are in. The automatic system can also be overridden in this operating mode by means of a push-button.

4.3.4 Step 4: Setting the control

The regulation functions ex works with approx. 500 lux. The accuracy of the regulation depends on the reflection behaviour and intensity of the daylight influence at the respective location. To adjust the regulation to the room conditions, if necessary, various options and methods are available as described below.

NOTE

In the following cases, regulation with the closed control loop of DACO® is only possible to a limited extent or not at all:

- little reflection energy from the floor and/or furniture (almost black)
- a lot of glass in the direct lateral environment
- in applications with mounting heights greater than 5m



With DACO® the regulation can be suppressed by deactivating the set value. The adjustable switch-on value of, for example, only 80% and the downstream orientation light at 20% with automatic switch-off (full or semi-automatic) can be used to save energy in this case, for example.

If necessary, the second light sensor located under the lens in honeycomb structure in the PD4N and PD2N models can lead to success despite unfavourable general conditions by using it for integral light measurement with the parameter „Weighting light sensor“.

4.3.4.1 Optional: Change reflection factor

The reflection factor (multiplier) serves as an option to adjust the lux value displayed in the app under the „Set value“ parameter so that it approximates the lux value measured on the table surface or floor with an external lux meter. Please note that the accuracy of the adjustable set value depends significantly on reflected mixed light (artificial, natural and scattered light). Furthermore, deviations can naturally occur depending on the properties of the floor, furniture, wall and incident daylight (window size, time of day, season, weather conditions).

In many applications, experience has shown that a reflection factor of 2 is suitable, which is why this is also stored as the factory setting.

The more dark reflection surfaces there are in the room, the higher the reflection factor should be. If it is already visible to the naked eye that the floor and/or the furniture in particular tend to be dark, the reflection factor can be increased to make the display in the „Set value“ parameter more realistic.

As a rule of thumb: floor and/or table... almost white: 1 / light: 2 / slightly dark: 3 / dark: 4 / very dark: 5

NOTE



The lux value measured on the ceiling can be checked in the app at any time by reading out the detector again and reading the „Current brightness“ status information, which also allows the reflection factor to be adjusted approximately by reading this information.

4.3.4.2 Option 1: Adjusting the set value

The quickest way is to change the parameter „Set value“ with the basic understanding that it serves as a control variable for the actual set value on the floor or on the table.

To be able to adjust the set value, you need a calibrated luxmeter, which is positioned and placed at the point to be measured. Now darken the room as much as possible (ideally at night) and change the set value until the desired lux value is reached on the calibrated lux meter. It should be noted that a certain distance from the calibrated lux meter must be maintained so as not to falsify the measurement.

4.3.4.3 Option 2: Carry out calibration and read in the set value

The most reliable way is to calibrate the artificial light source and read in the set value.

Calibration can be done manually or automatically (command or parameter setting). Automatic calibration is deactivated in the factory settings.

After calibration, use a calibrated luxmeter, place it at the point to be measured, step aside, darken the room as much as possible (ideally at night) and change the brightness of the luminaires until the desired lux value is reached on the calibrated luxmeter. To adopt the current status as the set value, press „Save brightness“. Please note that the value under the Set value parameter is not adopted directly, but is only updated after the device has been read out again.

4.3.4.4 Adjusting the regulation behaviour

In order to adapt the regulation to individual needs and environmental conditions, further parameters are available, which are explained in more detail in the respective chapter. For example, the regulation can be delayed and slowed down. A minimum regulation value can counteract extreme stray light conditions (for example, direct sunlight through skylights) of under-control, and brightness-related shut-off can also be suppressed.

4.4 Maintenance

Maintenance processes with the DACO® product family can be carried out easily thanks to the B.E.G. One (Swisslux) App and the additional B.E.G. One Cloud function.

4.4.1 Replace detectors

Taking into account the safety instructions in this document, a DACO® device can be replaced and provided with the previous parameters.

4.4.2 Replace luminaires

Taking into account the safety instructions in this document, a luminaire can be replaced.

Any necessary adjustments of the luminaires are carried out autonomously by DACO® devices with power supply.

