

DALI LINK

B.E.G. LUXOMAT® net DALI LINK

Functional description

Planning | Installation | Commissioning |
Maintenance

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DALI LINK

1. Introduction

B.E.G. LUXOMAT[®] net DALI LINK is a modular, fully automated lighting control system for luminaires with a DALI or DALI-2 interface. With demand-oriented lighting control, energy can be saved quickly, easily and reliably, comfort increased and safety guaranteed.

Operation and programming is carried out via the Bluetooth interface of a smartphone, which establishes a connection to a B.E.G. DALI LINK push-button module with integrated Bluetooth DALI gateway. This requires an app from B.E.G., which is available for free download in the iTunes and Google Play app stores.

This document is addressed both to lighting designers and to electrical installers and integrators who use B.E.G. LUXOMAT[®] net DALI LINK as lighting control for a lighting installation with DALI or DALI-2 luminaires. Graphical elements in the Android app differ slightly from those in the iOS app. For the sake of simplicity only screenshots of the iOS App are shown in this document.

2. Planning and installation notes

2.1. Supply voltages

B.E.G. DALI LINK control devices (multi-sensors and push-button modules) and B.E.G. DALI LINK control gears (relay modules) obtain the necessary supply voltage via the DALI bus and therefore do not require a mains cable. Accordingly, in addition to the luminaires, only the DALI LINK power supply unit requires a mains supply line in order to provide the required 16 VDC (typical) DC voltage for the DALI control line.

2.2. Compatibility with DALI luminaires

The DALI-1 standard only concerns so-called "control gears", which drive various types of light sources. Control devices such as "multi-sensors" or, in principle, "application controllers", which control these control gears, are not included in DALI-1. Only DALI-2 also takes into account control devices, which are expected to be fully certifiable from 2019/2020.

For this reason, there can be no 100% guarantee of compatibility with all DALI-1 or DALI-2 luminaires available on the market. B.E.G. has already prepared its control and system devices in DALI LINK for certification with DALI-2 by taking into account the IEC 62386 standard with the current parts 101, 102, 103, 303 and 304 (August 2018) when developing hardware and software.

So the probability is quite high that with DALI-2 luminaires there will be little or no compatibility problems. In order to minimise the probability of incompatibility with DALI-1 luminaires, it is advisable to ensure that the control gear used meets the following conditions:

Developed and tested according to:
IEC 62386-101-2013
IEC 62386-102-2014

In general, B.E.G. always recommends carrying out a test with the DALI-1 or DALI-2 luminaires used before installation. The manufacturer and type of the driver used in the luminaire is relevant, not the manufacturer and type of the luminaire itself. A B.E.G. sales representative can be consulted here at any time.

2.3. Cable specification and cable routing

B.E.G. recommends the use of NYM cables with a minimum cross-section of 1.5mm² for the DALI control line. If this recommendation is followed, a maximum distance of 300 metres applies between the DALI LINK power supply unit and the DALI subscriber.



Tip: The DALI bus may be routed parallel to the supply voltage in the same sheathed cable (e.g. with NYM 5 x 1.5 mm²)!



Attention: DALI is not SELV! Observe the corresponding installation instructions and always use a low-voltage cable (up to 1000 VAC / 1500 VDC) for the DALI bus!

2.4. Topology

All DALI units (DALI luminaires, multi-sensors and push-button modules) can be connected to each other using loop, star or tree structure distribution. Attention: NO RING may be formed!



Attention: Do not form a ring when wiring the DALI control line!

2.5. Limitations of DALI participants

The limitation of DALI participants is defined on the one hand by a maximum of 64 short addresses. On the other hand, the number of connectable participants depends on their power consumption. Respectively, there is also a dependency on the maximum output current of the bus voltage supply. DALI stipulates that 250mA must not be exceeded!

There is also a systemic limitation defined by B.E.G. with regard to the number of control devices that can be used. This limitation is intended to limit the communication density on the DALI bus, which should guarantee perfect control of the lighting system.

DALI LINK offers 2 options for supplying the bus with power:

- a. Use of type "PS-DALILINK".
This power supply is designed for local installation in the false ceiling and may be used in parallel to double the limited number of DALI subscribers. With one "PS-DALILINK", 25 luminaires and up to 6 DALI LINK control devices can be operated. With 2 "PS-DALILINK", 50 luminaires and up to 12 DALI LINK control devices can be operated.
- b. Use of type "PS-DALILINK-USB-REG".
This power supply unit is designed for installation in the sub-distribution on a DIN rail and may only be operated individually. With "PS-DALILINK-USB-REG", 45 luminaires

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and a maximum of 10 DALI LINK control devices can be operated. This power supply is suitable for a system change to B.E.G. LUXOMAT[®]net DALISYS.



Attention: When using a DALI LINK power supply unit of type "PS-DALILINK-USB-REG" no further DALI LINK power supply unit may be connected!

If fewer DALI LINK control devices are used than specified, 5 additional luminaires may be used per DALI LINK control device not used, provided that the sum of all DALI devices does not exceed 64. For a relay module, either 2 DALI LINK control devices or 8 luminaires must be removed.

Example for "Limiting DALI Subscribers":

A PS-DALILINK power supply unit is used. 12 luminaires, 2 multi-sensors and 2 push-button modules are to be used together. In addition, a relay is used to disconnect the luminaires from the mains when the light is off. A further relay is to implement presence-dependent ventilation control (HVAC function).

- 12 instead of 25 luminaires corresponds to a **reserve of 13 lights (+13L)**
- 4 control units instead of 6 corresponds to a **reserve of 2 control devices (+2S)**
- 1 relay for cut-off function means: **2 control devices less allowed (-2S)**
- 1 relay for HVAC function means: **8 luminaires less permitted (-8L)**

There remains a reserve of 5 lights or 1 control device. The above example therefore works.

2.6. Addressing method

In the DALI LINK system, devices are randomly addressed and their short addresses automatically managed. This prevents duplicate short addresses from being assigned. Short addresses cannot therefore be changed manually, which makes a fixed assignment of short addresses in advance pointless. However, what can be specified instead of the short address is the device name.

2.7. Wiring instructions

The polarity of the DALI control line is neutral, i.e. the polarity (DA + / DA -) marked on the DALI LINK power supply unit need not be observed during wiring. An exception is the use of two parallel DALI LINK power supplies of the type "PS-DALILINK". These must be wired in parallel with the polarity marked on both DALI LINK power supplies!



Attention: When installing a second DALI LINK power supply unit of type "PS-DALILINK", pay attention to the polarity of the DALI control line!

2.8. Sensor placement

To prevent the light from switching on unintentionally, multi-sensors must always be placed as far away as possible from radiant heaters, ventilation outlets and printers/copiers.

The multi-sensor should be mounted so that the main direction of movement is always tangential (to the side of the device).

If daylight-dependent control is desired, care should be taken that the corresponding multi-sensor must be placed in a potentially dark area (with little daylight incidence).



Attention: Please observe the mounting height indicated on the devices. Smaller mounting heights reduce the detection range. Larger mounting heights increase the detection range while simultaneously reducing sensitivity.



Tip: If the smallest movements are to be detected (e.g. working with the PC keyboard), we recommend selecting the installation location directly above the desk for ensuring a reliable detection.

In case of doubt, a B.E.G sales representative can be consulted at any time regarding sensor placement.

2.9. Safety instructions

Please observe and follow the safety instructions in the respective short form mounting instructions of the DALI LINK products!

2.10. Mounting instructions

Please observe and follow the individual mounting instructions in the respective short form mounting instructions of the DALI LINK products.

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3. Installation test

3.1. Step 1: Check bus voltage supply

The DALI LINK power supply unit is ready for operation when its indicator LED lights green (ready for operation without bus traffic) or flashes green (ready for operation with bus traffic).

- If the indication LED is off, the supply voltage must be checked.
- If the indication LED flashes red, there is a short circuit on the DALI bus or too many DALI devices are connected.
- If the indication LED is permanently red, the automatic switch-off is active due to overheating. In this case, ensure better ventilation of the device.

3.2. Step 2: Check push-button module(s) and DALI luminaires

A short actuation of a push-button (normally open contact) - which is connected to any binary input - switches all connected luminaires on and off ex works via broadcast commands. If all luminaires can be switched on or off by briefly pressing the push-button, the push-button, the push-button module and all DALI luminaires are ready for operation.



Tip: When using a toggle switch or a key-operated switch, a push-button (normally open contact) must be simulated for the installation test. A long keystroke or toggle switch position "Closed" has no function ex works! With DALI LINK, manual dimming only works after commissioning, which simplifies the installation test.

If one of many DALI luminaires can NOT be switched on with a push-button operation, the following is not possible...

- ...check the light source and the supply voltage of the (respective) DALI luminaire(s).
- ...check the through-plating of all DALI bus connections on the DALI luminaires.

If all DALI luminaires can NOT be switched on with a push-button operation, the following is possible...

- ...check the through-plating of all DALI bus connections on the DALI luminaires.
- ...check the connection of the push-button module to the DALI bus. The indication LED of the push-button module lights up permanently green when it is ready for operation.
- ...check the through-plating of all binary inputs (incl. COM) to the push-button or toggle switch used.
- ...reset the push-button module to factory setting (press reset button for longer than 10s).

3.3. Step 3: Check multi-sensors

The red indication LED of a multi-sensor flashes in the first 20 seconds after power supply and then lights up once each time motion is detected. All multi-sensors switch the light on fully automatically ex works and switch it off again after 10 minutes without further motion detection.

If at least one multi-sensor shows no LED indication, ...

- ...the connection of the multi-sensor to the DALI bus must be checked.



Note: If the green LED lights up when motion is detected, the multi-sensor has already been programmed (master function deactivated). This circumstance is irrelevant for the installation test itself: the multi-sensor is therefore also ready for operation if the green LED lights up once when motion is detected.

3.4. Installation test Log

Customer: _____

Date: _____

Inspector: _____

Test steps	OK = ✓
1: DALI bus voltage	()
2: Push-buttons and luminaires	()
3: Multi-sensors	()

Comment: _____

QR code for enabling commissioning:



Duration of the test: _____

Signature: _____

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4. Project planning / Commissioning planning

4.1. Understanding the DALI LINK control principle

The DALI LINK system controls the light with the help of the so-called "multimaster technology" and distributed intelligence. This means that several application controllers may be connected to a DALI loop, which may send telegrams to the DALI bus almost simultaneously with the aid of collision detection (multimaster). On the other hand, several application controllers simultaneously influence the status of the connected DALI luminaires (distributed intelligence). This has the advantage of a high operational reliability of the system. Multi-sensors and push-button modules are these independent application controllers in a DALI LINK system. They also monitor each other with the aim of providing the user with a comfortable yet familiar light control.

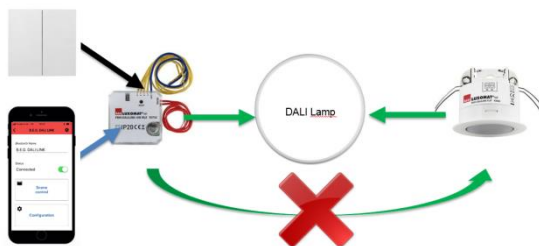
Example for "Distributed Intelligence":

In one use case, both a multi-sensor and a push-button module are used.

After pressing the key, an On command (Recall Max) is sent to the lights. The lights are on. Pressing the button again would now switch the light off again. Since the push-button is not pressed again, however, the multi-sensor now takes over its duty: it has registered this command to the luminaires and then activates its control cycle depending on the brightness set value. At the same time, the multi-sensor starts the follow-up time of the automatic switch-off, which is restarted each time motion is detected. If this follow-up time now expires, the multi-sensor sends an Off command to the lights. The lights go out.

The push-button module has now registered this command as well and changes the toggle switch logic on/off accordingly so that the next time the push-button is pressed, an on command is sent instead of an off command.

The push-button module therefore does not inform the multi-sensor that it should switch on the light. The push-button module communicates it directly to the luminaire, whereby the multi-sensor listens to these commands simultaneously in order to be able to react accordingly, as shown in the following figure:



4.2. DALI LINK Applications

4.2.1. Presence-dependent lighting control

The light can be switched on and off automatically ("full automatic") depending on the presence of humans or animals in the detection area of the sensor system. The automatic switch-off can be delayed at the user's discretion with the aid of a follow-up time that can be set to the second (factory setting: 10 minutes).

This automatic control also depends on the set brightness set value. If the value falls below the set value, the light comes on. The light remains out or goes out after a bridging time of 5 minutes when the set value is exceeded. With the setting "2500 Lux" the set value is permanently exceeded, the light switches on independently of the measured light value and remains switched on as long as the follow-up time is running.

The automatic switch-on is optional and can be deactivated during commissioning ("semi-automatic"). This makes it necessary to press a button to switch on the light.

Presence-dependent lighting control can also be deactivated as an option, which means that exclusively light-dependent operation ("CdS") can be achieved.

4.2.2. Daylight-dependent regulation

Daylight-dependent regulation can be activated during commissioning (output type: "regulation"). It automatically adjusts the illuminance in relation to additional incident daylight. If it is not activated (output type: "switching output"), the light is only switched to an adjustable value ("switch-on value").

