

DaliControl SC16

Best. Nr.: 3927-145-01

General

The INSTABUS-DALI-Gateway brings the lighting control specific DALI-Bus and the pluridisciplinary and cross-functional EIB/KNX bus together. Cost effective DALI ECGs can therefore be seamlessly integrated into an overall EIB/KNX architecture. DALI installations can benefit from the vast range of EIB/KNX user interfaces, sensors and building control devices available today. The DALI-Gateway serves both as DALI-Master device and power supply to all connected ECGs. Up to 64 ECGs allocated to up to 16 different groups can be connected per single DALI Gateway. Additionally, up to 16 lighting scenes can be created from the different groups. The light intensities and failure warnings are available as status objects and can be visualized using any corresponding EIB/KNX display device. The commissioning of the DALI Gateway (allocation of DALI ECGs to the various groups) is performed using the programming buttons and the display directly on the device. The setting of the different parameters and the programming of the scenes can also be performed with the buttons and the display, or alternatively using ETS. Scenes that have already been programmed can subsequently be changed at any time on the device. Finally, in addition to the EIB/KNX and the DALI interface, there are two binary inputs available on the device for connecting conventional switches, pushbuttons or movement sensors. This allows commissioning, test and operation of the DALI ECGs without the connection of the device to the EIB/KNX network.



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The DALI Gateway is a 6 units wide DIN Rail mounted device. The EIB/KNX connector is a standard EIB/KNX BUS connector. The DALI bus, the power supply and the binary inputs are fixed using screw connectors.

Device Type and Accessories

The following devices and accessories of this product group are available:

DaliControl SC16 Order No.: 3927-145-01

Package Contents

The delivery package of the INSTABUS-DALI-Gateway DaliControl SC16 contains the following components:

- Device with connected bus connector
- 1x shrink sleeve 1,2 x 2cm for supplementary insulation of the bus wires
- Installation and Operating Instructions

Application Programs

Currently the following application programs are available for this device:

3927-DaliControl-01-0110

Please refer to the application description for detailed information on the application program functionality.

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Technical Data

Power Supplies

- Power Supply 110 to 240 V, 50 to 60Hz, max. 0,1A
- Additional Power Supply via the **EIB** Bus

Operating Elements

- Programming Button to toggle between normal and addressing mode
- 3 buttons (MOVE, Prg/Set, ESC) on display front to commission the device and set parameters

Display Elements

- Red LED to indicate EIB/KNX Normal-/Addressing Mode
- Green PWR-LED to signal device readiness (blinks when in normal operation mode)
- Red ERR-LED to signal fault status
- LC-Display, 2 lines with 12 characters each with menu for commissioning and setting of parameters.

Inputs

- 2 x passive binary input for connection of conventional pushbutton or presence detector
9-32VDC or 8-26VAC, max wire length 15m

DALI-Bus

- Connection of up to 64 ECGs complying to IEC 60926
- DALI-Voltage 18-21VDC, short circuit proof
- It is not allowed to use other control devices (DALI-Master devices) within the same line.

Connectors

- **EIB** bus connector
- Power Supply: screw connector 3x 1,5mm² single or threaded core
- DALI-Bus: screw connector 2x 1,5mm² single or threaded core
- Binary input: screw connector 2x 1,5mm² single or threaded core

Mechanical Data

- Casing: Plastic LEXAN UL-94-V0
- Measurements of casing:
 - Width: 106mm
 - Height: 55mm
 - Length: 86mm
- Weight: 200 g
- Mounting: on 35mm DIN rail

Electrical Safety

- Pollution Degree: 2
- Protection (EN 60529): IP20
- Protection Class: (IEC 1140) I
- Overvoltage Category: III
- Bus: SELV DC 24 V

EMC-Compliance

Complies with EN 50081-1 and EN 50082-2, EN 50090-2-2

Environmental

- Operating Temperature: 0°C to +45°C
- Storage Temperature: -25°C to +70°C
- Rel. Humidity (non condensing): 5 % to 93 %

