IPAS

I P A S

DaliControl SC16
Intelligent Light Control

DaliControl SC 16

D+ D-   B1 B1 B2 B2

Move   Prg/Set   ESC   PWR   ERR

DaliControl SC 16

3927-145-01   KNX   EIB

EIB   LED Prog.   PE L N

DALI Light Control per EIB
Group management
Scene saving
Alarm messages

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Introduction

Technology

Optimal integration of DALI lighting control in EIB/KNX building bus system

People's expectations and requirements of modern lighting technology have changed considerably. Whilst earlier the aim may have been merely the provision of light for visual activities, the focus has now shifted to qualities such as comfort, ambience, functionality and energy saving. The traditional electrical installation, whose task is the simple wiring of light switches, dimmers, and lamps, can meet the new demands only insufficiently. Against this background, the industry has defined a new standard for digital communication between the individual components of a light technology appliance.

The manufacturer-independent DALI-Bus (Digital Addressable Lighting Interface) is increasingly becoming the interface standard for the communication with Electronic Control Gears (ECGs). It consciously avoids the maximum functionality of a complex building system technology in favour of easier communication structures and establishes a control code limited and optimized to the sensible functions of light control.

Its major advantages compared to conventional 0..10V technology have led to widespread market acceptance and it can be expected that DALI will in the medium-term completely replace analogue technology.

The DaliControl SC16 combines the EIB/KMX installation bus with the lighting specific DALI Bus. Cost-effective, digital ECGs with DALI interface can, thereby, be integrated as sub-systems in a cross-functional EIB system. This means that the planner and user cannot only take advantage of the enormous diversity of the available EIB appliances for DALI control, but the combination of the DALI lighting system with the EIB/KNX system also allows for a connection of different devices and hence creates substantial synergies.

Introduction

## System integration

Advantages of DALI technology:

- Digital communication with Electronic Control Gears (ECGs)

- Simple wiring by means of conventional cables in any bus topology

- ECGs of different manufacturers, which support the DALI standard, can be combined

- Support of different light sources

- Simultaneous dimming

- Standard luminance for all identically built light sources

- Light and ECG errors are reported

- Operating hours and switch cycles can be recorded individually.

Advantages of IPAS DaliControl SC16:

- Up to 64 ECGs can be connected with a Gateway

- No additional power supply is necessary. DaliControl supply to the ECGs is available directly through the device.

- The ECGs can be set through digital addressing in up to 16 groups, which are switched and dimmed via the EIB.

- Simple storage of 16 light scenes directly in the device without any additional EIB components

- Immediate use after installation of the lights and testing possible even without EIB.

- Construction site operation possible even without availability of the EIB System, by means of push button inputs

- Simple group assigment directly on the display without any PC

- Alternatively, comfortable commissioning and group assigment through software tool

- Simple change of configuration possible without changes in wiring and without ETS

- Adding and removing DALI ECGs is possible without re-configuration of the existing DALI ECGs

- Push button inputs can also be used as EIB binary inputs for other functions such as window/door contacts or conventional presence detectors

- ECG-errors and lamp errors can be exactly localized within a group. Under menu point "System test" each erroneous light number can be singularly tracked on the display of the device.

- A DALI- short circuit is immediately notified both on the display as well as on a separate EIB/KNX-communication object.