4.2.3. Daylight-dependent regulation in Duo mode

If daylight-dependent control is operated in DUO mode (output type: "Control" / offset channel: "Active"), lighting fittings in the immediate vicinity are controlled by windows with less power than in potentially darker areas of the room. The damping factor can be set between 1% and 30%. In extreme lighting situations (very bright or very dark), the damping factor is automatically set to 0% so that both lighting groups are controlled with the same values.

Prerequisite for this function is a corresponding "digital" grouping of the luminaires during commissioning.

4.2.4. Flexible regulation speeds

DALI LINK allows the speed and delay of the regulation to be flexibly adjusted to suit different applications.

4.2.5. Orientation light

A percentage dimming value is defined for the orientation light. The light is dimmed to this value, for example, when no movement is detected. Safety-relevant areas are never completely dark, but energy is saved compared to the main lighting.

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4.2.6. Automatic override (push-button)

The automatic functions of the multi-sensor can be overridden at any time by means of a push-button or smartphone app. Both push-buttons and switches (bistable) can be used.

On and off commands always take the automatic functions into account, while dimming commands deactivate the regulation until automatic switch-off via an adjustable follow-up time. Scenes can either disable the regulation only or the regulation and at the same time also the automatic shutdown.

4.2.7. Scene control via Bluetooth App

With the DALI LINK App you can control the lighting with scenes via Bluetooth. This function is designed for the end user and can only be used with the individual Bluetooth password. The end user can create, edit and delete scenes at his own discretion.

4.2.8. Guided Light

In multi-room applications, Guided Light can be used to additionally control the light depending on the presence status of neighbouring rooms.

For example, the light in a foyer can be maintained at least in the orientation light as long as movement is detected in the adjacent office.

4.2.9. Soft start

"Soft start" refers to the switch-on value which is to be valid when the lighting is switched on (automatically or by push-button). A gentle increase curve of the light output can be used to avoid glare when entering the room (e.g. 10%).

4.2.10. Automatic staircase control

If no multi-sensor is used for a certain group, the push-button can be used like a staircase automat with any adjustable follow-up time and integrated switch-off warning (30 seconds).

4.2.11. Integrating non-dimmable luminaires

With the aid of a DALI relay (device type 7) from any manufacturer or the B.E.G. DALI relay, luminaires can be integrated that cannot be dimmed.



Attention: Pay attention to the high inrush currents of capacitive loads and always use a contactor in case of doubt!

4.2.12. Cut-off function / avoid standby power consumption

As soon as all DALI luminaires are switched off, the cut-off function of the B.E.G. DALI relay can be used to automatically disconnect the mains supply. As soon as any control unit wants to switch on the light again, the mains voltage is supplied again.



Note: A B.E.G. DALI relay module is required for this functionality.

4.2.13. Integration of HVAC systems

The motion detections of DALI LINK multi-sensors can also be used to automatically operate a ventilation system only when the room is occupied.



Note: A B.E.G. DALI relay module is required for this functionality.

4.2.14. Impulse function

The motion detections of DALI LINK multi-sensors can also be used, for example, to implement a passage detector function (acoustic signal when entering a store).

Every 9s a 2.5 s pulse is set.



Note: A B.E.G. DALI relay module is required for this functionality.

4.2.15. Alarm function

The motion detections of DALI LINK multi-sensors can also be used to report information on room occupancy to a higher-level building control system (via binary inputs).

Every 9s a 2.5 s pulse is set. In order to trigger an alarm pulse, at least 3 movements must be detected over a period of 9 s. The alarm must be triggered by the alarm system.



Note: A B.E.G. DALI relay module is required for this functionality.

4.3. Define device names

Ideally, a naming policy has already been defined in advance according to which the DALI participants are to be named during commissioning.



Tip: B.E.G. recommends using speaking names. In general, the room name should be included in the device name. E.g. "Foyer LED wall side left" or "Foyer LED1.1" (first digit for the light row, second digit for the luminaire/device).

4.4. Create grouping plan

Before commissioning can take place, the grouping of all DALI devices must be defined.



Tip: For simple applications, a grouping plan can also be sketched manually on a sheet of paper. This saves time and fulfils its purpose!

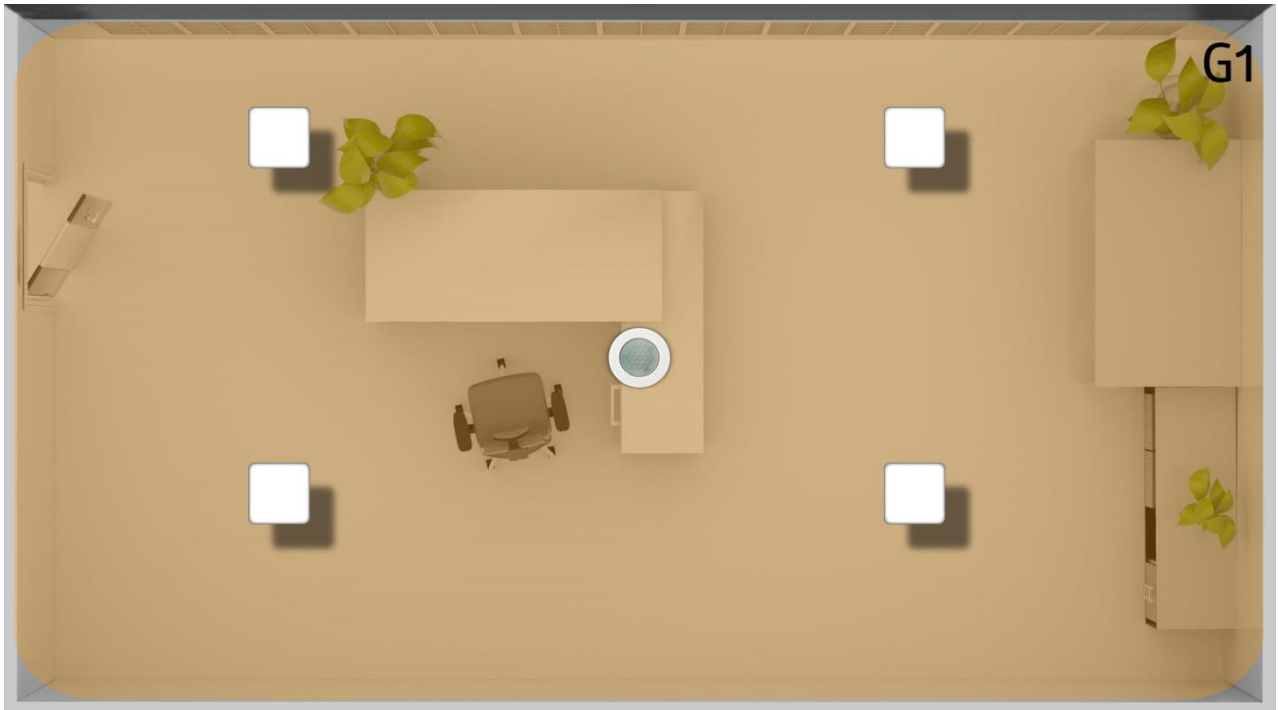
4.5. Grouping examples

The following grouping examples are intended to provide orientation on how a grouping can be designed. Each application is presented in 2 variants:

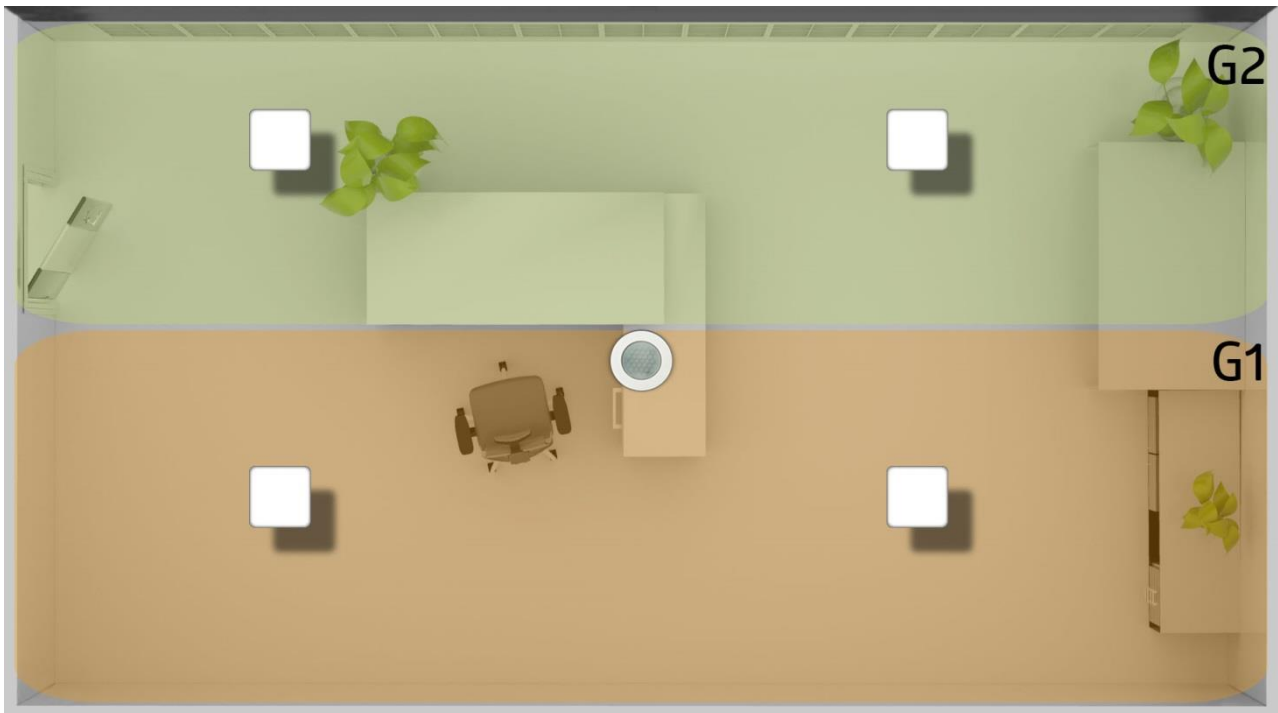
- Standard regulation or switching
- Regulation in "Duo mode"

Additional energy can be saved by regulation in DUO mode, as an adjustable damping factor can be used to attenuate the light output near the window. For this purpose, luminaires in the vicinity of windows must be assigned to a separate, next higher group.