Certification

KNX/EIB registered

CE-Signage

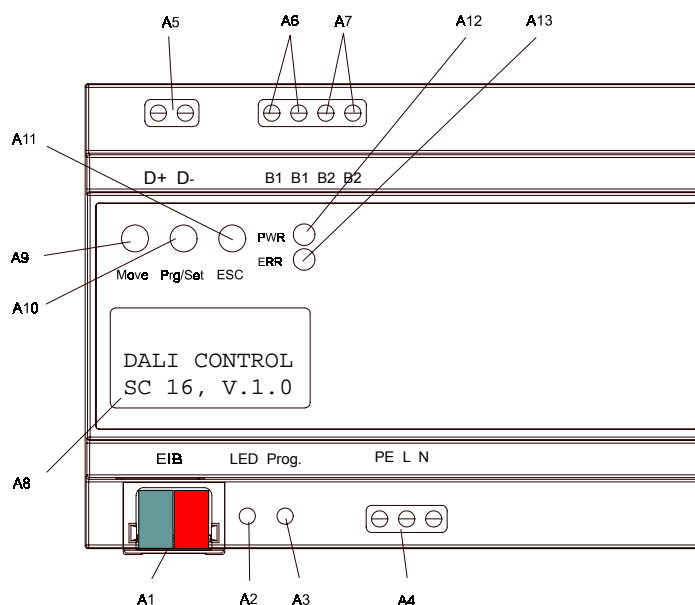
According to EMC recommendations (domestic and commercial buildings), low voltage recommendations

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Location and Function of the Control and Display Elements

The connectors as well as the KNX/EIB programming button and LED are only accessible once the cover of the distribution panel removed. The operation of the programming buttons (MOVE, Prg/Set, ESC), the control LEDs (PWR and ERR) as well as the menu display are accessible even with closed cover.



At the lower side of the casing the following connectors can be found (left to right):

- A1: EIB bus connector
- A2: EIB Programming LED
- A3: EIB Programming Button
- A4: Power Supply

At the upper side of the casing the following connectors can be found (left to right):

- A5: DALI-connector
- A6: Connector passive binary input 1
- A7: Connector passive binary input 2

On the device front the following elements can be found:

- A8: Display 2x12 chars for DALI Commissioning
- A9: MOVE-button
- A10: Prg/Set-button
- A11: ESC-button
- A12: Operating-LED (PWR)
- A13: Failure-LED (ERR)

The signage of the connectors on the casing is to be followed at all times!

Installation Notices and Warnings

- **Life Hazard through Electrical Shock**
- The device must only be installed and commissioned by qualified Electricians!
- The current country specific safety and accident prevention rules and regulations as well as the EIB guidelines must be respected at all times!
- The device is destined for fixed mounting in dry interior locations!
- When connecting the power supply wires, the power supply must be switched off.
- The device must not be opened. Defectuous devices must be returned to the manufacturer.

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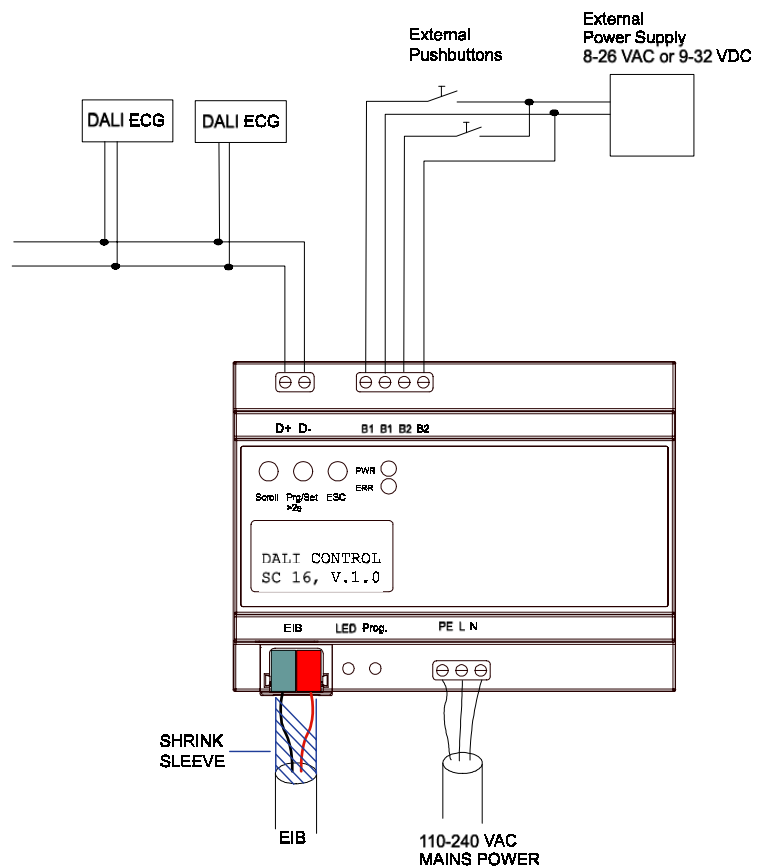
Mounting and Connection