NOTE



If you use luminaires with DALI-2 certified control gear supported by the DACO® device, you will minimise sources of error.

5 Backwards compatibility

DACO® devices are backwards compatible with their respective predecessor „DALI/DSI“ models with only a few limitations:

1. The double lock function is no longer supported. PIN protection has been introduced instead.
2. The proprietary DSI protocol is no longer supported.
3. There are no more DIP and/or potentiometer functions.
4. Old IR remote controls, The operating instructions „Settings with optional IR-RC remote control and the FO IR-PD DALI function foil“ apply with the restrictions already listed.

NOTE



The use of remote controls from previous models instead of the B.E.G. One app in combination with the BLE/IR adapter is possible, but not recommended. New functions that contribute to significantly better functionality are not available with the old remote controls.

6 Functions

6.1 Initialisation phase (boot)

After the mains voltage is switched on or the mains supply is restored, the device starts and switches on the connected lighting for the duration (60 s) of the self-test cycle (factory setting INI ON).

6.2 External push-button - manual switching and dimming of the lighting

Overriding the automatic system with an optionally connected push-button functions as follows and can be influenced in part with parameters:

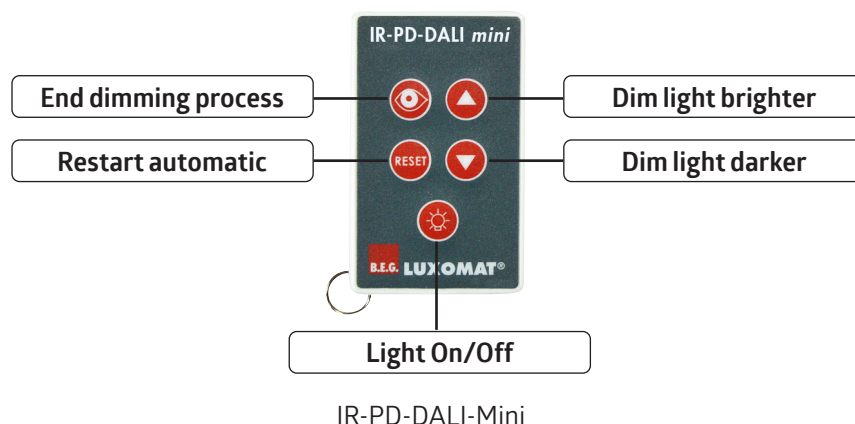
Switching on: With a short push-button action, the light can be switched on in all operating modes to the set switch-on value. If regulation is activated, the light is controlled directly to the set value, taking into account the reflection factor.

Dimming: With a long button press (> 2s), the light can be dimmed to a personally preferred brightness value in all operating modes. Another long press of the button changes the direction of the brightness change. Directly after switching on, the dimming direction (brighter/darker) depends on the switch-on value. If the switch-on value is less than 50%, it becomes brighter, otherwise darker. When dimming, settings of the regulation dynamics (Max/Min) are ignored.

Switching off: The light can be switched off in all operating modes by briefly pressing the push-button again, unless the „Push-button behaviour“ parameter is set to the value „Switch on only“.


Behaviour of the automatic control in case of override: In all operating modes, the regulation in the manually dimmed state is suppressed until the light is switched off automatically or manually via the push-button. When the light is switched on again, the manually dimmed state is lost.


6.3 Mini remote control - Manual switching and dimming of the light



6.4 Basic functions

6.4.1 PIN protection


App command	
Symbol	
Name	PIN protection - no PIN
Description	The device PIN protects the device from reconfiguration. When a PIN is used, the device remembers the PIN and it does not need to be re-entered. Only after a break of 30 minutes it is necessary to enter the PIN again.
Change log	available as of firmware V1.0

App command	
Symbol	
Name	Enter PIN
Description	Please enter 4-digit PIN
Change log	available as of firmware V1.0