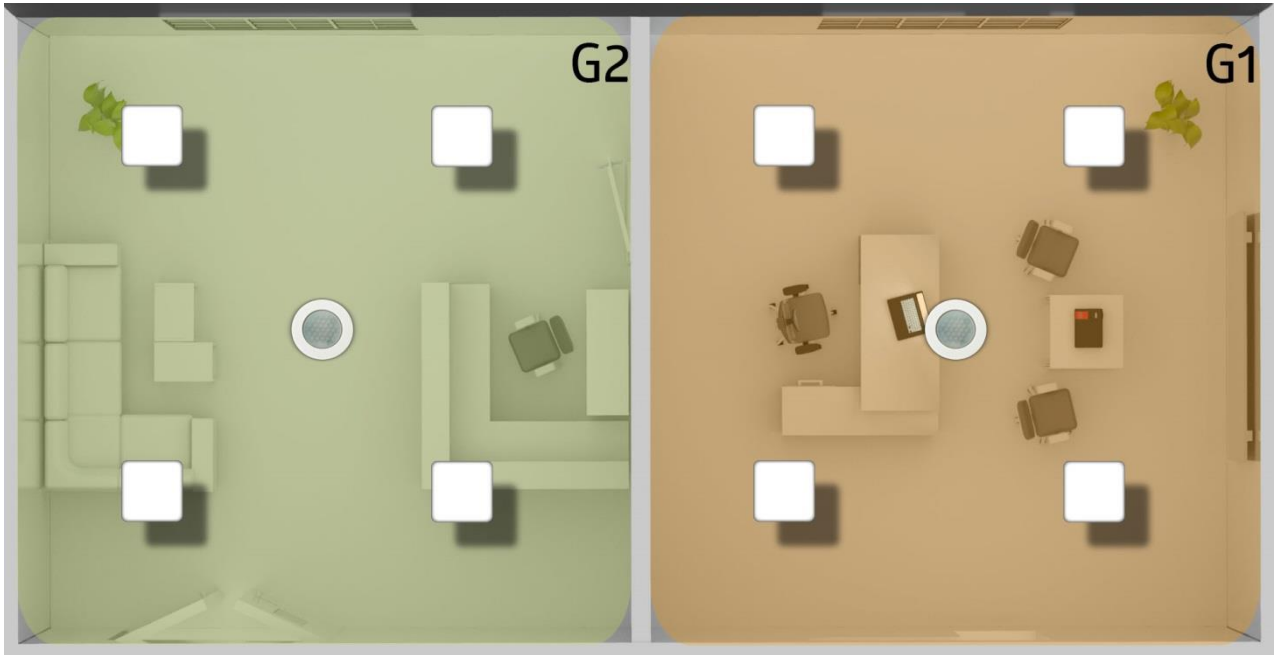
4.5.1. Office



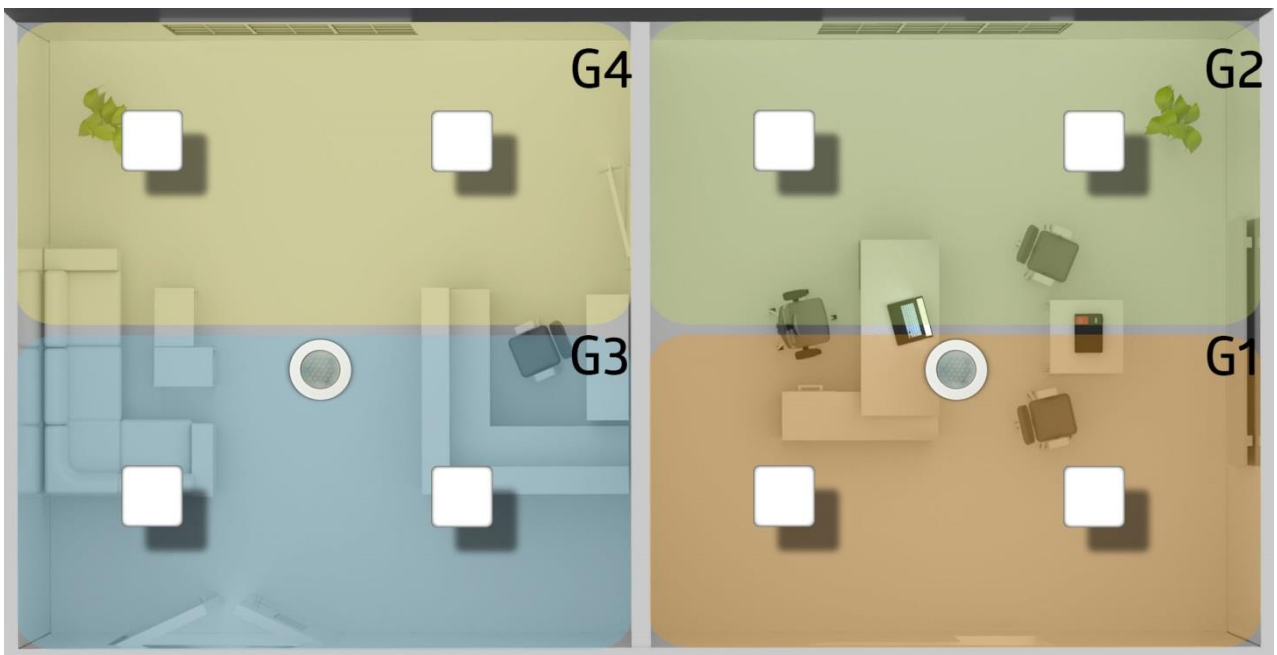
4.5.2. Office (DUO mode)



4.5.3. Office and foyer

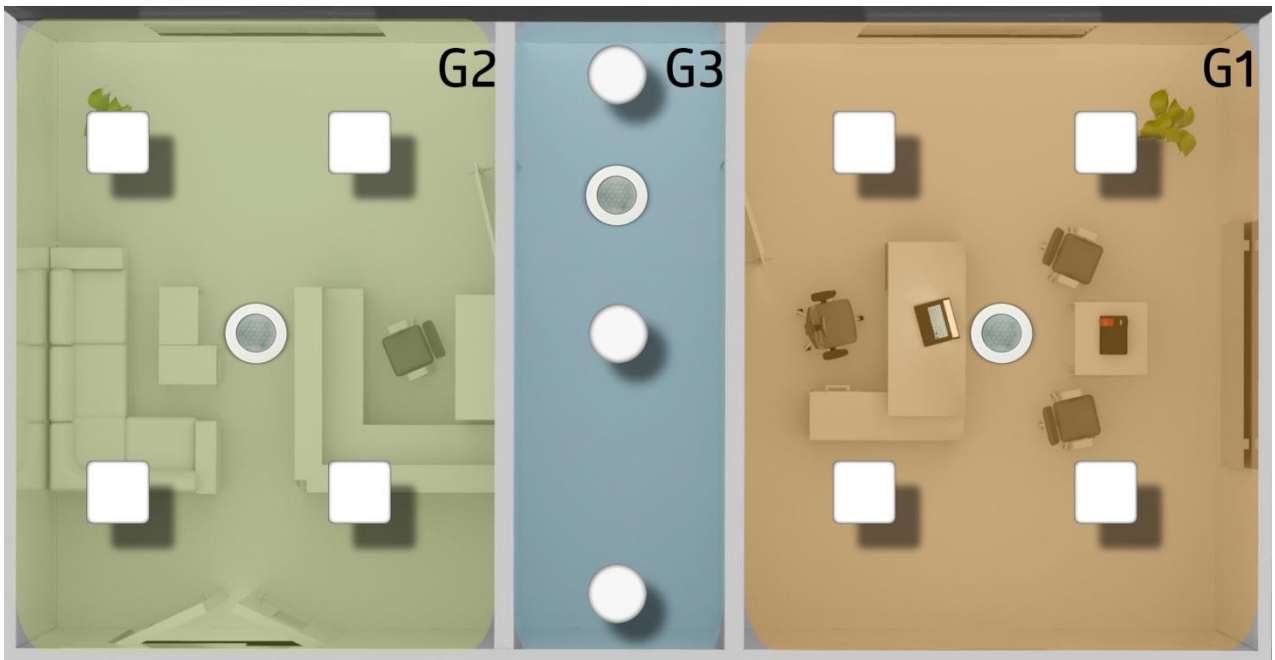


4.5.4. Office and foyer (DUO mode)

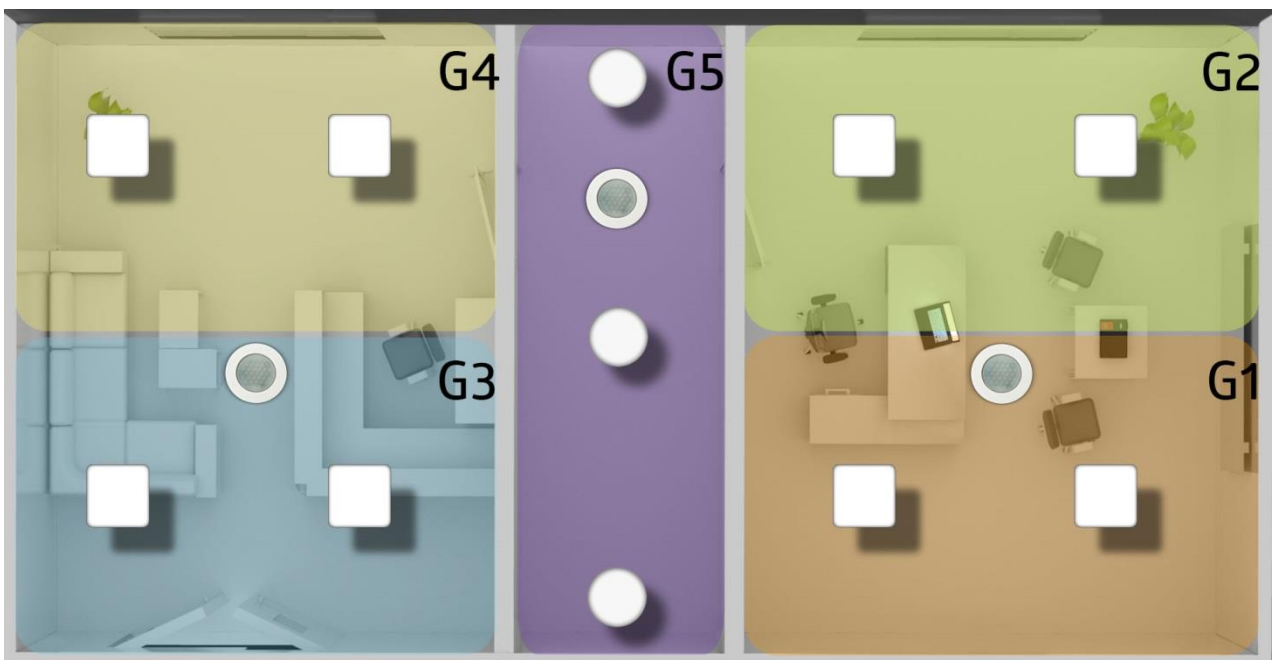


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4.5.5. Office, foyer and corridor

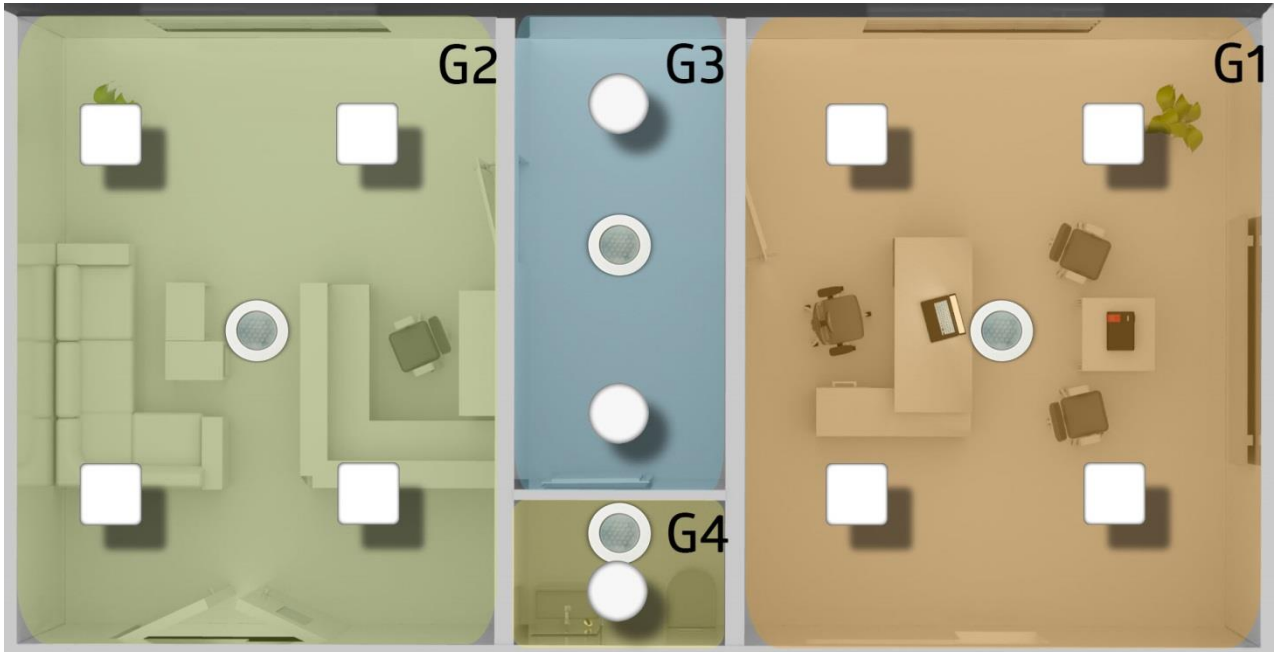


4.5.6. Office, foyer and corridor (DUO mode)

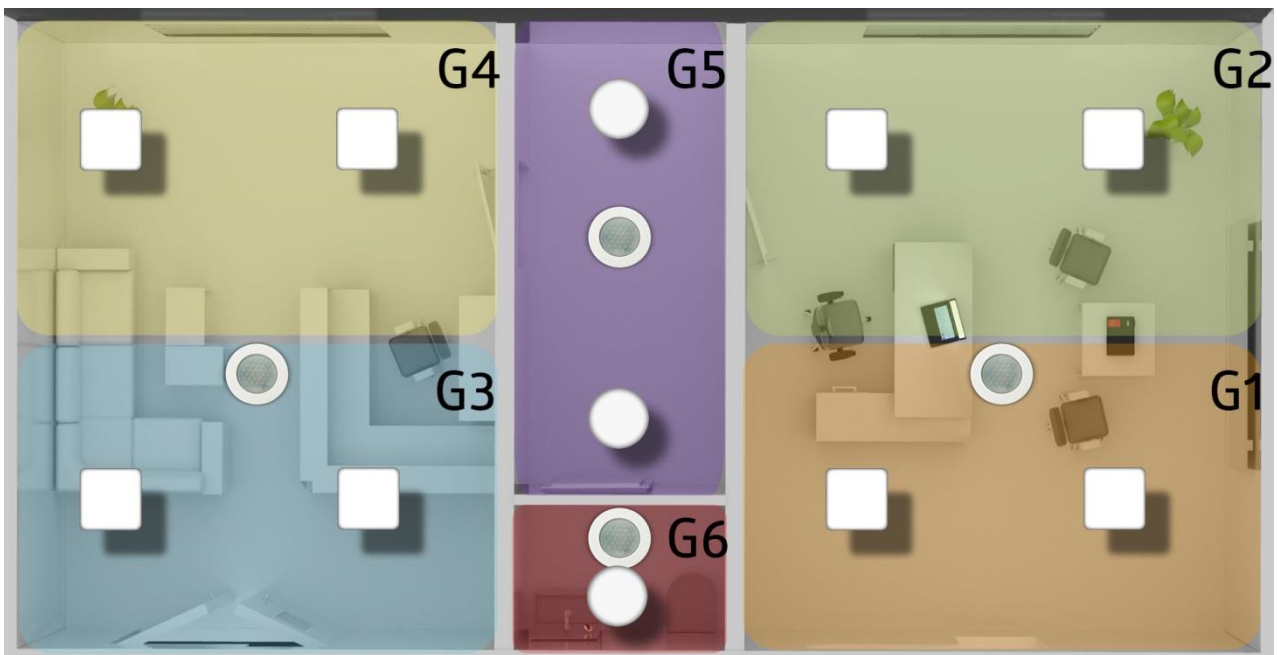


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4.5.7. Office, foyer, corridor and WC



4.5.8. Office, foyer, corridor and WC (DUO mode)



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5. Commissioning

5.1. Understanding the DALI LINK App functional principle

5.1.1. Rolls in DALI LINK

The DALI LINK App is designed for 2 rolls:

- Installer/Integrator
- End customer/room user

In order to be able to access the functional areas of the app which concern the addressing and parameterisation of the devices, a QR code must be scanned via the smartphone. The QR code is supplied with the push-button module type "PBM-DALILINK-4W-BLE".