The INSTABUS-DALI-Gateway DaliControl SC16 is designed to be mounted within distribution panels equipped with 35mm DIN rails. After simply snapping the device onto the rail, the DALI bus should be connected first. The DALI Control wires can be part of a 5-stranded cable also carrying the ECG power according to IEC90929 (the base insulation is sufficient). However each wire must be clearly marked and reliably identified. The maximum cable length for one entire DALI segment must not exceed 300m.

After connecting the DALI control wires, the optional external pushbuttons can be connected. The binary inputs are passive meaning that an auxiliary 8-26VAC or 9-32V DC voltage is required to operate the switches.

It is now possible to connect the 110-240 VAC 50/60 Hz power supply to the lower right connector block according to the printed schema.

The EIB bus cable is connected using the featured bus connector that is already inserted in the block when the device is shipped. For proper insulation from the power block, it is necessary to wrap the EIB control wires from the cable end right to the EIB connector with the shrink sleeve that is part of the package.



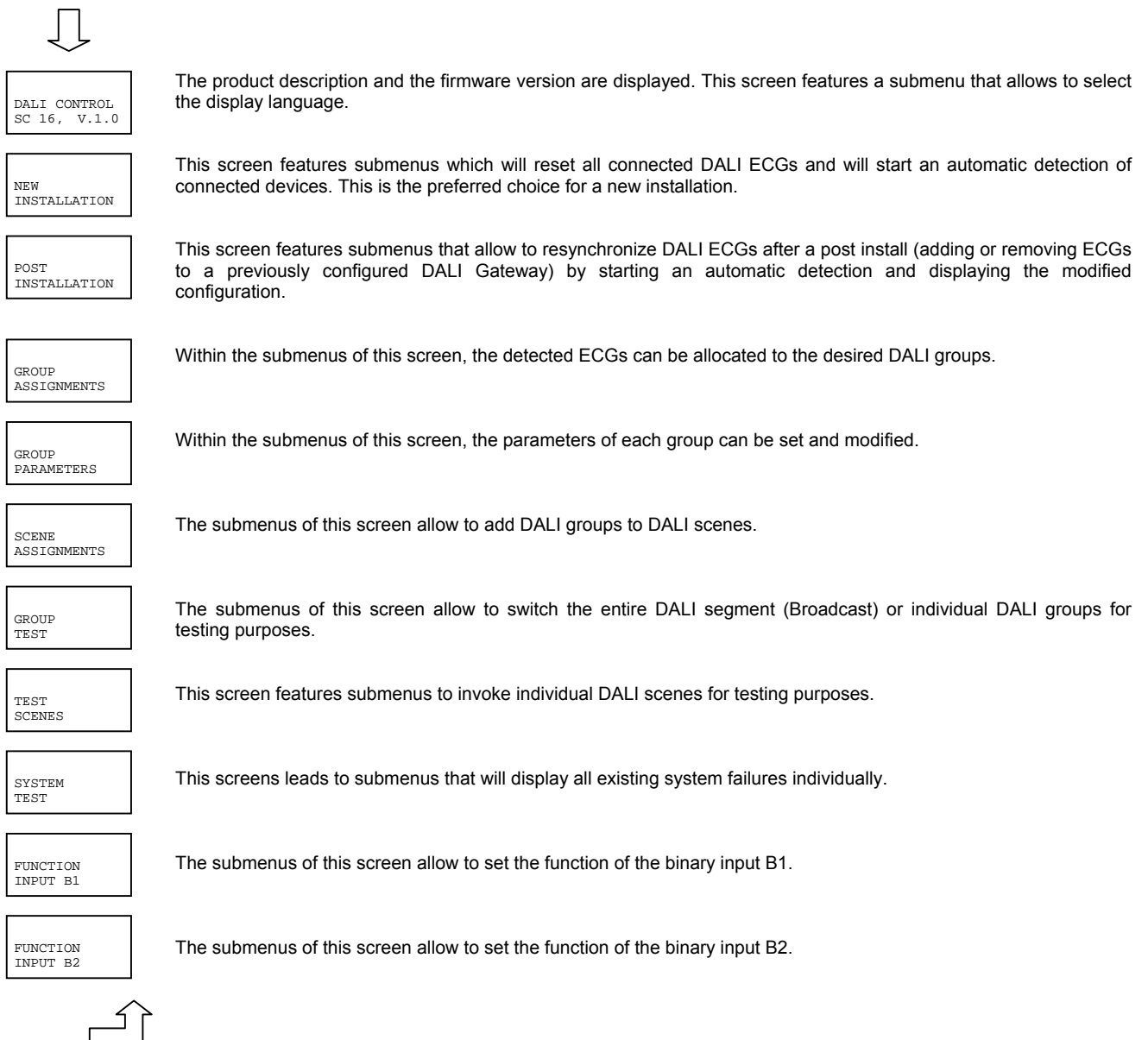
After complete connection of the device and activation of the power supply, the device will display its product name and the firmware version. The blinking green PWR light signals that the device is ready. If the device is started without being connected to the EIB, the red ERR-LED is lit. If the red ERR-LED is still ON after connecting the EIB (fed with its EIB power supply), a short circuit within the DALI segment is the probable error source (refer Submenu SYSTEM TEST). Please check the wiring of the DALI segment in such cases.