6.4.1.1 Cancel PIN protection

Process	
Name	Remove PIN protection
Description	<p>The PIN protection can be cancelled as follows (no PIN):</p> <ul style="list-style-type: none"> - Switch off operating voltage - Apply operating voltage for 31 s ... 59 s - Switch off the operating voltage again - Apply operating voltage and wait for the self-test cycle to complete. - Read out device and assign new PIN or no PIN <p>If no setting is changed with the remote control after deactivation of the double lock, the detector switches back to the original PIN protection state after 30 minutes. This means that the PIN protection cannot be cancelled by an accidental power failure.</p>
Change log	available as of firmware V1.0

6.4.2 Reset to factory settings

App command	
Symbol	
Name	Reset to factory settings
Description	ATTENTION: If this entry is confirmed with Yes, the device is reset to factory settings and the individually made settings are lost.
Change log	available as of firmware V1.0

Process	
Name	Button Reset
Description	Available on PD4N and PD2N models: Pressing a button under the lens (PD4N) or under the design ring (PD2N) for longer than 10s while the device is in operation resets the device to its factory settings.
Change log	available as of firmware V1.0

6.5 System settings, status and commands


6.5.1 Part number

Status information	
Symbol	-
Name	Part No.
Description	Represents the part number of the device
Change log	available as of firmware V1.0


6.5.2 Software-Version

Status information	
Symbol	-
Name	Software version
Description	Shows the software or firmware version after readout
Change log	available as of firmware V1.0


6.5.3 Device status

Status information	
Symbol	
Name	Device status
Description	The following status information is displayed: OK, motion sensor defective, light sensor defective, DALI bus error (short circuit or disturbed communication)
Change log	available as of firmware V1.0


6.5.4 Current brightness

Status information	
Symbol	
Name	Current brightness
Description	Shows the current brightness without reflection factor after readout (no automatic update)
Change log	available as of firmware V1.0

6.5.5 Sensitivity of the motion sensors

Parameter	
Symbol	
Name	Sensitivity
Values	MAX; HIGH; MEDIUM; LOW; MIN
Factory setting	HIGH
Function dependencies	None
Description	With a high (detection) sensitivity, even small movements are detected and large areas are covered
Change log	available as of firmware V1.0



6.5.6 Status LEDs

Parameter	
Symbol	
Name	Status LEDs
Values	OFF; ON
Factory setting	ON
Function dependencies	None
Description	These are used to indicate movement, among others. For more information on the status LEDs, please refer to the operating instructions. ATTENTION: In the open state as well as in test mode, the LEDs are ACTIVE!
Change log	available as of firmware V1.0

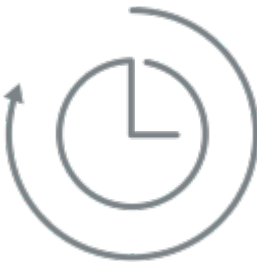
6.5.6.1 LED function displays

LED function displays	
Operation	Indication
Initialisation time	Red flashes for 60s
Load factory setting	Running light for 30s, then: Red flashes for 30s
Read out device (send IR)	Red flickers
Motion detection	Red flashes with each detected movement
Brightness set value exceeded	Green flashes 2x per 1s
Light calibration active	Green flashes every 10s
Semi-automatic mode active	White lights up permanently
Corridor operation active	White flashes every 3s
Error detected (device or bus)	Red/green/white flashing simultaneously


6.5.7 Behaviour of the lighting when voltage is applied (INI ON / OFF)

Parameter	
Symbol	
Name	INI-ON / INI-OFF
Values	OFF; ON
Factory setting	ON
Function dependencies	None
Description	This determines whether the light is on/ or off during the self-test cycle (60s after power recovery).
Change log	available as of firmware V1.0
NOTE	
	During the self-test cycle, the movement detection, light measurement and push-button function are not yet active.