Note: A QR code sticker is already on the push-button module, another QR code sticker is loose in the packaging of the push-button module type "PBM-DALILINK-4W-BLE".

Both roles have access to the scene menu where scenes can be created, saved, modified and deleted.



Note: The database of device parameters is kept redundantly in the app and in the devices. Physically, device parameters are located in the devices themselves and are not lost in the event of voltage

loss. However, the database of scene and device names is located only on the smartphone.

5.1.2. Protection mechanisms/Access permissions

B.E.G. DALI LINK provides 2 protection mechanisms to allow access only to authorised persons:

- Access to hardware (push-button module with Bluetooth) only possible with 6-digit password (PIN code)
- Access to configuration menu in App only possible with QR code (supplied with push-button module)

5.2. Preparatory measures on the smartphone

5.2.1. Install DALI LINK App

The free DALI LINK app can be found in the Apple ("iTunes") and Google ("Play Store") app stores using the search term "DALI LINK".

5.2.2. Activate Bluetooth

In order for the app to have access to the Bluetooth interface, Bluetooth must be activated in the smartphone's system settings.

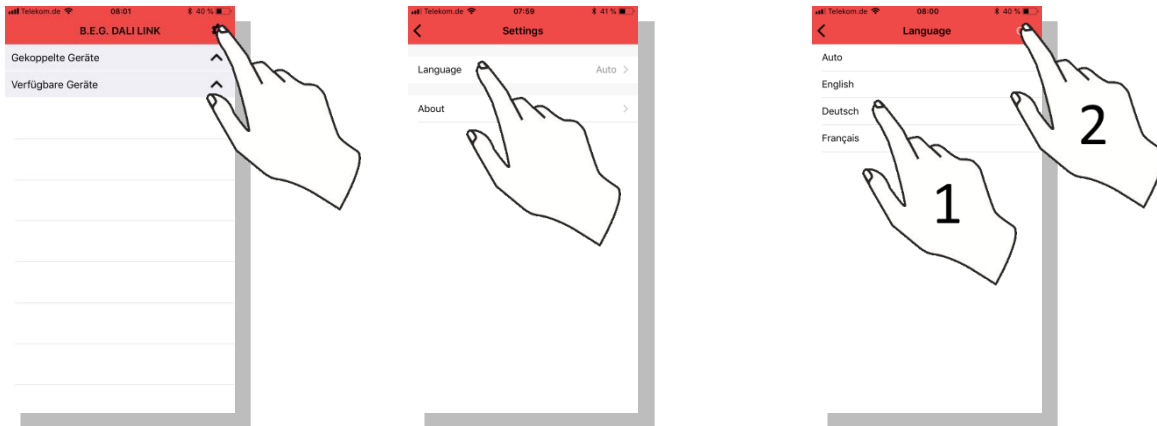
5.2.3. Allow camera access

For smartphones with iOS operating system, access to the camera via the "B.E.G. DALI LINK" app must be manually accepted in the system settings for "Privacy".

5.3. Preparatory measures in the app

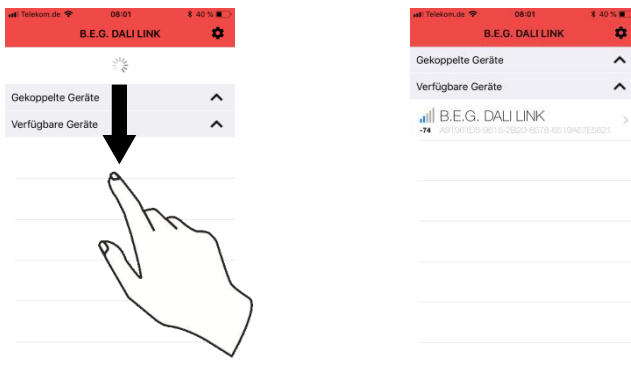
5.3.1. Select language

In the default setting, the app automatically obtains the information about the desired language from the smartphone's operating system ("Auto"). The manual selection of a desired language prevents this automatic setting.



5.3.2. Find pairable Bluetooth devices

The list of connectable devices can be updated at any time with a wipe downwards.



Tip: The blue bars indicate how strong the Bluetooth radio signal is. The more bars, the closer the distance to the push button module – Therefore, this display can also help to locate the push button module more quickly if several push button modules are within range.

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DALI LINK

5.3.3. Connect with DALI LINK push-button module

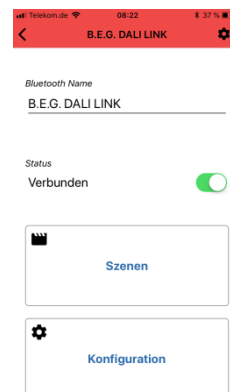
The connection with the DALI LINK push-button module is initiated by tapping on the front of the connectable device:



Note: The successful connection setup is acknowledged with a signal tone from the push-button module.

5.3.4. Enter Bluetooth PIN code (password)

In the factory state - accordingly also after a hardware reset - the password, which is requested once during the first connection setup, is: **123456**



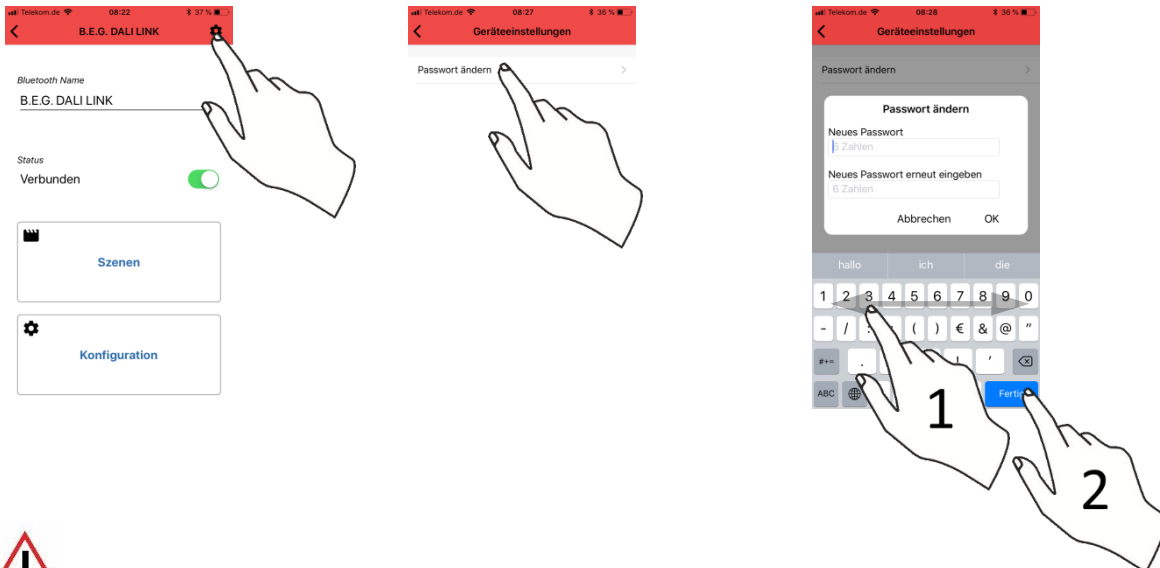
Attention: Please change your password immediately after this step, as it is very likely that you will forget to change it at a later date!

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DALI LINK

5.3.5. Change Bluetooth PIN code (password)

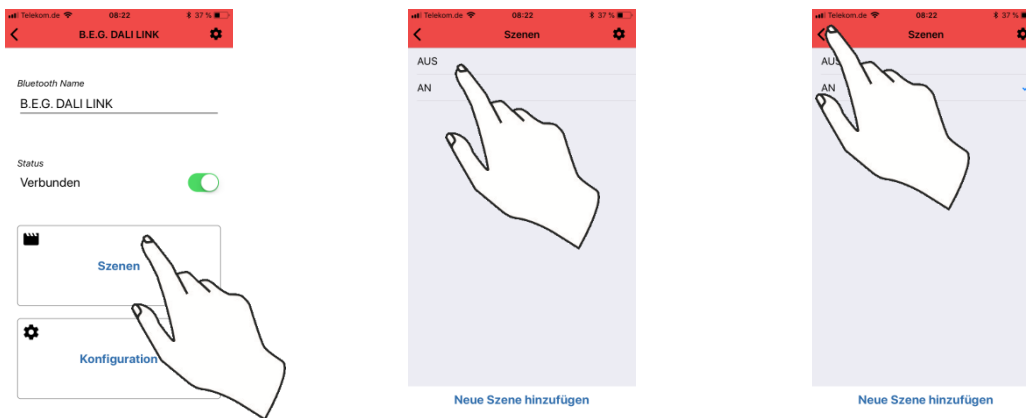
Change the password so that persons without authorisation cannot access the lighting control system via Bluetooth!



Attention: If after changing the password the reconnection is interrupted with an error message, delete/ignore all DALI LINK devices in the system settings - category "Bluetooth" - and try again afterwards.

5.3.6. Make sure that you are connected to the correct device.

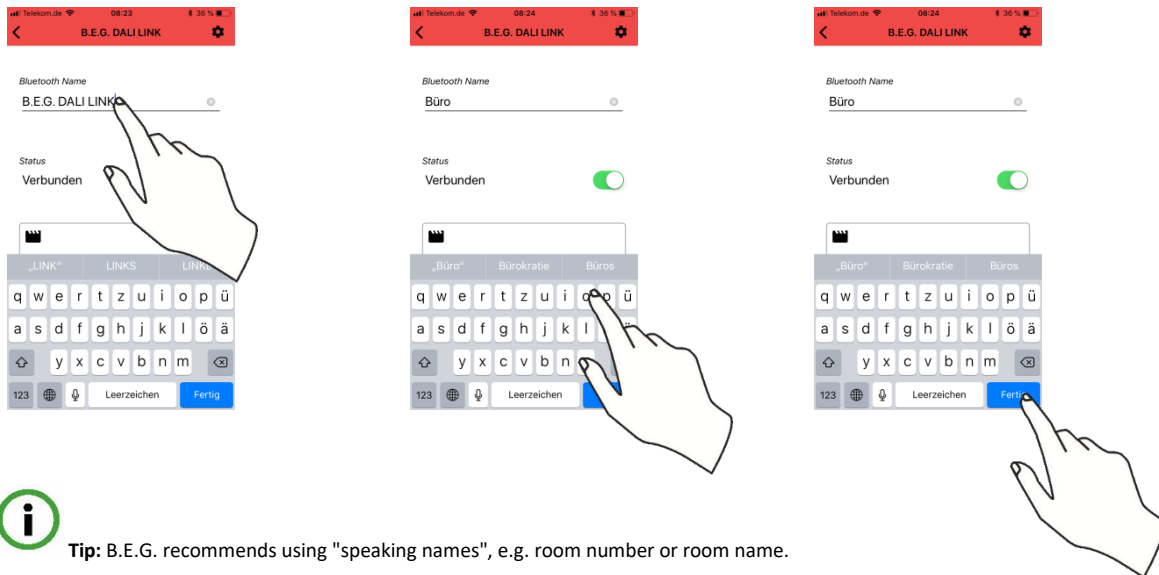
In order to ensure that you are connected to the correct device, the light can be switched on and off in the scene menu before the actual commissioning.



5.3.7.

5.3.8. Assign the name of the push-button module

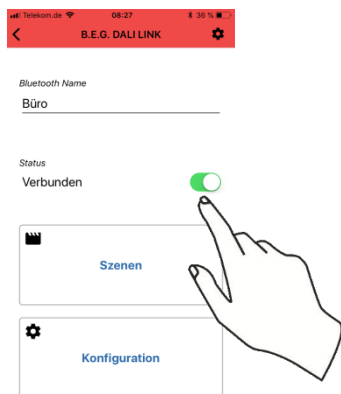
The default name "B.E.G. DALI LINK" can now be adapted to the conditions. The "Bluetooth Name" is only stored on the smartphone.