Operation and Menu Structure

The connected DALI segment can entirely be commissioned with the three programming buttons (MOVE, Prg/Set, ESC). Optional DALI parameters can also be set or changed with these buttons. The usage is menu driven. Depending on the current menu position, up to two submenu levels can be accessed. The currently selected menu item is shown in the display. The user navigates within the menu with short pushes of the buttons: the MOVE button selects the next menu item within each level. A short push on the Prg/Set button selects the submenu, if it exists. The ESC button quits the current menu level and returns to the parent menu item.

Main Menu – Level 1

The main menu is structured as follows:



If a function is to be activated or a parameter to be changed within a given submenu, it is necessary to switch to the so called programming mode by pushing the Prg/Set button for more than 2 seconds. Once the selected function or parameter is in programming mode, an Arrow symbol (→) appears in the display. Once the programming mode is active, the MOVE button is used to change the setting or the parameter value. By pressing the Prg/Set button with a short push again, the programming mode is ended (EXIT and SAVE). The parameter is updated to the selected value or the selected function is activated. The ESC button quits the programming mode without saving.

Submenu DALI CONTROL – Level 2

DALI CONTROL
SC 16, V.1.0

The level 1 menu DALI CONTROL leads to the submenu SPRACHE (LANGUAGE) by pressing the Prg/Set key with a short push.

SPRACHE
DEUTSCH

The currently active language is displayed within the submenu. By pressing the Prg/Set button for more than 2 seconds, the programming mode is activated. The MOVE button navigates through the available languages: DEUTSCH, ENGLISH, FRANCAIS, ESPAÑOL, SVENSKA. Pressing the Prg/Set button with a short push this time, the new language is activated and the display changes accordingly. The default language on shipment is GERMAN.

Submenu NEW INSTALLATION – Level 2

NEW
INSTALLATION

A short push on the Prg/Set key leads from level 1 menu NEW INSTALLATION to the submenu SEARCH ECG via P-MODE.

SEARCH ECG
via P-MODE

A long push of the Prg/Set button switches the device to programming mode. Another push, but a short one this time, starts the initialisation and search processes. First, all ECGs connected to this DALI Segment are reset automatically, all previously assigned groups and parameters are deleted. Secondly, all ECGs are searched for by their randomly generated long address and identified in ascending order.