Example for mounting devices
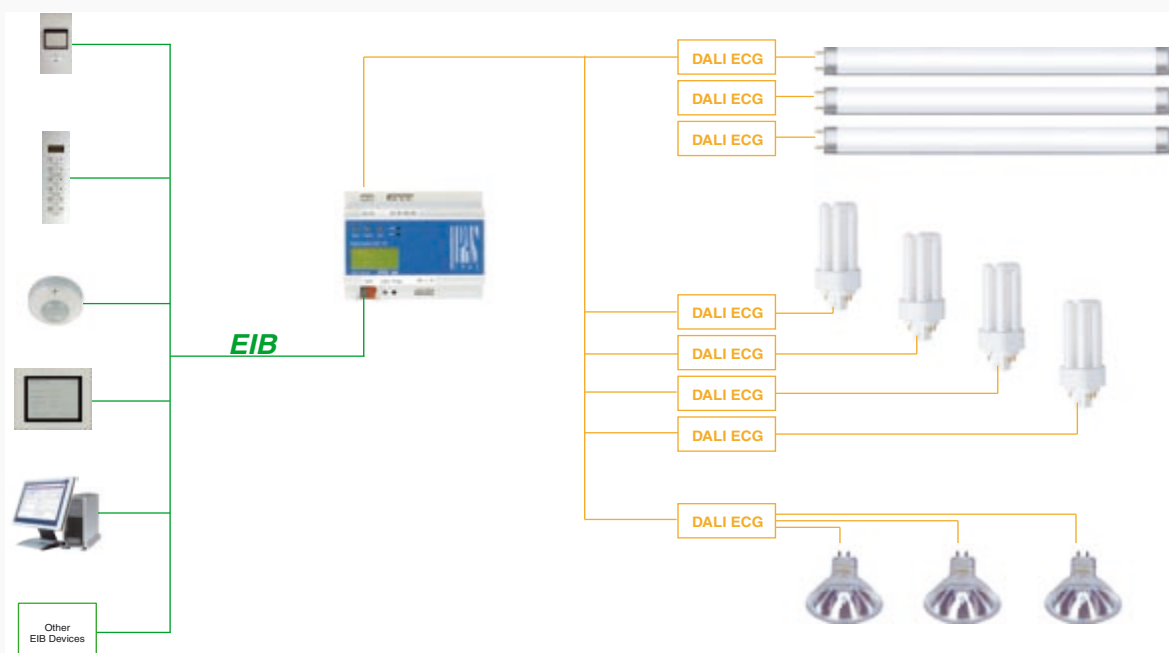
DaliControl SC16

Device description

The DaliControl SC16 serves as DALI-Master and power supply for the connected ECGs. Per gateway up to 64 ECGs can be switched and dimmed in 16 groups. In addition, up to 16 light scenes can be created from the different groups. Brightness values and error reports are available as status objects on the EIB and can be visualized on corresponding display devices.

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

D+/D- -> DALI connector
B1 -> Connector passive binary input 1
B2 -> Connector passive binary input 2

On the device front the following elements can be found:

Display 2x12 chars for DALI Commissioning
MOVE button
Prg/Set button
ESC-button

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

EIB -> EIB bus connector
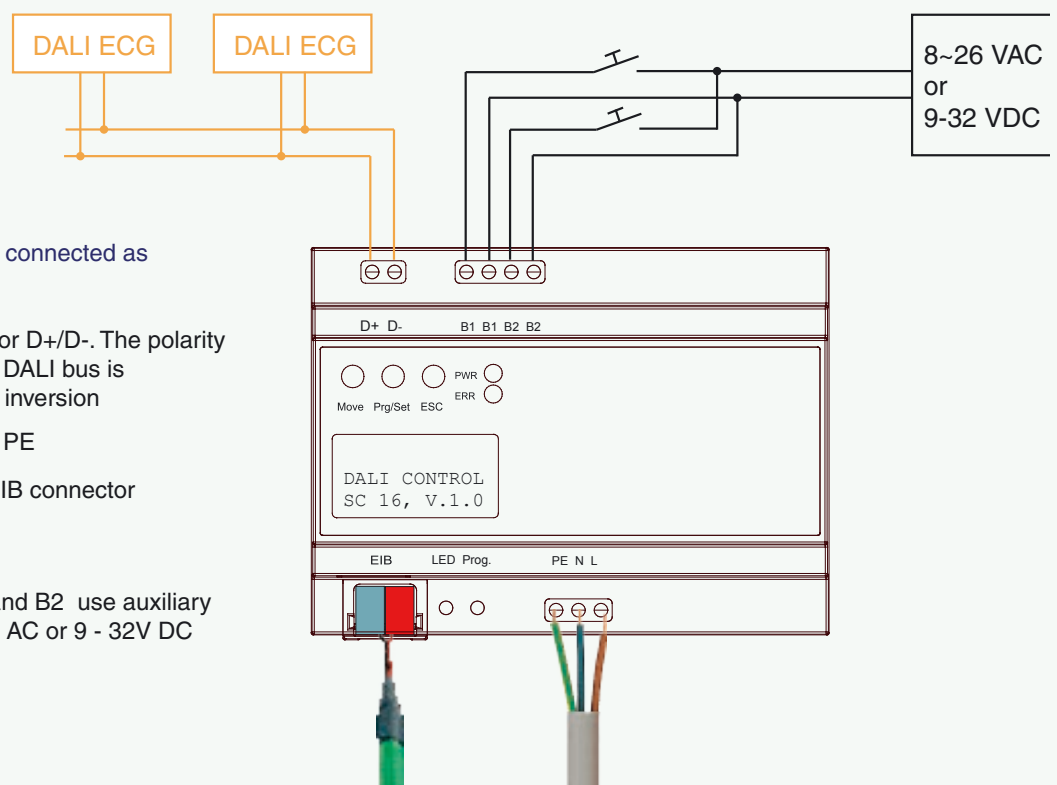LED -> Programming LED
Prog. -> Programming button