Tip: B.E.G. recommends using "speaking names", e.g. room number or room name.

5.3.9. Change connection status (disconnect and reconnect)

The connection to the DALI LINK push-button module can be disconnected and reconnected via a slide control.



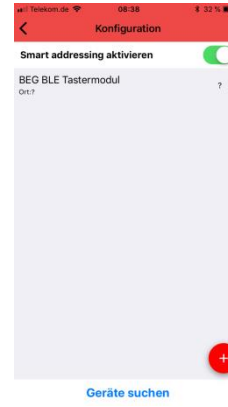
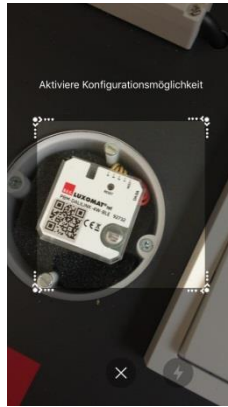
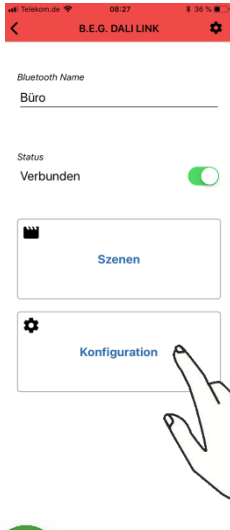
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DALI LINK

5.4. Commissioning procedure

5.4.1. Enable configuration mode with QR code

To access the configuration menu, the correct QR code must be scanned.



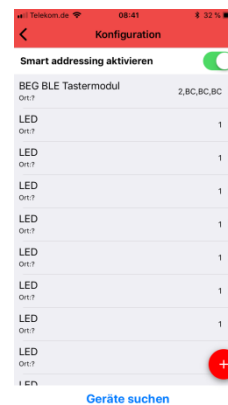
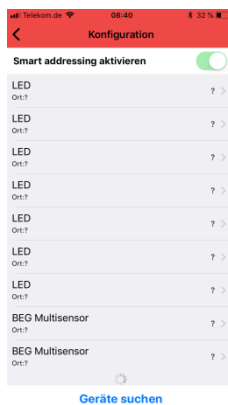
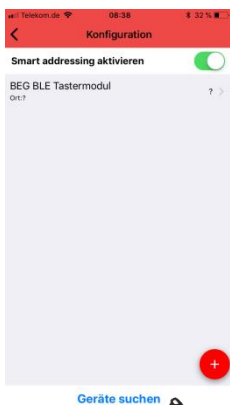
Tip: B.E.G. recommends that installers attach the second QR code enclosed in the packaging of the push-button module to the project documents.

5.4.2. Step 1: Addressing devices (short address assignment)

"Smart addressing" can be used simultaneously for initial commissioning and maintenance procedures and is already activated in the default setting. With this function an addressing method is used, which automatically...

- addresses new devices and adds them to the device list
- includes already addressed devices in the device list
- solves problems with possible duplicate short addresses

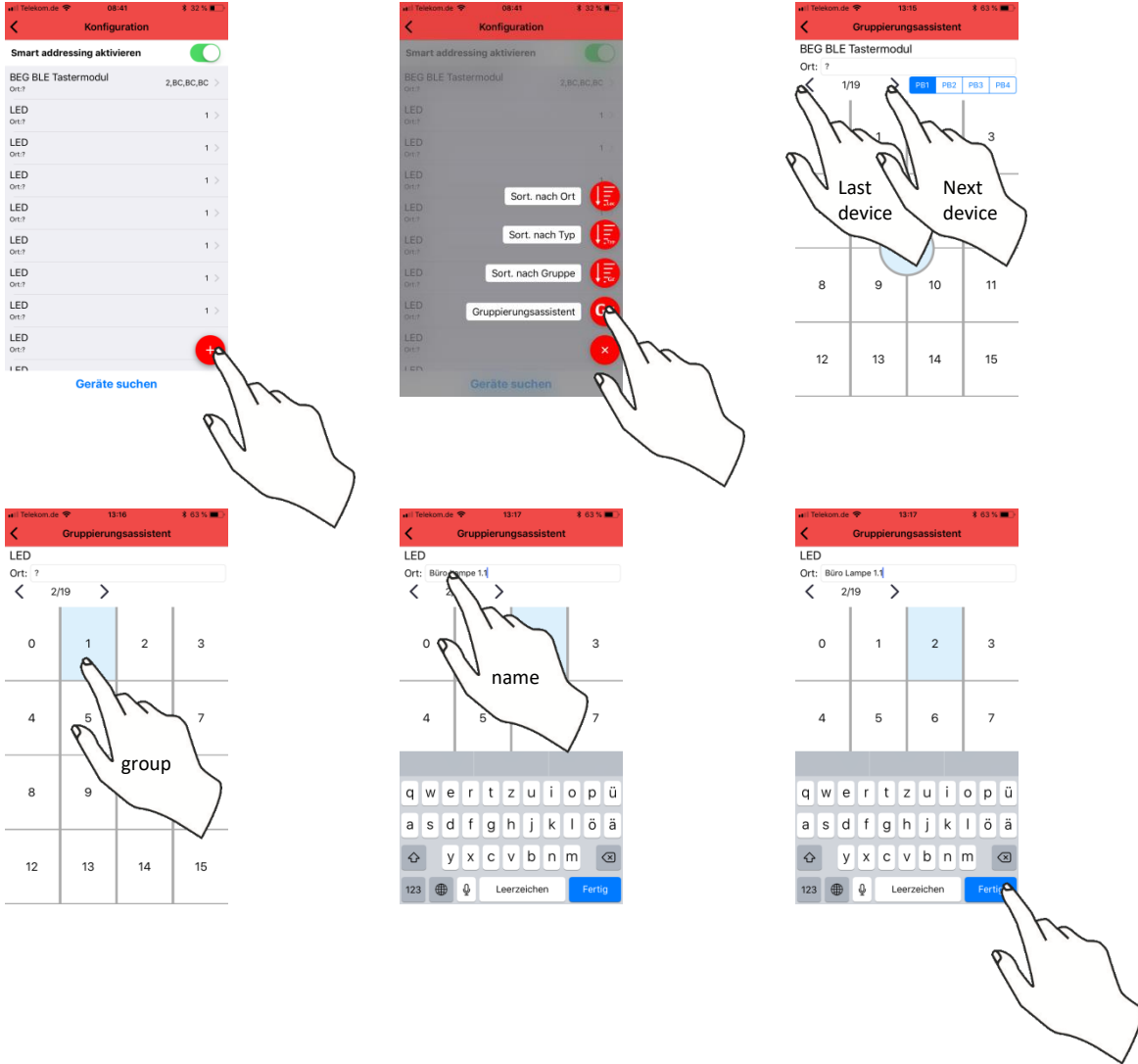
If "Smart addressing" is deactivated, all devices are reset to factory settings before the addressing process.



Attention: Only deactivate "Smart addressing" if you are sure that the device settings of all connected participants may be overwritten!

5.4.3. Step 2: Group and name devices

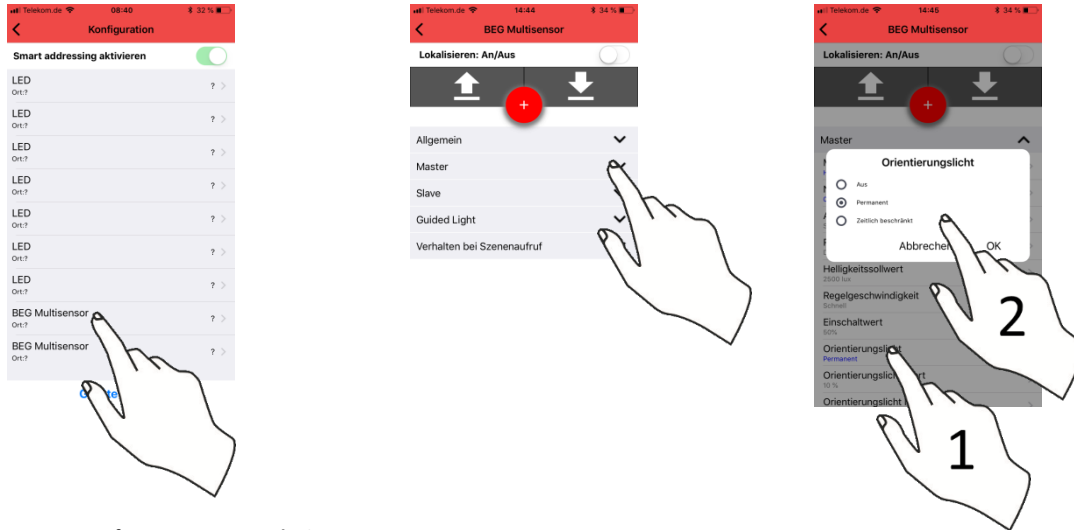
The grouping wizard facilitates the assignment of a group address and also offers the option of naming each device individually.



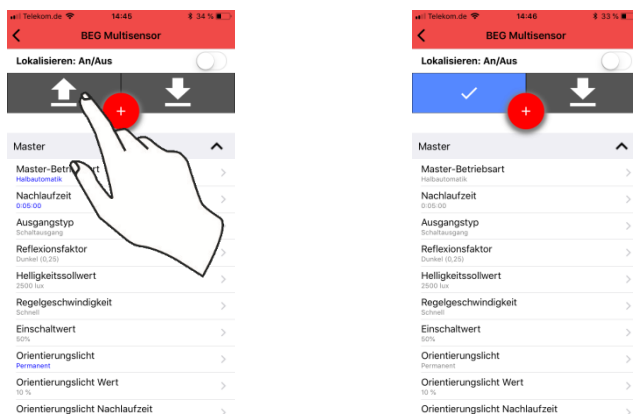
5.4.4. Step 4: Set and manage parameters

5.4.4.1. Set parameters

Now the parameters are set, which must be used in the project engineering due to the requirements.



5.4.4.2. Transfer parameters to device

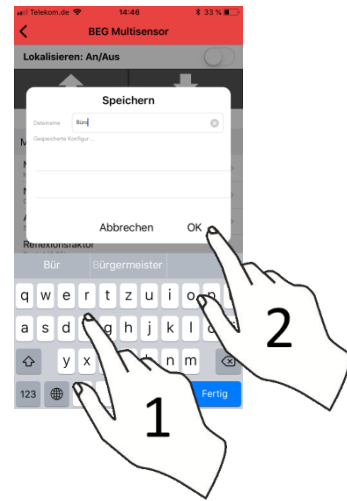
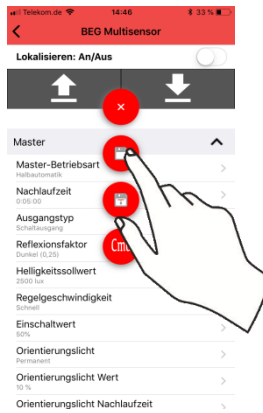
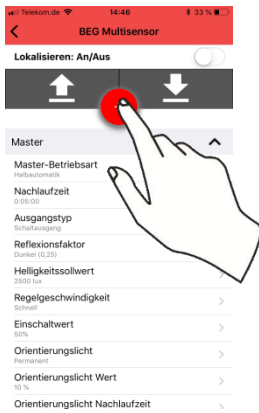


Tip: Blue coloured values are only stored in the app, not in the device! Remember to transfer the set values to the device with the arrow key (up arrow).