6.5.8 Restart

App command	
Symbol	
Name	Restart
Description	Immediately forces all connected luminaires to switch off automatically, resetting all timers in the automation logic.
Change log	available as of firmware V1.0

6.5.9 Test motion detection

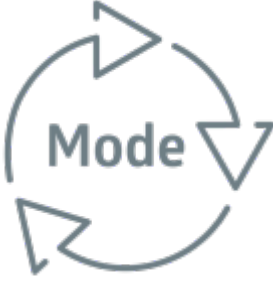
App command	
Symbol	
Name	Test operation (start / stop)
Description	The test mode can be used to quickly and easily check the motion detection. In activated test mode, all connected luminaires are switched on for 1 second each time motion is detected. The test mode has no automatic switch-off and must always be stopped manually.
Change log	available as of firmware V1.0

6.5.10 Lighting On/Off/Brighter/Darker/Stop

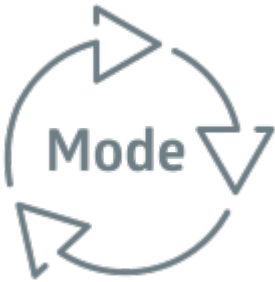
App command	
Symbol	
Name	On / Off / Brighter / Darker / Stop
Description	The operating buttons can be used in the course of the installation check or for setting the control to switch and/or dim the light. By briefly pressing „Brighter“ or „Darker“, the light can be dimmed in a certain direction. „Stop“ ends the dimming process.
Change log	available as of firmware V1.0

6.6 Automation (main light)


6.6.1 Operating mode

Parameter	
Symbol	
Name	Operating mode
Values	FULL AUTOMATIC; SEMI-AUTOMATIC; TWILIGHT SWITCH
Factory setting	FULL AUTOMATIC
Function dependencies	None
Description	<p>The operating mode of the detector is set here.</p> <p>FULL AUTOMATIC: In this operating mode, the lighting switches on and off automatically for increased comfort, depending on presence and brightness.</p> <p>SEMI-AUTOMATIC: In this operating mode, the lighting switches on for increased economy only after manual switch-on. Switching off is automatic or manual. Within 10s after the follow-up time has elapsed, the lighting can be switched on again automatically by movement. After this period has elapsed, in contrast to FULL AUTOMATIC, pressing the push-button again is required to switch on the lighting.</p> <p>TWILIGHT SWITCH: The detector switches the light on regardless of movement when the light falls below the switch-on threshold. Depending on the switch-on threshold, a switch-on/switch-off delay is active.</p>
Change log	available as of firmware V1.0

6.6.2 Output type

Parameter	
Symbol	
Name	Output type
Values	Switching output; regulation output
Factory setting	Regulation output
Function dependencies	(None)
Description	The regulation is deactivated with the setting Switching output
Change log	available as of firmware V1.0

6.6.3 Follow-up time

Parameter	
Symbol	
Name	Follow-up time
Values	00h:00m:00s – 12h:00m:00s
Factory setting	00h:10m:00s
Function dependencies	Full automatic, semi-automatic (operating mode main light)
Description	This is the duration after a movement that the connected load remains switched on.
Change log	available as of firmware V1.0



NOTE





The follow-up time is also used to suppress motion-dependent switch-on in full automatic mode when the light is switched off via the push-button or the app.

6.7 Regulation (light control brightness)



6.7.1 Setpoint

Parameter	
Symbol	
Name	Setpoint
Values	INACTIVE; USE VALUE
Factory setting	USE VALUE - 500 lx
Function dependencies	None
Description	<p>INACTIVE: Switching is independent of brightness. The detector uses only motion detection and follow-up time.</p> <p>USE VALUE: The brightness set value is the brightness value to which the room lighting is controlled.</p>
Change log	available as of firmware V1.0
NOTE	
	<p>In addition to automatic control, the set value is also used as a switch-on and switch-off threshold, taking into account a non-adjustable hysteresis. Deactivation of the set value in the twilight switch operating mode is therefore suppressed.</p> <p>Please read the chapter „Process descriptions - Commissioning“.</p>



6.7.2 Save brightness

App command	
Symbol	
Name	Save brightness
Description	The operating keys „Brighter“, „Darker“ and „Stop“ can be used to set the set value with the command „Save brightness“.
Change log	available as of firmware V1.0
NOTE	
	Recommendation to read the chapter „Process descriptions - Commissioning“.


6.7.3 Saving the setpoint after dimming

Parameter	
Symbol	
Name	Save set value after dimming
Values	OFF; ON
Factory setting	OFF
Function dependencies	None
Description	It is defined whether the brightness is saved as a new set value after dimming via a connected push-button.
Change log	available as of firmware V1.0
NOTE	
	The function has been used in the previous models by the designations „User Mode“ and „Preset Mode“.