Mounting and Connection

The DaliControl SC16 is connected as follows:

1. DALI Bus to connector D+/D-. The polarity has no meaning, the DALI bus is safeguarded against inversion

2. Connect Mains L, N, PE

3. Connect EIB using EIB connector

Optional:

Pushbuttons on B1 and B2 use auxiliary power, either 8 - 26V AC or 9 - 32V DC
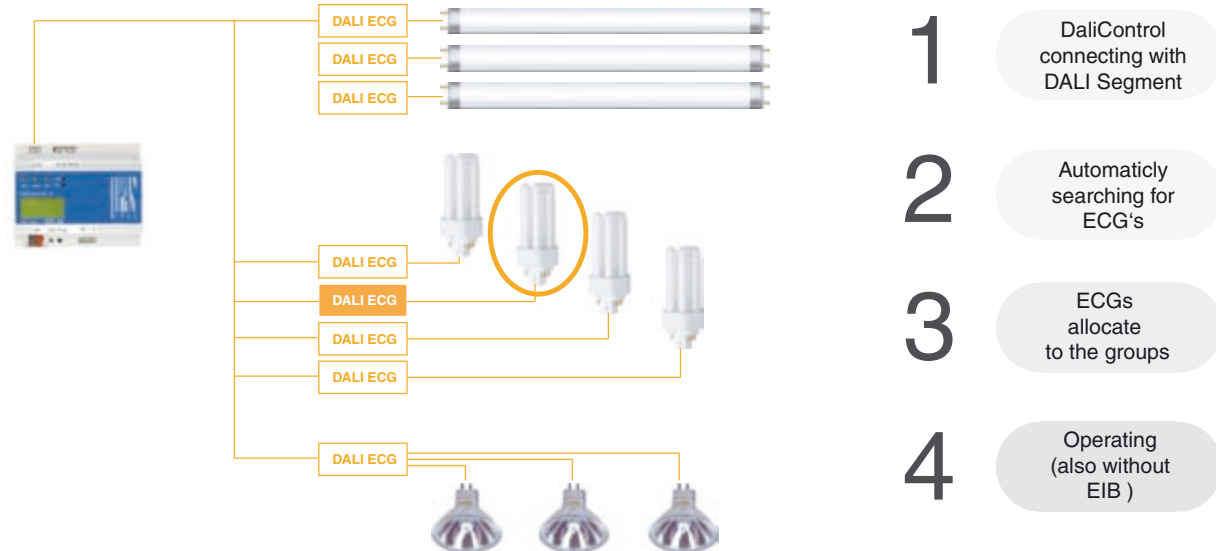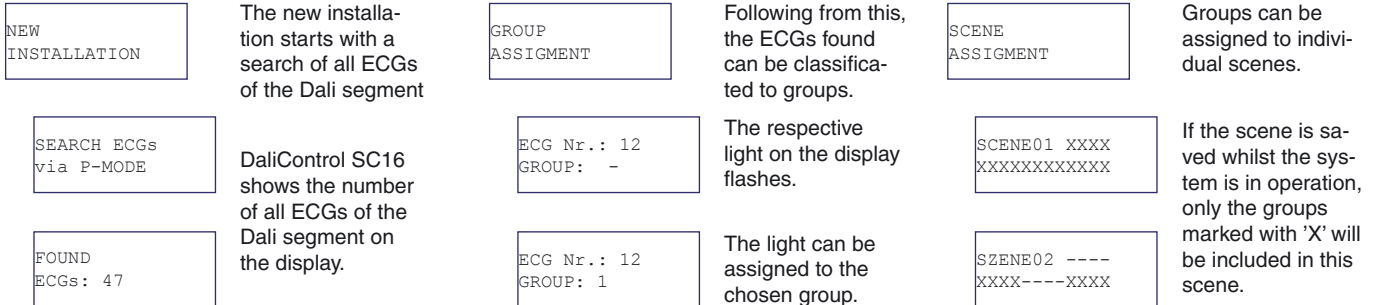
DaliControl SC16