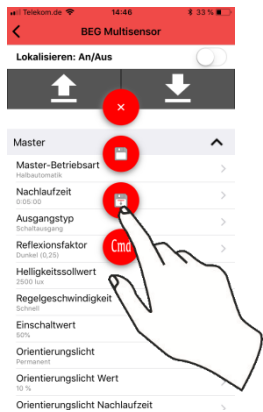
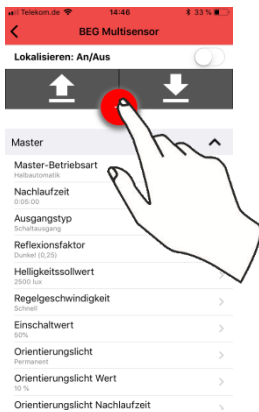
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DALI LINK

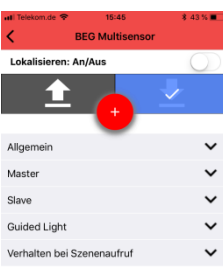
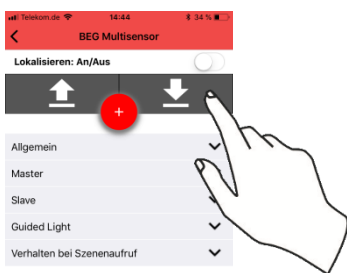
5.4.4.3. Save / copy parameter set to App



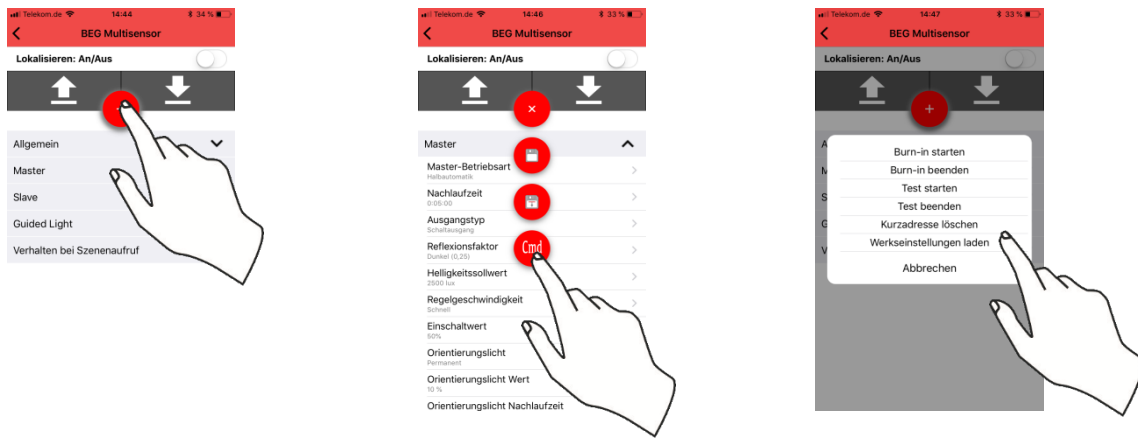
5.4.4.4. Load / insert parameter set from App



5.4.4.5. Read all parameters from device again



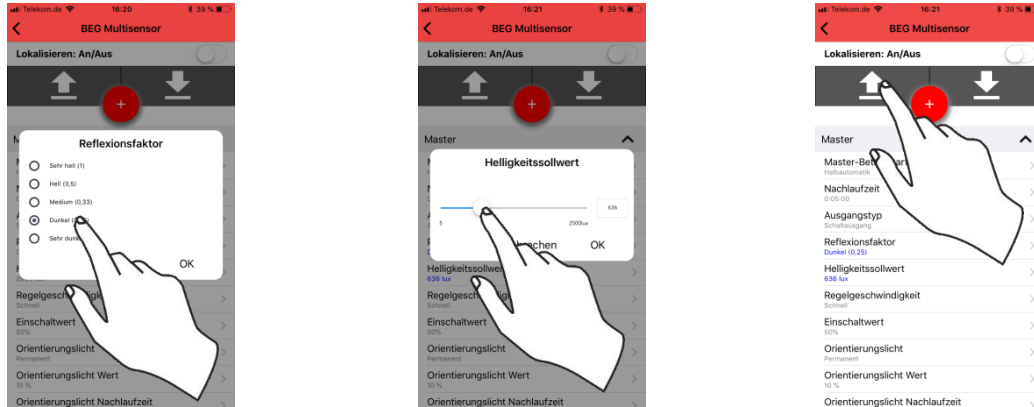
5.4.4.6. Load factory setting



5.4.5. Step 5: Calibration/adjustment of daylight-dependent regulation

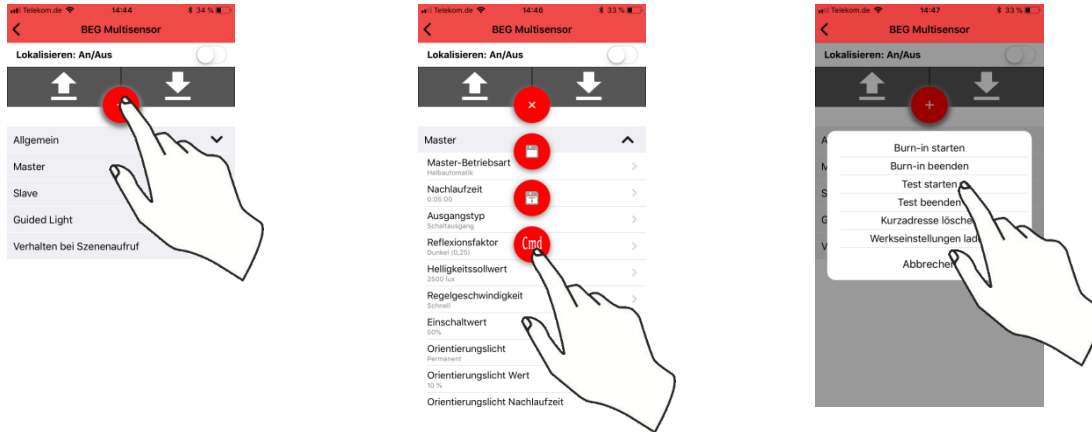
- a) Darken the room
- b) Set the reflection factor (for a detailed explanation, see the "Functions in Detail" section).
- c) Place the calibrated luxmeter under the sensor.
- d) Change the lux set value parameter until the desired lux value is displayed on the calibrated lux meter.

Once all the necessary device parameters for automatic light control have been stored, a practical test of the application should always be carried out.



5.4.6. Step 6: Test and adjust detection range

Test mode speeds up the process of testing and adjusting the detection range.



Tip: There are two ways for changing the detection zone after installation:

- Digitally via a parameter that divides the sensitivity of the sensors into 3 steps
- Mechanically via the supplied blinds

5.4.7. Step 7: Documentation / QR Code Retention

In addition to the documentation in which requirements and final function parameters have been recorded, the QR code enclosed with the push-button module must also be retained at your own discretion.



Attention: If the QR code can no longer be found, the push-button module must be replaced. This means that all names have to be reassigned. The QR code is located in 2 places:

- On a sticker that is already attached to the push-button module
- As a loose sticker in a plastic bag in the packaging of the push-button module

5.5. Maintenance processes

5.5.1. Replace defective DALI devices

In order to replace a defective DALI device, it must first be uniquely identified. The localisation function in the view of the respective device parameter serves this purpose. The procedure for an exchange is as follows:

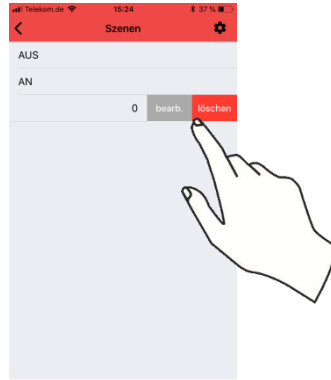
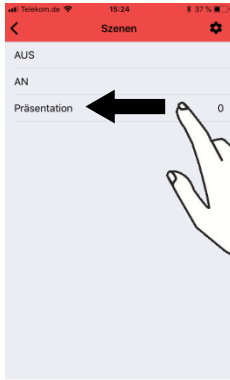
- Uniquely identify the device
- Save parameter set
- Delete short address (device disappears from the list)
- Replace device
- Press "Find devices" with "Smart addressing" activated.
- Load parameter set to new device

6. Manage and retrieve scenes

6.1. Understanding the Scene manager

Up to 16 different lighting scenes can be created with the scene manager. The memory banks stored in the electronic ballasts (EB) are used for this purpose, which guarantees a very homogeneous and accurate reaction of the luminaires. The scene ID used in the background is displayed on the right side of the screen as a hint for each scene created. This number can also be used for orientation if a push-button has previously been prepared for scene control (example: a double button has been programmed so that the left button activates scene 0 and the right button scene 1). This means that the first two scenes in the app can always be called up also via the double button.

6.3. Edit or delete scene



Programmable functions in detail

6.4. B.E.G. Multi-sensor

B.E.G.

Multi-sensor

GENERAL INFORMATION

PARAMETER DESIGNATION	Values	Factory setting	Meaning	Use cases
DESTINATION	G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, G12, G13, G14, G15, BROADCAST (BC)	BROADCAST (BC)	The set group address is used both as "destination address" (for commands to lights) and as "sender address" (for "B.E.G. motion"). Only one group or broadcast can be selected. BROADCAST means that commands are sent to all connected luminaires. If a group is selected, only those lights react to the commands which have previously been assigned the same group address.	Broadcast communication is suitable for simple office applications and has the advantage that luminaires do not necessarily have to be localised and grouped. Group communication can realise more complex or multi-room applications, but requires the localisation and grouping of luminaires.
SENSITIVITY OF MOTION DETECTION	High, Medium, Low	High	The higher the motion detection sensitivity, the more frequently and quickly motion is detected.	Limiting sources of interference (e.g. caused by copiers or ceiling outlets of ventilation systems)

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Multi-sensor

MASTER

PARAMETER DESIGNATION	Values	Factory setting	Meaning	Use case
MASTER MODE	Full automatic, semi-automatic, CdS, master function off	Full automatic	With this parameter, the operating mode of the integrated application controller can be activated, which can send DALI commands to the luminaires.	
	Full automatic		In full automatic mode, the multi-sensor reacts to movement and switches the light on and off automatically. The set brightness switch-on threshold and follow-up time for the switch-off are taken into account. If the regulation output is activated, the set brightness switch-on threshold also represents the brightness set value. If the light is switched off via a push-button, the automatic switch-on function remains deactivated until the follow-up time has elapsed.	Foyer, hallway, WC
	Semi-automatic		The semi-automatic mode is almost identical to the full automatic mode. The difference is that the light must always be switched on via a push-button. Special feature: For safety reasons, the full automatic mode is active for a period of 10 seconds after the automatic switch-off by the multi-sensor.	Office, conference room, relaxation room
	CdS		In CdS mode, motion-dependent lighting control is deactivated. This means that only the set brightness switch-on threshold is taken into account in the switch-on and switch-off logic. If the control output is activated (see parameter ID MS1 P2.3), the set brightness switch-on threshold also represents the brightness set value. When motion is detected, the multi-sensor still sends the "B.E.G. motion" telegram with the associated sender address to the DALI bus.	Foyer, corridor, office, conference room - if the lighting system is switched on and off via mains isolation.
	Master function off		The value "Master function off" deactivates all functions that exist for direct control of luminaires. When motion is detected, the multi-sensor still sends the "B.E.G. motion" telegram with the associated sender address to the DALI bus.	Extension of the detection area within a room/group

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FOLLOW-UP TIME	1s - 120m	10m	When no more movement is detected, the follow-up time begins, after which the light is switched off. Special feature in full automatic mode: If the light is switched off manually via a push-button, the light remains off as long as movement is detected plus the set follow-up time.	The follow-up time ensures that people who do not move for a while do not suddenly sit in the dark. The follow-up time can be extended to avoid unwanted switching cycles. It can be shortened to save more energy costs. Short follow-up times (less than 10 minutes) are only suitable if LED lights are used and/or the orientation light function is used.
OUTPUT TYPE	Control output, switching output	switching output	This parameter determines whether the light is automatically dimmed to an adjustable brightness set value (regulation output) or not (switching output) depending on the proportion of daylight.	The switching output is suitable for rooms without daylight (e.g. storage room, technical room, WC). The regulation output saves additional energy costs and is suitable for all rooms with a high proportion of daylight.
BRIGHTNESS OF THE REFLECTION SURFACE	Very bright, bright, medium, dark, very dark	Very bright	The brightness of the reflection surface represents a multiplier for the parameter "Brightness set value". The brighter the reflection surface, the better the luminous efficacy on the ceiling and the higher the reflection factor. "Very bright", for example, requires a white floor and white furniture and corresponds to a reflection factor of 1, i.e. the application logic assumes that the LUX value measured on the ceiling almost corresponds to the LUX value measured on the desk or floor. "Very dark", on the other hand, can be the first choice for a dark carpet with black furniture and corresponds to a reflection factor of 0.2 (1/5), i.e. the application logic assumes that the LUX value measured on the ceiling is 5 times lower than the LUX value measured on the desk or floor.	Calibration of the "Brightness set value" parameter. In case of doubt, the value can be set to "Dark". This setting corresponds to a reflection factor of 1:4 (only a quarter luminous efficacy on the ceiling compared to the luminous intensity on the desk or floor). In most cases this leads to a slight oversteering of the artificial lighting.
BRIGHTNESS SET VALUE	10-2500 LUX	2500 LUX	This parameter represents both the brightness set value for daylight-dependent regulation and the brightness switch-on threshold, each on a reflection surface (desk, floor, etc.). The accuracy of the set value depends on the setting of the "Brightness of the reflection surface" parameter. The value "2500" corresponds to "infinite", i.e. the application logic always assumes with this setting that it is "too dark" regardless of the real conditions.	Adjust the desired brightness set value on the desk or above the floor. In a darkened room, place a calibrated LUX measuring instrument below the multi-sensor and change the value until the desired brightness set value is reached on the measuring instrument. With the setting "2500", applications with purely motion-dependent lighting control can be implemented without taking brightness into account.