6.7.4 Reflection factor

Parameter	
Symbol	
Name	Reflection factor
Values	1;2;3;4;5
Factory setting	2
Function dependencies	USE VALUE (set value)
Description	To compensate for the difference between the brightness on the desk and on the ceiling, a reflection factor can be set on the detector. This represents the ratio of the light value measured on the desk to the light value measured on the ceiling (e.g., desk 500 lux, ceiling 250 lux = factor 2).
Change log	available as of firmware V1.0
NOTE	
	Please read the chapter „Process descriptions - Commissioning“.


6.7.5 Maximum regulation value

Parameter	
Symbol	
Name	Maximum regulation value
Values	1-100%
Factory setting	100%
Function dependencies	USE VALUE (set value)
Description	This value can prevent unwanted overriding of the regulation algorithm due to difficult room reflection conditions. The regulation light value will never exceed this limit.
Change log	available as of firmware V1.0

6.7.6 Minimaler Regelwert

Parameter	
Symbol	
Name	Minimum regulation value
Values	1-100%
Factory setting	1%
Function dependencies	USE VALUE (set value)
Description	This value can prevent undesired understeering of the control algorithm due to difficult room reflection conditions. The regulation light value will never fall below this limit (with the exception of brightness-related shut-off, which can also be deactivated via a separate parameter).
Change log	available as of firmware V1.0

6.7.7 Weighting light sensor

Parameter	
Symbol	
Name	Weighting light sensor
Values	0-100%
Factory setting	0%
Function dependencies	USE VALUE (set value); models PD4N and PD2N
Description	The weighting of the internal and external light sensor is set here. 0 = external light sensor only 100 = internal light sensor only
Change log	available as of firmware V1.0

NOTE



The second light sensor located under the lens can be used for integral light measurement.


Advantage only external sensor (0%): The reflective surface that is used for the set value is measured very accurately.

Disadvantage external sensor only (0%): If the brightness of the reflective surface is temporarily changed directly under the detector, for example by spreading out a large white sheet of paper, the regulation can react to this by taking into account the „regulation delay“ and „regulation speed“ parameters.

Advantage only internal sensor (100%): A temporary change in the reflective surface that takes place directly under the detector has virtually no negative effects.

Disadvantage internal sensor only (100%): In extreme weather conditions in winter (snow-covered ground) or in summer (direct sunlight), but also with angled blind positions, it is no longer possible to clearly differentiate between natural and artificial light, because in those cases the light sensor located under the lens predominantly measures the reflected daylight. The „Minimum regulation value“ parameter can be used to avoid under-control.

6.7.8 Regulation method


Parameter	
Symbol	
Name	Regulation method
Values	CLASSIC; INTELLIGENT
Factory setting	INTELLIGENT (from V1.6)
Function dependencies	USE VALUE (set value)
Description	<p>CLASSICAL: The classic regulation method is used, as in the previous models.</p> <p>INTELLIGENT: The new, intelligent regulation method is used. This sends fewer DALI telegrams and uses the intelligence of the control gear in the luminaires.</p>
Change log	<p>available as of firmware V1.0</p> <p>Change of factory setting as of V1.6 from „CLASSICAL“ to „INTELLIGENT“</p>

NOTE




Function retained due to backwards compatibility. Recommendation to use classic mode only in case of error in projects with old detectors and/or DALI drivers.


6.7.9 Regulation speed

Parameter	
Symbol	
Name	Regulation speed
Values	FAST; MEDIUM; SLOW
Factory setting	FAST
Function dependencies	INTELLIGENT (control method)
Description	The regulation speed can be set in 3 steps.
Change log	available as of firmware V1.0

6.7.10 Regulation delay

Parameter	
Symbol	
Name	Regulation delay
Values	INACTIVE; USE VALUE 0s- 120s
Factory setting	INACTIVE
Function dependencies	INTELLIGENT (regulation method)
Description	As soon as the brightness set value is reached, an adjustable dead time starts, which prevents a new regulation cycle.
Change log	available as of firmware V1.0