Example for mounting the devices

Operation of the DALI segment can be started within a few minutes. As soon as the DALI Bus is wired and powered up, ECGs can be searched on the display even without EIB. The search results will show how many appliances have been found. After that each ECG can still be identified and assigned to a group through the display and the push buttons of the DaliControl SC16.
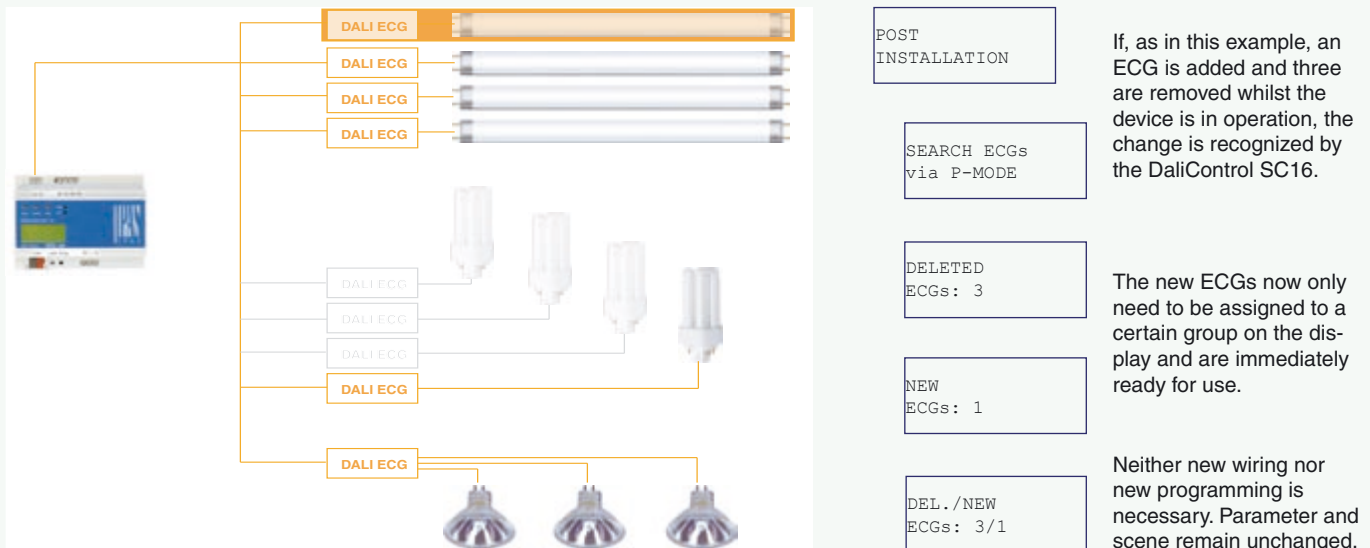
1 DaliControl connecting with DALI Segment

2 Automaticly searching for ECG's

3 ECGs allocate to the groups

4 Operating (also without EIB)

Installation

In a few steps to success:

```
NEW
INSTALLATION
```
The new installation starts with a search of all ECGs of the Dali segment

```
SEARCH ECGs
via P-MODE
```
DaliControl SC16 shows the number of all ECGs of the Dali segment on the display.

```
FOUND
ECGs: 47
```

```
GROUP
ASSIGMENT
```
Following from this, the ECGs found can be classificated to groups.

```
ECG Nr.: 12
GROUP: -
```
The respective light on the display flashes.

```
ECG Nr.: 12
GROUP: 1
```
The light can be assigned to the chosen group.

```
SCENE
ASSIGMENT
```
Groups can be assigned to individual scenes.

```
SCENE01 XXXX
XXXXXXXXXXXX
```
If the scene is saved whilst the system is in operation, only the groups marked with 'X' will be included in this scene.

```
SZENE02 ----
XXXX----XXXX
```

Subsequent changes with minimal efforts:

```
POST
INSTALLATION
```
If, as in this example, an ECG is added and three are removed whilst the device is in operation, the change is recognized by the DaliControl SC16.

```
SEARCH ECGs
via P-MODE
```

```
DELETED
ECGs: 3
```
The new ECGs now only need to be assigned to a certain group on the display and are immediately ready for use.

```
NEW
ECGs: 1
```

```
DEL./NEW
ECGs: 3/1
```
Neither new wiring nor new programming is necessary. Parameter and scene remain unchanged.