DALI LINK

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Multi-sensor

MASTER

REGULATION SPEED	Fast, moderate, slow	Fast	If the lighting conditions in the room change, the regulation algorithm begins to work. This parameter influences the speed of the regulation to the brightness set value.	In some applications, fast passing clouds can be the cause that the regulation leads to disturbances for room users. This can be remedied by slowing down the regulation.
REGULATION DELAY	0s - 20s	0s	If the lighting ratio in the room changes, the regulation algorithm starts working immediately in the factory setting of this parameter (0s). The so-called regulation cycle starts. If this parameter is changed, the regulation cycle is not started for the duration of this parameter. If, after the set duration, the change in lighting conditions is still present, the regulation cycle starts. A new regulation cycle can only be started and therefore delayed after a regulation cycle has elapsed. The regulation oscillates to the brightness set value and remains there for 3 seconds.	Sometimes it can happen that the regulation causes room users to feel disturbed if, precisely in the area of the light measurement, the lighting conditions change more frequently and quickly than average due to passers-by or a constantly changing work surface. This can be remedied by delaying the regulation.
SWITCH-ON VALUE (SOFT-START PLUS)	5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, calculated	100%	The settings of this parameter influence the switch-on behaviour immediately after movement has been detected. In semi-automatic mode, this parameter is only relevant if the light is switched on again by a detected movement from the orientation light level.	A gentle increase curve of the light level can be used to avoid glare when entering the room (e.g. 10%). If the "Output type" parameter is set to "Switching output", this parameter corresponds to the light value held for the duration of the follow-up time.
ORIENTATION LIGHT (PLUS)	Off, time-limited, Permanent	Off	The orientation light (OL) begins after the regular follow-up time and can be either time-limited or infinite/permanently active. If the output type "regulation output" is set, the OL phase continues to regulate to the set brightness set value. If the brightness set value is exceeded for at least 5 minutes, the light switches off. If the lighting conditions then change again so that the brightness set value is undershot, the orientation light switches on again if the time limit has not yet expired. If the output type "Switching output" is set, the set orientation light value in % is kept within the time limit during the OL phase, whereby no automatic switch-off takes place if the brightness set value is exceeded.	Can enhance the user's sense of security and provide orientation at night to the extent that areas that are not nearby but can still be seen do not appear pitch-dark.
ORIENTATION LIGHT VALUE	5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%	20%	Adjusts the light value of the orientation light.	The lower the value, the higher the energy saving. The higher the value, the better the user's orientation and sense of security.

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MASTER

ORIENTATION LIGHT FOLLOW-UP TIME	1s - 120m	5m	Adjusts the duration of the orientation light.	The time limitation of the orientation light can additionally save energy.
BEHAVIOUR WITH VOLTAGE SUPPLY	No action, light on, light off.	Light on	Immediately after switching on the DALI bus voltage, an on or off command is sent to the luminaires. If you want to leave the behaviour at voltage supply to the luminaires themselves (via the parameter "Switch-on value / Power On Level" in the EBs), the value "No action" must be selected.	If, for example, the complete supply voltage of the lighting system is disconnected from the mains overnight, the "Light off" setting can save energy when the supply voltage is reapplied the next morning. Please note that the device does not switch on the light in the first 20 seconds (initialisation time) despite movement.
REACTION AT B.E.G. LOCK	Lights off, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, No action	100%	The "B.E.G. Lock" command, which can be sent by a DALI LINK button or an activated scene, puts the destination device into a "sleep mode": all automatic functions (regulation and follow-up times) are deactivated in this way. Before the device switches to sleep mode, it can send a command to the lights that can be set using this parameter. If this is not desired, the value "No action" must be selected.	At events or other special moments (e.g. surgery in the hospital, cleaning before or after office hours, examination situations, etc.) it may be desirable for the lighting system to operate without possible distracting automatic functions. This function can also be used to define the light output with which the lighting system is to be operated during this time.
REACTION AT B.E.G. UNLOCK	Lights off, 5%, 10%, 20%, 30%, 40%, 50%, 60%, 70%, 80%, 90%, 100%, No action	Light off	Before the device changes back from sleep mode to the set master operating mode with the "B.E.G. Unlock" command, it can send a command to the luminaires that can be set using this parameter. If this is not desired, the value "No action" must be selected. The value "Light off" corresponds to the command "B.E.G. Central Off" (see parameter description of the push-button module), with which the selected full automatic light control is immediately reactivated.	If the automatic mode is reactivated (after events or special moments - see "Reaction at B.E.G. Lock"), this parameter can be used to restore an "initial state" of the lighting.
BURN-IN TIME (BURN-IN)	1-100h	100h	The regulation output is deactivated during the burn-in time. It can be started with the app command "Start Burn-In" and is terminated with the app command "End Burn-In". It is only active for the lights which are in the group of the controlling device.	If T8 or T5 lamps are used, they must be operated without dimming for a certain period of time in accordance with the operating instructions of the respective manufacturer.
DUO MODE (OFFSET CHANNEL)	Deactivated, Active	Off	If the DUO mode (offset channel) is active, the adjacent, next higher DALI group is automatically controlled in parallel with an adjustable damping factor (offset) in the regulation cycle. Switching the destination address on and off via a push-button also causes the neighbouring DALI group to be switched on and off via the multi-sensor.	The DUO mode is used when there are 2 light bands in a room and one of them (on the window side) is to be controlled with less light output. This leads to further energy savings.

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Multi-sensor

MASTER

DAMPING OFFSET CHANNEL	0%-30%	25%	Damping can be used as a percentage to define how strongly the window light band is controlled to be weaker than the wall light band.	The greater the damping, the greater the energy savings.
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DALI LINK

B.E.G.

Multi-sensor

SLAVE

PARAMETER DESIGNATION	Values	Factory setting	Meaning	Use case
INTERVAL MOVEMENT	1s - 4m15s	10s	Defines the cycle how often a "B.E.G. Motion" command may be sent to the bus.	If a DALI LINK relay with "Alarm" or "Pulse" mode is used, a setting of 2s-3s is required. When using Guided Light with extremely short follow-up times, a reduction of this value can also be advantageous. Please note: The lower the value, the higher the bus load and the associated susceptibility of the overall system to faults. The factory setting is ideal for most applications.

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Multi-sensor

GUIDED LIGHT

PARAMETER	Values	Factory setting	Meaning	Use case
BEHAVIOUR DURING MOVEMENT IN G0-15	Ignore, main light, orientation light	Ignore	Defines how to react to "B.E.G. motion" commands from the respective groups. "B.E.G. motion" from the own target address group is automatically interpreted as "main light" regardless of this parameter. The "Main light" setting starts the normal light control cycle in the device, while "Orientation light" activates the light control cycle after the regular follow-up time. If the orientation light is deactivated per se, it is temporarily activated for "B.E.G. motion" from this group.	With this function, additional energy can be saved while observing safety and comfort aspects (at least orientation light in all visible areas) (non-visible areas are switched off). In small offices with an adjacent foyer, for example, the foyer can always be kept at least in the orientation light as long as someone is in the office. In warehouses, this function can be used to keep adjacent shelf aisles, which are visible, in the orientation light in order to increase the user's sense of safety and at the same time save energy, as a "permanent orientation light" is not needed in all other shelf aisles. Also in stairways, even more energy can be saved without the user noticing.
BEHAVIOUR DURING MOVEMENT IN BC	Ignore, main light, orientation light	main light	See Behavior in G0-15 with the difference that "B.E.G. motion" was sent from a device that has "Broadcast" set as the destination address. In addition, the factory setting here is "Main light".	-

DALI LINK

B.E.G.

Multi-sensor

SCENES

PARAMETER	Values	Factory setting	Meaning	Use case
BEHAVIOUR WITH SCENE 0-15	B.E.G. Lock, B.E.G. Unlock, Auto-Off, Ignore	auto-off	Specifies what should happen to the multi-sensor application logic when a scene is sent to the lights via the DALI LINK smartphone app or a button.	
	B.E.G. Lock.		See parameter description for "B.E.G. Lock".	See use case description for parameter "Reaction to B.E.G. Lock".
	B.E.G. Unlock		See parameter description for "B.E.G. Unlock".	See use case description for parameter "Reaction to B.E.G. Unlock".
	auto-off		If the regulation output is activated, the current regulation cycle is terminated and the regulation is deactivated. However, the automatic switch-off of the lighting (auto-off) over the set follow-up time is still active.	The motion-dependent, automatic switching off of the lighting saves energy costs even when scenes are used.
	Ignore		The application logic of the multi-sensor considers the scene with this setting as irrelevant for luminaires of its own destination address.	Enables scenes to be called in multi-room applications using the broadcast procedure. It thus simplifies scene management and scene recall because the DALI grouping does not have to be observed.

DALI LINK

B.E.G. Multi-sensor

COMMANDS

COMMAND	Meaning	Use cases
START BURN-IN	Starts the burn-in time taking into account the parameter setting.	See parameter "Burn-in time".
END BURN-IN	Manual termination of the burn-in time.	See parameter "Burn-in time".
START TEST	Starts the test mode which switches on the light for 2 seconds each time a movement is detected.	The test mode is suitable for limiting sources of interference or generally for testing the detection range.
END TEST	Ends the test mode	If the test mode is not terminated manually via this command, it is terminated automatically after 3 minutes.
DELETE SHORT ADDRESS	Deletes the short address in the device, releases this short address for reassignment and removes the device from the list.	If control devices or control gears that were already installed in another system are connected to the DALI bus, problems can occur when adding them to the new system (double short addresses). Before you add an already used device to the new system, you should connect it individually to the DALI bus, address it and then delete the short address.
LOAD FACTORY SETTING	Restores the factory setting.	In the event of a fault, the unit can be reset to factory settings, allowing the installation to be checked quickly and easily in accordance with the installation test instructions.

DALI LINK

6.5. B.E.G. Push-button module

B.E.G. Push-button module

PBM 1-4

PARAMETER	Values	Factory setting	Meaning	Use case
DESTINATION	G0, G1, G2, G3, G4, G5, G6, G7, G8, G9, G10, G11, G12, G13, G14, G15, BROADCAST (BC)	BROADCAST (BC)	The set group address is used as the "destination address" (for commands to lights). Only one group or broadcast can be selected. BROADCAST means that commands are sent to all connected luminaires. If a group is selected, only those lights react to the commands which have previously been assigned the same group address.	Broadcast communication is suitable for simple office applications and has the advantage that luminaires do not necessarily have to be localised and grouped. Group communication can realise more complex or multi-room applications, but requires the localisation and grouping of luminaires.
CONTROLLER TYPE	Push-button (NO contact), switch	Push-button (normally open)	The parameter Control type decides whether a time or edge evaluation is to be carried out. In the setting "Push-button (NO)", the states "pressed" and "not pressed" are recorded in time, on the basis of which logical blocks can be stored in the parameters "Short push-button action" and "Long push-button action". The setting "Switch", on the other hand, only evaluates the direction of edges (close contact, open contact), on which basis logical blocks can be stored in the parameters "Positive edge" and "Negative edge".	Push-buttons (normally open contacts) are generally used for simple operation of the lighting. Whereas a "bistable switch", such as a key switch to deactivate and reactivate the automatic system, is used with the B.E.G. commands "Lock/Unlock". The "switch" is often also found in old buildings, which has the advantage of being able to use existing switches with the DALI LINK push-button module.

DALI LINK

B.E.G. Push-button module
PBM 1-4

<p>SHORT KEYSTROKE</p>	<p>Toggle switch (Maximum Value/Off), Off, Maximum Value, Scene, Toggle switch (Scene/Off), Value (%), Toggle switch (Value/Off), B.E.G. Lock, B.E.G. Unlock, B.E.G. Central Off, Deactivated</p>	<p>Toggle switch (maximum value/off)</p>	<p>A short or long key press can either always send the same command or alternately two commands ("toggle"). If no function is desired, the value "Deactivated" must be selected. "Scene" and "Value(%)" always take into account the fade time (FADE TIME) set in the EB and each bring along a further parameter in order to be able to define the scene number or the light value in %. "Maximum value" calls up the maximum value stored in the EB without considering the fade time set in the EB (FADE TIME) and also offers the option of activating a purely time-dependent automatic switch-off function. The associated parameters "Activate follow-up time" and "Follow-up time" appear as soon as the value "Maximum value" has been selected. Once the follow-up time has elapsed, the light remains on for a further 30 seconds, which is announced by briefly switching the light off and on again.</p>	<p>The application possibilities are manifold. The logical block "Maximum value" with activated follow-up time can be used for simple staircase lighting. Attention: Do not use the follow-up time in the push-button module in combination with the follow-up time of a multi-sensor, as this can lead to a conflict that can lead to undesired lighting control.</p>
<p>LONG KEY PRESS</p>	<p>Toggle switch (Up/Down), Step Up, Step Down, Scene, Toggle switch (Scene/Off) Value (%), Toggle switch (Value/Off), B.E.G. Lock, B.E.G. Unlock, B.E.G. Central Off, Deactivated</p>	<p>Deactivated</p>	<p>See description "Short keystroke".</p>	<p>The application possibilities for a long keystroke are as varied as those for a short keystroke. As a rule, however, a long press of the button is used for manual dimming of the lighting. The logical component functions in such a way that the dimming direction changes each time the key is pressed again.</p>

DALI LINK

B.E.G. Push-
button module
PBM 1-4

POSITIVE EDGE	Toggle switch (Maximum Value/Off), Off, Maximum Value, Scene, Toggle switch (Scene/Off), Value (%), Toggle switch (Value/Off), B.E.G. Lock, B.E.G. Unlock, B.E.G. Central Off, Deactivated	-	<p>A positive or negative edge always sends only the same command (logical blocks with "toggle switches" have no function). If no function is desired, the value "Deactivated" must be selected. "Scene" and "Value(%)" each have an additional parameter to define the scene number or the light value in %. "Maximum value" also offers the option of activating a purely time-dependent automatic switch-off function. The associated parameters "Activate follow-up time" and "Follow-up time" appear as soon as the value "Maximum value" has been selected. Once the follow-up time has elapsed, the light remains on for a further 30 seconds, which is announced by briefly switching the light off and on again.</p>	See use cases "Short keystroke".
NEGATIVE EDGE	Toggle switch (Maximum Value/Off), Off, Maximum Value, Scene, Toggle switch (Scene/Off), Value (%), Toggle switch (Value/Off), B.E.G. Lock, B.E.G. Unlock, B.E.G. Central Off, Deactivated	-	See description "positive edge".	See use cases "Short keystroke".
DURATION OF LONG KEYSTROKE	500ms, 600ms, 800ms, 1s, 1.2s, 1.5s, 2s, 3s	500ms	This parameter is used to set when the application logic assumes a "long keystroke".	500ms are ideal for most applications.
BEHAVIOUR UPON VOLTAGE SUPPLY	No action, light on, light off.	Light on	Immediately after switching on the DALI bus voltage, an on or off command is sent to the luminaires. If you want to leave the behaviour upon voltage supply to the luminaires themselves (via the parameter "Switch-on value / Power On Level" in the EBs), the value "No action" must be selected.	If, for example, the complete supply voltage of the lighting system is disconnected from the mains overnight, the "Light off" setting can save energy when the supply voltage is reapplied the next morning.