FOUND
ECGs: 47

The search process can require several minutes depending on the number of connected ECGs. After completion of the search process, the number of discovered ECGs is shown on the display. By pushing the ESC button or by simply waiting for more than 30 seconds, the parent menu item is again activated.

Submenu POST INSTALLATION – Level 2

POST
INSTALLATION

A short push on the Prg/Set key leads from level 1 menu POST INSTALLATION to the submenu SEARCH ECG via P-MODE.

SEARCH ECG
via P-MODE

A long push of the Prg/Set button switches the device to programming mode. Another push, but a short one this time, starts the verification and search process. The connected ECGs are searched for by their long addresses. The result is compared with the previous configuration. If ECGs have been removed from the DALI-Segment, their corresponding entries and settings are automatically deleted from the DALI Gateway. During the verification process, the number of deleted ECGs is summarized on the display.

DELETED
ECGs: 3

The Gateway then searches for new ECGs within the DALI-Segment. New ECGs are automatically reset and all previously assigned parameters are deleted. The search process can require several minutes depending on the number of connected ECGs. During the search process, the number of new ECGs that are discovered is summarized on the display.

NEW
ECGs: 1

After completion of the verification and of the search process, the number of deleted and new ECGs are shown on the display (# deleted ECGs on the left / # new ECGs on the right). By pushing the ESC button or by simply waiting for more than 30 seconds, the parent menu item is again activated.

DEL./NEW
ECGs: 3/1

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Submenu GROUP ASSIGNMENT – Level 2 and 3

```
GROUP
ASSIGNMENT
```

A short push on the Prg/Set key leads from level 1 menu GROUP ASSIGNMENT to a submenu allowing to assign ECGs to one of the 16 DALI groups. Within the submenu, it is possible to create new assignments for ECGs or to modify existing ones.

```
ECG Nr.: 12
GROUP: --
```

A short push on the MOVE button navigates from one ECG to the next. The first display line shows the number of the selected ECG. The corresponding light will blink for as long as its ECG is selected. This allows to easily identify which number is assigned to which light.

```
ECG Nr.: 12
GROUP: 1
```

A long push of the Prg/Set button switches the device to programming mode. A short push on the MOVE-Button allows to select the group to which the ECG is to be assigned. Once the assignment completed, a short push on the Prg/Set button will confirm and save the selection. For a new installation, this task needs to be completed for each ECG that was discovered during the search process. By pushing the ESC button or by simply waiting for more than 30 seconds, the parent menu item is again activated.

Submenu GROUP PARAMETERS – Level 2 and 3

```
GROUP
PARAMETERS
```

A short push on the Prg/Set key leads from level 1 menu GROUP PARAMETERS to a submenu allowing to set all parameters of a DALI Group. It is recommended to set the group parameters within ETS and only use this function for quick modification of individual settings. Please note that each ETS download overwrites these manual settings.

```
GROUP: 01
PARAMETERS
```

A short push of the MOVE button navigates from one group to the next. The first display line indicates the current group number. A long push of the Prg/Set button switches the device to programming mode and the parameter type and its value are shown on the second display line. The following parameters can be modified directly on the device:

```
GROUP: 12
ON VALUE: 100
```

- Initial (ON) Value: 0 to 100% in 5% steps
- Lower Dimming Limit (MIN VAL): 0 to 40% in 5% steps
- Upper Dimming Limit (MAX VAL): 50 to 100% in 5% steps
- Dimming Duration for 0..100%: 5 sec. to 60 sec.

```
GROUP: 12
MIN VAL: 0
```

```
GROUP: 12
MAX VAL: 100
```

```
GROUP: 12
DURATION: 10s
```

Once the programming mode is active, the first parameter (ON VALUE) is displayed. The parameter value can be changed with a short push of the MOVE button. If no change is required, don't use the MOVE button. A short push of the Prg/Set button saves the parameter value and jumps to the next parameter of this group (MIN VAL) which can in turn be modified or not. A short push again of the Prg/Set button saves the parameter value and jumps to the next parameter of this group (MAX VAL) which can in turn be modified or not. And finally another short push of the Prg/Set button saves the parameter value and jumps to the next parameter of this group (DURATION) which can in turn be modified or not. A short push of the Prg/Set button saves the value and jumps again to the first parameter (ON VALUE). It is possible to escape back to the next higher menu with the ESC button or by simply waiting for more than 30 seconds.