DaliControl SC16

DALI and ETS

Full control of the DALI segment over the EIB

Following the DALI commissioning and group assignment, the system integrator can, by means of the ETS, build linkages with the EIB/KNX-group addresses and carry out the configuration of the individual groups as usual.

ETS

After a few seconds of downloading the DALI segment is fully operational via the EIB/KNX.

Edit Parameters

Switch on value:	100%
Dimming time:	5 Seconds
Minimum value for dimming:	5%
Maximum value for dimming:	100%
Behavior when receiving On:	Accept value immediately
Behavior when receiving Off:	Accept value immediately
Behavior when receiving value::	Accept value immediately
Dimming time for On/Off, set value:	30 Seconds
Type of status object:	Value status, 0-100%
Type of recognized failures:	Lamp and ECG failures

Download

Access: Bus / Local

Program Physical Address | Overwrite Physical Address
Download Application | Partial Download
Physical Address + Application | Help | Close

| Phys. Address	Sequence	Description	Product	Adr	Prg	Par	Grp	Cfg	Pr
01.01.001			INSTABUS-DALI-Gate...						Dal

Service and Comissionig Wizzard

SCW-Softwaretool

*The alternative for the system integrator: Commissioning via software tool*

As mentioned earlier, the DALI commissioning and group assignment can be carried out entirely with the push buttons and display of the DaliControl SC16, even without a functioning EIB/KNX-Bus system. This procedure does not require intensive training and with the help of a short manual, an electrician will be able to carry out these tasks within a very short period of time.

Alternatively, after connection of the EIB/KNX and attribution of the physical addresses, these tasks can be carried out very comfortably by using the free-of-charge software tool "DaliControl Service and Comissioning Wizzard".