6.7.11 Calibration

Parameter	
Symbol	
Name	Calibration
Values	INACTIVE; ACTIVE
Factory setting	INACTIVE
Function dependencies	USE VALUE (set value)
Description	<p>INACTIVE: No calibration is performed</p> <p>ACTIVE: Calibration determines the amount of light from the own luminaires, which enables compensation for daylight. This results in even more accurate control. Calibration can be started manually. For this, the room must be darkened. For calibration, the light is switched on for 5 minutes. If manual calibration has not been carried out, it is carried out automatically once as soon as less than 50lx are measured. The orientation light remains switched off until the calibration has been carried out. If the set value is changed, the calibration must be carried out again.</p>
Change log	available as of firmware V1.0


NOTE




Please refer to the chapter „Process descriptions - Commissioning „.

6.8 Light control (brightness) - Advanced


6.8.1 Switch-on value

Parameter	
Symbol	
Name	Switch-on value
Values	Last value; USE VALUE
Factory setting	USE VALUE 10%
Function dependencies	None
Description	<p>Last value: The light is switched on to the last light value when the push-button is pressed briefly or when movement occurs in full automatic mode.</p> <p>USE VALUE: When the push-button is pressed briefly or during movement in full automatic mode, the light is switched on to this value.</p>
Change log	<p>available as of firmware V1.0</p> <p>Change of factory setting as of V1.3 from 100% to 10%.</p>


6.8.2 Push-button behaviour

Parameter	
Symbol	
Name	Push-button behaviour
Values	Toggle (on/off); only switch on
Factory setting	Toggle (On/Off)
Function dependencies	None
Description	<p>Toggle (On/Off): Pressing the button briefly toggles the light (on/off).</p> <p>Only switch on: A short press of the button switches the light on. Manual switching off is deactivated.</p>
Change log	available as of firmware V1.0

6.8.3 Brightness-related switch-off

Parameter	
Symbol	
Name	Brightness-related switch-off
Values	OFF; ON
Factory setting	ON
Function dependencies	USE VALUE (set value)
Description	The lighting is switched off if the brightness set value is exceeded for longer than the set delay time.
Change log	available as of firmware V1.0

6.8.4 Delay time for brightness-related switch-off

Parameter	
Symbol	
Name	Delay time for brightness-related switch-off
Values	00h:00m:00s - 01h:00m:00s
Factory setting	00h:05m:00s
Function dependencies	USE VALUE (set value)
Description	The lighting is switched off if the brightness set value is exceeded for longer than the set delay time.
Change log	available as of firmware V1.0

6.8.5 Remaining burn-in time

Status information	
Symbol	<div>100 h</div>
Name	Remaining burn-in time
Description	Displays the remaining burn-in time after read-out (no automatic update).
Change log	available as of firmware V1.0

6.8.6 Burn-in duration

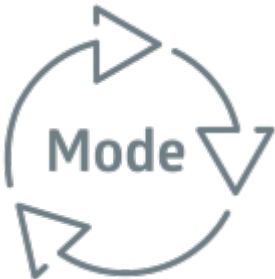
Parameter	
Symbol	<div>100 h</div>
Name	Burn-in duration
Values	1h-100h
Factory setting	100h
Function dependencies	None
Description	<p>Before dimming is possible, the dimming function must be suppressed for a certain period of time.</p> <p>T5 fluorescent lamps: 80h T8 fluorescent lamps: 100h</p> <p>During this period, the detector only switches ON or OFF. Control to a set value is suppressed.</p>
Change log	available as of firmware V1.0

6.8.7 Burn-in Start/Stop


App command	
Symbol	<div>100 h</div>
Name	Burn-in Start/Stop
Description	Starts and stops the burn-in cycle of T5 or T8 luminaires.
Change log	available as of firmware V1.0