Submenu SCENE ASSIGNMENT – Level 2 and 3

```
SCENE
ASSIGNMENT
```

A short push on the Prg/Set key leads from level 1 menu SCENE ASSIGNMENT to a submenu allowing to associate DALI Groups to up to 16 DALI Scenes.

```
SCENE01 XXXX
XXXXXXXXXXXX
```

With a short push of the MOVE button, it is possible to navigate from one scene to the next. The first display line shows the number of the currently selected scene. Symbols show which of the 16 groups are associated with this scene. An 'X' at the corresponding location means that the group is part of the scene, a '-' means that it is not. The four characters following the scene number represent groups 1 through 4, the 12 characters on line two represent groups 5 through 16.

```
SCENE03 ----
XXXX-----XX
```

A long push of the Prg/Set button switches the device to programming mode. A blinking cursor on the first X shows that Group 1 is currently selected. A short push of the MOVE button toggles between selected ('X') and not selected ('-'). A short push of the Prg/Set button moves the cursor to the next Group field, which in turn can be selected or not with the MOVE button, etc. Once all 16 Groups have been moved through, the configuration is saved and active as soon as the scene is invoked again. After completion of the last group, this submenu is closed automatically and the device returns to the next higher menu item. To avoid saving changes, don't complete the line, and use the ESC button instead, or simply wait for more than 30 seconds.

Submenu GROUP TEST – Level 2 and 3

```
GROUP
TEST
```

A short push on the Prg/Set key leads from level 1 menu GROUP TEST to a submenu allowing to switch individual DALI Groups or all DALI Groups (via broadcast) at the same time for testing purposes.

```
GROUP: 6
TEST
```

A short push on the MOVE button within the submenu allows to navigate from one group to the next. The currently active group is shown on the first display line.

```
GROUP: 6
->off
```

A long push on the Prg/Set button switches the device to programming mode. A short push on the MOVE button sets the desired action (options `->on` or `->off`), which then needs to be committed with a short push on the Prg/Set button. Pushing the ESC button or simply waiting for more than 30 seconds cancels the operation and leads back to the parent menu item.

Submenu TEST SCENES – Level 2 and 3

```
TEST SCENES
```

A short push on the Prg/Set key leads from level 1 menu TEST SCENES to a submenu allowing to switch individual DALI scenes for testing purposes or to save current lighting settings to a given scene number.

```
SCENE: 2
TEST
```

A short push on the MOVE button navigates from one scene to the next. The currently active scene is shown on the first display line.

```
SCENE: 2
->invoke
```

A long push on the Prg/Set button switches the device to programming mode. A short push on the MOVE button sets the desired action (options `->invoke` or `->save scene`), which then needs to be committed with a short push on the Prg/Set button. Pushing the ESC button or simply waiting for more than 30 seconds cancels the operation and leads back to the parent menu item.

Submenu SYSTEM TEST – Level 2 and 3

```
SYSTEM
TEST
```

A short push on the Prg/Set key leads from level 1 menu SYSTEM TEST to a submenu allowing to view individual failure messages.

```
DALI
fault
```

It is clearly shown on the display if there are failures or not. The following failure types are recognized and shown on the display and also signaled by the red failure LED (ERR):

- Short circuit on the DALI bus
- Lamp failure with indication of the ECG number
- ECG failure with indication of the ECG number
- EIB Bus not present

```
LAMP
fault: 23
```

```
ECG
fault: 34
```

A short circuit on the DALI bus is a failure that prevents the device from recognizing any other failure that may be present. By contrast, all other failure types are detected simultaneously. With a short push on the MOVE button, it is possible to navigate from one failure message to the next. Lamp and ECG failures show the ECG number, so that the error can be located immediately within the group. Pushing the ESC button or simply waiting for more than 30 seconds leads back to the parent menu item.

```
EIB
EIB FAILED
```

Submenu FUNCTION INPUT B1 – Level 2 and 3

FUNCTION
INPUT B1

A short push on the Prg/Set key leads from level 1 menu FUNCTION INPUT B1 to a submenu allowing to select the function of the conventional pushbutton or presence detector connected to the binary input B1.