DALI LINK

B.E.G. Push-button module

COMMANDS

COMMAND	Meaning	Use cases
DELETE SHORT ADDRESS	Deletes the short address in the device, releases this short address for reassignment and removes the device from the list.	If control devices or operating devices that were already installed in another system are connected to the DALI bus, problems can occur when adding them to the new system (double short addresses). Before you add an already used device to the new system, you should connect it individually to the DALI bus, address it and then delete the short address.
LOAD FACTORY SETTING	Restores the factory setting.	In the event of a fault, the unit can be reset to factory settings, allowing the installation to be checked quickly and easily in accordance with the installation test instructions.

DALI LINK

6.6. B.E.G. Relay

B.E.G. Relay

GROUP

PARAMETER	Values	Factory setting	Meaning	Use case
GROUP 0-15	Deactivated, Activated	Deactivated (corresponds to Broadcast)	The set group address can be checked and changed here. Normally, the group address is assigned via the grouping assistant. Attention: In connection with automatic functions, only one group may be selected in DALI LINK at a time, as control devices can only control and monitor one group.	Checking and changing the grouping of a particular luminaire without using the grouping assistant.

SCENE

PARAMETER	Values	Factory setting	Meaning	Use case
SCENE 0-15	Off, On with [%]	Off	Each scene can be activated or deactivated. If a scene is activated, the stored dimming value is taken into account. Normally, however, scenes are managed via the Scene menu.	Checking and changing the scene settings of a specific luminaire without accessing the scene menu.

VALUE

PARAMETER	Values	Factory setting	Meaning	Use case
MAXIMUM VALUE (MAX LEVEL)	1%-100%	100%	Defines the maximum possible dimming value of the connected lamp.	Energy saving by limiting the maximum light output.
MINIMUM VALUE (MIN LEVEL)	1%-100%	1%	Defines the minimum possible dimming value of the connected lamp.	For safety reasons, it may be necessary to set the minimum value higher so that the luminaire cannot be dimmed down too much during the regulation cycle.
VALUE IN CASE OF SYSTEM FAILURE (SYSTEM FAILURE LEVEL)	1%-100%	100%	Defines the dimming value which is to be used in the event of a failure of the DALI bus voltage supply or a short circuit on the DALI line.	Safety lighting in the event of faults in system or control devices.
VALUE FOR VOLTAGE SUPPLY (POWER-ON LEVEL)	1%-100%	100%	Defines the dimming value which is to be called up when the luminaire is supplied with voltage and the DALI bus voltage is applied simultaneously.	With B.E.G. DALI LINK, the behaviour when voltage is supplied is usually determined by the control devices. In the event of faults in the control devices or if the control device is set accordingly, the luminaire can also provide the application logic that the light should be on, dimmed or off when voltage is applied.
FADE TIME	0s, 0.7s, 1s, 1.4s, 2s, 2.8s, 4s, 5.7s, 8s, 11.3s, 16s, 22.6s, 32s, 45.3s, 64s, 90.5s	0s (second)	The fade time defines the duration required for dimming up from 0% to 100% or for dimming down from 100% to 0%.	If scenes are called up or values are sent via the push-button module or the DALI LINK Smartphone App, this setting is taken into account.

DALI LINK

VALUE

FADE RATE	2.8st/s, 4st/s, 5.6st/s, 7.9st/s, 11.2st/s, 15.8st/s, 22.4st/s, 31.6st/s, 44.7st/s, 63.2st/s, 89.4st/s, 126.5st/s, 178.9st/s, 253st/s, 357.8st/s	44.7 st/s (steps/second)	No function - for future applications.	No function - for future applications.
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FLANKS

PARAMETER	Values	Factory setting	Meaning	Use case
POSITIVE EDGE ON	0%-100%, Ignore	1%	Defines the threshold value as of when the relay contact is to be closed with an increasing dimming value sequence.	Example setting: 1% relay contact is closed during dimming up if the dimming value is greater than or equal to 1%.
POSITIVE EDGE OFF	0%-100%, Ignore	Ignore	Defines the threshold value as of when the relay contact is to be opened with an increasing dimming value sequence.	Only for complex and advanced use cases
NEGATIVE EDGE ON	0%-100%, Ignore	Ignore	Defines the threshold value as of when the relay contact is to be closed with a descending dimming value sequence.	Only for complex and advanced use cases
NEGATIVE EDGE OFF	0%-100%, Ignore	1%	Defines the threshold value as of when the relay contact is to be opened with a descending dimming value sequence.	Example setting: 1% relay contact is opened during dimming down if the dimming value is less than or equal to 1%.
LOAD ERROR HOLD TIME	0s-2540s, Infinite	0s	For future applications	For future applications

DALI LINK

MASTER

PARAMETER	Values	Factory setting	Meaning	Use case
OPERATING MODE	Switching function, Cut-off, HVAC, Impulse, Alarm, Blinds	Switching function	The DALI LINK relay module is not only a device type 7 ("switching function"). According to the DALI LINK principle of distributed intelligence, it also has its own application controller with various application programs that can be activated with this parameter.	
	Switching function	-	Switching function according to IEC 62386-101-102-208	Switching lamps on and off without a DALI driver
	Cut-off	-	The cut-off function can at choice also be used to disconnect lamps with DALI drivers across groups and using additional parameters with delay from the mains when the light is off.	Additional energy savings, as the stand-by power consumption of DALI control gear is prevented.
	HVAC	-	Uses the "B.E.G. motion" telegram sent by multi-sensors as a trigger for the application logic. As soon as movement is detected, the relay contact closes for the duration of the set switch-off delay. A switch-on delay can also be activated.	Additional energy savings through motion-dependent control of heating, ventilation and air conditioning.
	Impulse	-	Uses the "B.E.G. motion" telegram sent by multi-sensors as a trigger for the application logic. As soon as movement is detected, the relay contact closes for 2 seconds. Only after 9 seconds a new pulse can be generated, if a "B.E.G. motion" telegram arrives.	For example for applications in shops for controlling a door bell or an access detector
	Alarm	-	Uses the "B.E.G. motion" telegram sent by multi-sensors as a trigger for the application logic. As soon as at least 3 movements are detected within 10 seconds, the relay contact closes for 2 seconds.	Can, for example, be used for connection to the higher-level control technology in order to be able to visualise room occupancy.
	Blinds	-	for future applications	
REPEATER FUNCTION	Activated, Deactivated	Deactivated	If this function is activated, all incoming DALI telegrams are sent 2 times again to the bus.	Required for the cut-off function, since the drivers disconnected from the network would otherwise not receive the original DALI telegram, which was responsible for closing the relay contact.
SWITCH-OFF DELAY	0s-2h	0s	Opens the relay contact after the set time.	
SWITCH-ON DELAY	Activated, Deactivated	Deactivated	The relay does not close until regular movements have been detected within 5 minutes.	With HVAC integration, it can be useful to delay the activation so that persons who only visit the room for a short time do not immediately switch on the ventilation system.

DALI LINK

6.7. DALI Control gear (e.g. LED)

DALI Control gear (e.g. Type 6)

GROUP

PARAMETER	Values	Factory setting	Meaning	Use case
GROUP 0-15	Deactivated, Activated	Deactivated (corresponds to Broadcast)	The set group address can be checked and changed here. Normally, however, the group address is assigned via the grouping assistant. Attention: In connection with automatic functions, only one group may be selected in DALI LINK at a time, as control devices can only control and monitor one group.	Checking and changing the grouping of a particular luminaire without using the grouping assistant.

SCENE

PARAMETER	Values	Factory setting	Meaning	Use case
SCENE 0-15	Off, On with [%]	Off	Each scene can be activated or deactivated. If a scene is activated, the stored dimming value is taken into account. Normally, however, scenes are managed via the Scene menu.	Checking and changing the scene settings of a specific luminaire without accessing the scene menu.

VALUE

PARAMETER	Values	Factory setting	Meaning	Use case
MAXIMUM VALUE (MAX LEVEL)	1%-100%	100%	Defines the maximum possible dimming value of the connected lamp.	Energy saving by limiting the maximum light output.
MINIMUM VALUE (MIN LEVEL)	1%-100%	1%	Defines the minimum possible dimming value of the connected lamp.	For safety reasons, it may be necessary to set the minimum value higher so that the luminaire cannot be dimmed down too much during the regulation cycle.
VALUE IN CASE OF SYSTEM FAILURE (SYSTEM FAILURE LEVEL)	1%-100%	100%	Defines the dimming value which is to be called up in the event of a failure of the DALI bus voltage supply or a short circuit on the DALI line.	Safety lighting in the event of faults in system or control devices.
VALUE FOR POWER SUPPLY (POWER-ON LEVEL)	1%-100%	100%	Defines the dimming value which is to be called up when the luminaire is supplied with voltage and the DALI bus voltage is simultaneously present.	With B.E.G. DALI LINK, the behaviour when voltage is supplied is usually determined by the control devices. In the event of faults in the control devices or if the control device is set accordingly, the luminaire can also provide the application logic that the light should be on, dimmed or off when voltage is applied.
FADE TIME (FADE TIME)	0s, 0.7s, 1s, 1.4s, 2s, 2.8s, 4s, 5.7s, 8s, 11.3s, 16s, 22.6s, 32s, 45.3s, 64s, 90.5s	0s (second)	The crossfade time defines the time required for dimming up from 0% to 100% or for dimming down from 100% to 0%.	If scenes are called up or values sent via the push-button module or the DALI LINK Smartphone App, this setting is taken into account.

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VALUE

FADE RATE (FADE RATE)	2.8st/s, 4st/s, 5.6st/s, 7.9st/s, 11.2st/s, 15.8st/s, 22.4st/s, 31.6st/s, 44.7st/s, 63.2st/s, 89.4st/s, 126.5st/s, 178.9st/s, 253st/s, 357.8st/s	44.7 st/s (steps/second)	No function - for future applications.	No function - for future applications.
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DALI LINK

6.8. Explanation of B.E.G.'s own communication telegrams

In the DALI LINK system, B.E.G.'s own communication telegrams are also sent via the DALI bus, enabling additional functions for demanding application scenarios. These are:

- **B. E.G. Motion**
Sent from: Multi-sensors
Designed for: Multi-sensors and relay modules
Meaning: Indicates that a movement has been detected.
Applications: Guided Light, simple slave function, HVAC function of relay module

- **B.E.G. Lock**
Sent from: Push-button module
Designed for: multi-sensors
Meaning: Deactivates the automatic functions of the multi-sensor and triggers an additional, last command to the DALI lamps (depending on the setting in the multi-sensor).
applications: Manual operation without automatic control for events, celebrations or the like



Note: In this "deactivated state" (Lock), the multi-sensor continues to transmit "B.E.G. motion" if motion

has been detected. This means that only the "master functionality" is disabled, not the "slave functionality".

- **B.E.G. Unlock**
Sent from: Push-button module
Designed for: multi-sensors
Meaning: Activates the automatic functions of multi-sensors previously "deactivated" with B.E.G. Lock and triggers an additional initialisation command to the DALI lights (depending on the setting in the multi-sensor).
Applications: Manual operation without automatic control for events, celebrations or the like

- **B.E.G. Central Off**
Sent from: Push-button module
Designed for: multi-sensors
Meaning: Immediately sets the remaining follow-up time in multi-sensors to 0 seconds, which means that multi-sensors send an "OFF" telegram to the lights of the respective destination address.
Applications: Resetting the automatic system can be used, for example, when leaving the room or lighting area.