This Softwaretool make the DALI system integration much simpler especially in view of identification and assignment of connected lamps with Electronic Control gears (ECGs).
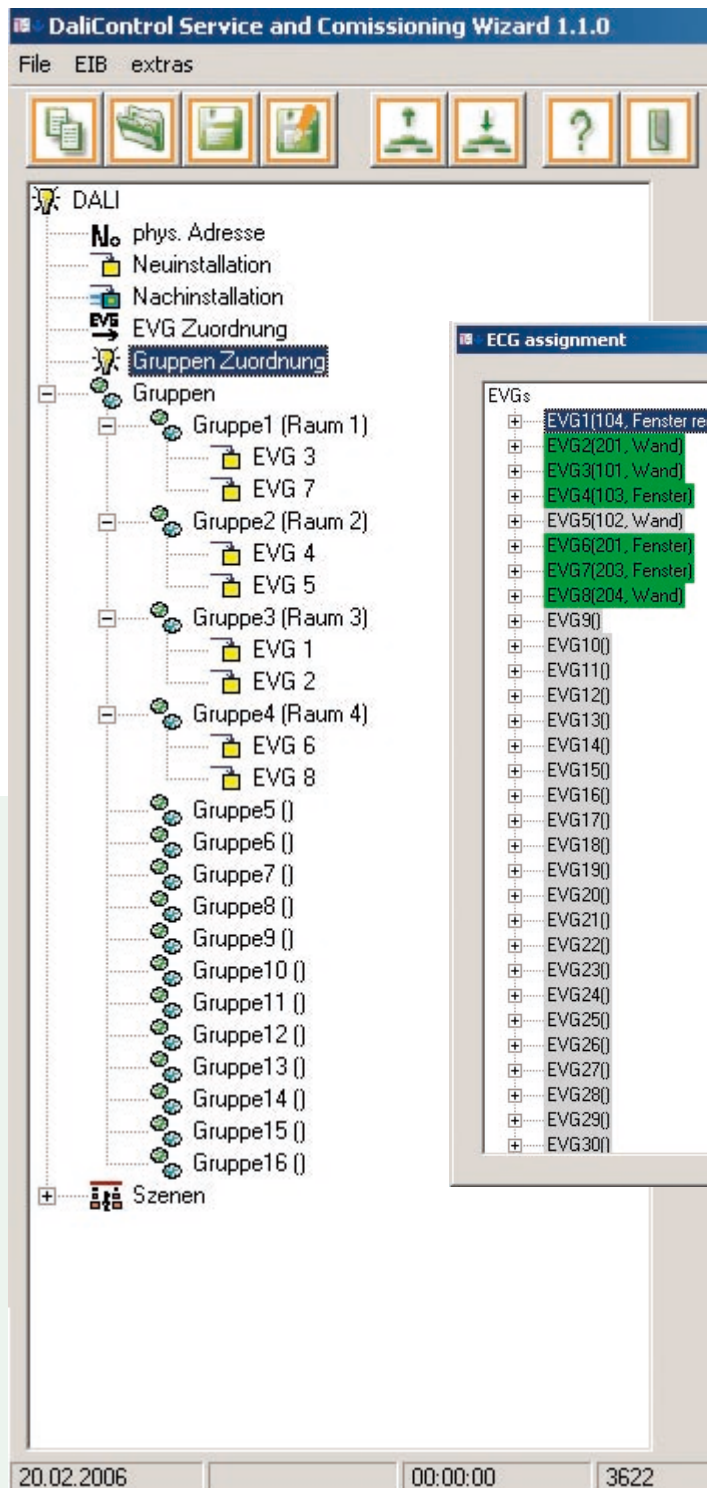
Normally lamps which conected EIB to DALI Gateways are used inside distribution boxes. Thus is complicated to identify the correct light becaus it is impossible to see it directly. With this software tool the identification now it is possible also from the assembly area of the lamps.
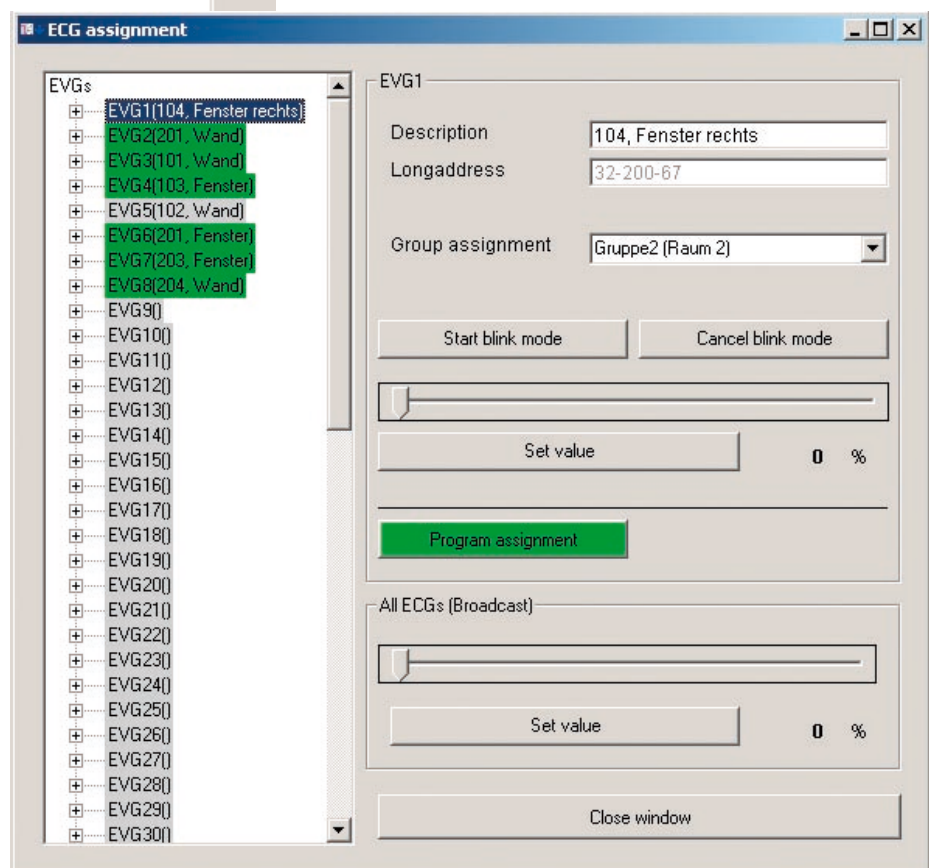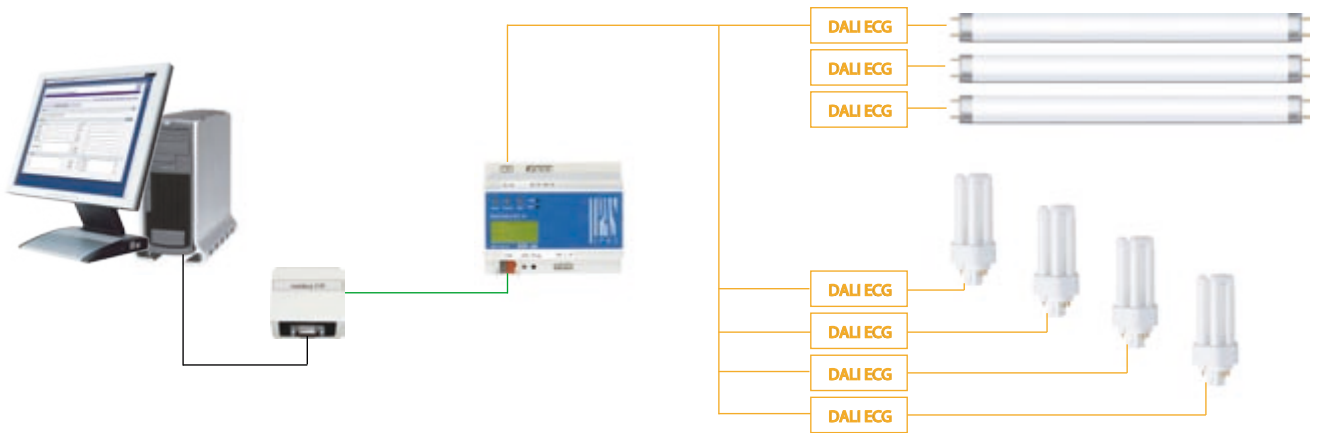
As registered user you receive this software tool in our online customer centre.