TOG/DIM
INPUT B1

A short push on the MOVE button navigates from one function to the next. The first display line shows the selected function. The following functions are available:

- ON pushbutton issues ON command
- OFF pushbutton issues OFF command
- TOGGLE pushbutton toggles between ON and OFF
- ON/DIM short push on the button issues ON command, long push dims up and issues a stop telegram when pushbutton is released.
- OFF/DIM short push on the button issues OFF command, long push dims down and issues a stop telegram when pushbutton is released.
- TOG/DIM short push toggles between ON and OFF, long push dims up or down and issues a stop telegram when pushbutton is released. (Single Button Dimming)
- SCENE pushbutton invokes a scene

TOG/DIM
GROUP: ALL

TOG/DIM
GROUP: 07

A long push on the Prg/Set button switches the device to programming mode. A short push on the MOVE button allows to select the group or the scene with which the function is to be associated. A short push on the Prg/Set button confirms the selection and exits. Pushing the ESC button or simply waiting for more than 30 seconds cancels the operation and leads back to the parent menu item.

Submenu FUNCTION INPUT B2– Level 2 and 3

FUNCTION
INPUT B2

A short push on the Prg/Set key leads from level 1 menu FUNCTION INPUT B2 to a submenu allowing to select the function of the conventional pushbutton or presence detector connected to the binary input B2.

SCENES
SCENE B2

A short push on the MOVE button navigates from one function to the next. The first display line shows the selected function. The following functions are available:

- ON pushbutton issues ON command
- OFF pushbutton issues OFF command
- TOGGLE pushbutton toggles between ON and OFF
- ON/DIM short push on the button issues ON command, long push dims up and issues a stop telegram when pushbutton is released.
- OFF/DIM short push on the button issues OFF command, long push dims down and issues a stop telegram when pushbutton is released.
- TOG/DIM short push toggles between ON and OFF, long push dims up or down and issues a stop telegram when pushbutton is released. (Single Button Dimming)
- SCENE pushbutton invokes a scene

SCENES
SCENE: 03

A long push on the Prg/Set button switches the device to programming mode. A short push on the MOVE button allows to select the group or the scene with which the function is to be associated. A short push on the Prg/Set button confirms the selection and exits. Pushing the ESC button or simply waiting for more than 30 seconds cancels the operation and leads back to the parent menu item.

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First Installation of a DALI Segment

Once the wiring of the device has been completed according to the above instructions, the DALI segment can be commissioned directly with the device independently of the EIB system. As long as the EIB is not connected, the red failure LED (ERR) will be lit, but the commissioning can proceed nevertheless. Here are the steps to follow:

1. For a first installation, it is necessary to start by searching for all connected DALI ECGs using the menu NEW INSTALLATION. Once all devices are discovered, the display shows (ESC) right after the number of discovered ECGs to prompt the user to press the ESC button to exit this menu while giving him a chance to read or make a note of the number.
2. In a second step, all discovered devices have to be individually assigned to DALI groups, using the GROUP ASSIGNMENT menu. The basic commissioning is completed with this second step.

Testing:

- Using the menu GROUP TEST, individual groups can be switched ON and OFF for testing and quality control purposes.

Optional Settings:

- If pushbuttons are connected to the inputs of the DALI Gateway, the menu FUNCTION INPUT B1 and B2 allow to select the desired function for each input. This allows basic operation of the DALI segment in case the EIB is not operational at that point (e. g. for Construction Site Operation). Subsequently the binary inputs can be used as a cost effective complement to the system for example to connect conventional presence or movement detectors or simply pushbuttons.
- Finally it is possible to assign groups to scenes using the menu SCENE ASSIGNMENT

This completes the commissioning of the DALI Segment. The EIB programming and commissioning can be started from that point on using ETS and the DaliControl application program.