6.9 Automation (Orientation light)


6.9.1 Orientation light Operating mode

Parameter	
Symbol	
Name	Operating mode
Values	INACTIVE; USE TIME; PERMANENT
Factory setting	INACTIVE
Function dependencies	FULL AUTOMATIC; HALF AUTOMATIC (main light mode)
Description	<p>INACTIVE: The light is switched off after the regular follow-up time has elapsed.</p> <p>USE TIME: After the regular follow-up time has expired, the orientation light is switched on for this duration. Afterwards, the light is switched off automatically. Other settings, such as set value or brightness-related switch-off, remain active during the orientation light phase, except for the parameters for limiting the control values (min/max). These are replaced with new limit values for this duration. If the detector detects a movement during the orientation light phase, the light is controlled again with the original limit values. This also happens in the SEMI-AUTOMATIC operating mode.</p> <p>PERMANENT: After the regular follow-up time has elapsed, the orientation light is switched on. Other settings, such as set value or brightness-related switch-off, remain active during the orientation light phase, except for the parameters for limiting the control values (min/max). These are replaced with new limit values for this duration. If the detector detects a movement during the orientation light phase, the light is controlled again with the original limit values. This also happens in the SEMI-AUTOMATIC operating mode.</p>
Change log	available as of firmware V1.0


6.9.2 Orientation light follow-up time

Parameter	
Symbol	
Name	Follow-up time
Values	00h:00m:00s – 12h:00m:00s
Factory setting	00h:05m:00s
Function dependencies	USE TIME (operating mode orientation light)
Description	This is the duration after a movement that the connected load remains on in the orientation light.
Change log	available as of firmware V1.0

6.9.3 Orientation light Maximum regulation value


Parameter	
Symbol	
Name	Maximum regulation value
Values	10-30%
Factory setting	20%
Function dependencies	USE TIME; PERMANENT (orientation light mode)
Description	This parameter replaces the originally set maximum regulation value within the orientation light phase.
Change log	available as of firmware V1.0

6.9.4 Orientation light Minimum regulation value


Parameter	
Symbol	
Name	Minimum regulation value
Values	1-30%
Factory setting	1%
Function dependencies	USE TIME; PERMANENT (orientation light mode)
Description	This parameter replaces the originally set minimum regulation value within the orientation light phase.
Change log	available as of firmware V1.0

6.10 Luminaire configuration


6.10.1 Automatic “Fade Time = 0.7s”

Parameter	
Symbol	
Name	Automatic “Fade Time = 0.7s”
Values	ON; OFF
Factory setting	OFF
Function dependencies	None
Description	The parameter “Fade-Time” in the luminaires is automatically set to 0.7s after power supply.
Change log	available as of firmware V1.0

6.10.2 Automatic “Broadcast Reset“

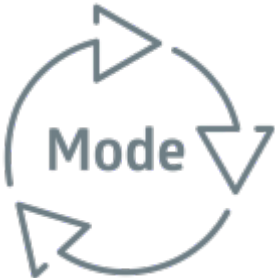
Parameter	
Symbol	
Name	Automatic “Broadcast Reset“
Values	ON; OFF
Factory setting	OFF
Function dependencies	None
Description	The luminaires are automatically reset to the factory settings after power is supplied (DALI BROADCAST RESET)
Change log	available as of firmware V1.0

6.10.3 Broadcast reset command

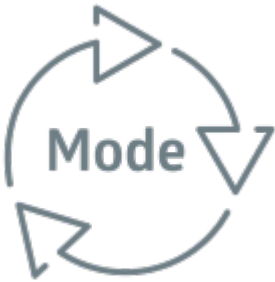
App command	
Symbol	
Name	Broadcast Reset
Description	The luminaires are reset to the factory state (DALI BROADCAST RESET).
Change log	available as of firmware V1.0

6.11 Relay configuration

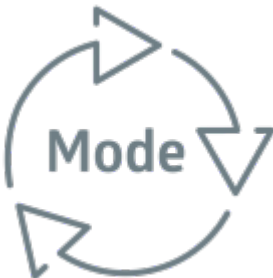
6.11.1 Channel type

Parameter	
Symbol	
Name	Operating mode
Values	CUT-OFF; Movement only
Factory setting	CUT-OFF
Function dependencies	Models PD4N-1C and PD2N-1C
Description	<p>CUT-OFF: Minimises stand-by power consumption of DALI ECG.</p> <p>Motion only: When motion is detected, the channel is switched for the set follow-up time regardless of brightness.</p>
Change log	available as of firmware V1.0


6.11.2 Relay operating mode - movement only

Parameter	
Symbol	
Name	Operating mode
Values	PULSE; ALARM; HVAC
Factory setting	HVAC
Function dependencies	Movement only (channel type)
Description	<p>IMPULSE: A switching pulse is output when motion is detected.</p> <p>ALARM: A switching pulse is emitted when 3 movements are detected within 9 seconds.</p> <p>HVAC: When motion is detected, the channel is switched for the set follow-up time, regardless of brightness.</p>
Change log	available as of firmware V1.0

6.11.3 Operating mode relay - light

Parameter	
Symbol	
Name	Operating mode
Values	FULL AUTOMATIC; SEMI-AUTOMATIC
Factory setting	FULL AUTOMATIC
Function dependencies	Light (channel type)
Description	<p>FULL AUTOMATIC: In this operating mode, the lighting switches on and off automatically for increased comfort, depending on presence and brightness.</p> <p>SEMI-AUTOMATIC: In this operating state, the lighting switches on for increased economy only after manual switch-on. Switching off is automatic or manual. Within 10s after the follow-up time has elapsed, the lighting can be switched on again automatically by movement. After this time has elapsed, in contrast to FULL AUTOMATIC mode, it is necessary to press the push-button again to switch on the lighting.</p>
Change log	available as of firmware V1.0

Follow-up time - relay light

Parameter	
Symbol	
Name	Follow-up time
Values	00h:00m:00s – 12h:00m:00s
Factory setting	00h:10m:00s
Function dependencies	Full automatic, semi-automatic (operating mode main light)
Description	This is the duration after a movement that the connected load remains switched on.
Change log	available as of firmware V1.0

7 Care, maintenance and disposal

7.1 Cleaning

If necessary, clean the plastic lens of the occupancy detector with a soft, fibre-free cloth.

NOTE



Do not use aggressive cleaners!

→ Do not use aggressive cleaning agents such as thinner or acetone to clean the device.

→ Only use a fibre-free cloth to clean the lens.

Pointed and hard objects can destroy the lens.

7.2 Maintenance

The occupancy detector does not normally require any maintenance by the operator. Repairs to the devices may only be carried out by the manufacturer.

For repairs, contact your local B.E.G. Brück Electronic branch or B.E.G. Brück Electronic GmbH, Germany directly.

7.3 Disposal

When disposing of the device, observe the national regulations for electrical components.

8 Diagnosis / Troubleshooting

The connected luminaire does not switch/dim
<ul style="list-style-type: none"> ▪ The luminaire is defective: → Replace luminaire/lamp ▪ No mains voltage available: → Check the fuse in the sub-distribution ▪ The brightness set value is not set correctly: → Correct the setting
The connected luminaire switches on too late or the range is too small
<ul style="list-style-type: none"> ▪ The detector is mounted too high: → Correct the mounting height if necessary. ▪ The brightness set value is not set correctly: → Correct setting → Correct the detection sensitivity
The luminaire remains permanently switched on
<ul style="list-style-type: none"> ▪ The detector is parallel to a switch that allows the light to be switched on manually: → Correct switching if necessary
Unintentional switching on of the light
<ul style="list-style-type: none"> ▪ Movements of heat sources in the detection area: → Do not install detectors near radiators or ventilators. → Animals can also be detected by the detector as moving heat sources.

9 Service / Support

9.1 Manufacturer's warranty

The company B.E.G. Brück Electronic GmbH grants a warranty in accordance with the warranty conditions, which you can download from the website at <https://www.B.E.G.-luxomat.com/service/downloads/>.

9.2 Contact details

Return address for repairs:

Contact your B.E.G. Distribution Switzerland:

B.E.G. Vertrieb Schweiz:

Swisslux AG

Industriestrasse 8

CH-8618 Oetwil am See

Tel: 043 844 80 80

Fax: 043 844 80 81

E-Mail: info@swisslux.ch

Internet: <http://www.swisslux.ch>

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