Service und Comissionig Wizzard

Commissioning

All that is required for commissioning is to connect a PC with the tool to the EIB/KNX-system via any serial interface. Interfaces supported are RS-232, USB and EIB/NetIP.

The plus for large facilities: Commissioning via EIB/NetIP and WLAN

Especially in large facilities in which the lights of a DALI segment are spread over many rooms the commissioning can be carried out through a mobile note book with WLAN card thanks to the EIB/NetIP-ability of the software. For this, all that is needed is to connect an EIB/NetIP Gateway (for example from the IPAS ComBridge product group) with a WLAN-access point and thus build a temporary radio trans-mission network. In this way the system integrators can freely move around the building with their note book and carry out the commissioning and group assignment directly in the area of the lights.

If a stationary WLAN with corresponding hotspots is available in the building, this can also be used for commissioning the DALI via DaliControl Service and Commissioning Wizzard.
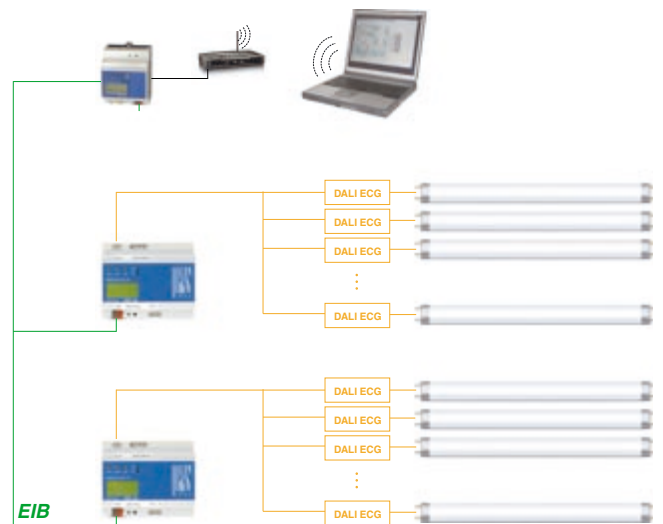
Scene saving

For the setting and loading of scenes, the device should already be programmed via ETS. At first, the assignment of groups to individual scenes should be planned and then carried out. The table is an example for a planned object with two room units.

Gruppe / Szene	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11	G12	G13	G14	G15	G16
S1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
S5	X	X	X	X	X	X	X	X								
S6	X	X	X	X	X	X	X	X								
S7	X	X	X	X	X	X	X	X								
S8	X	X	X	X	X	X	X	X								
S9									X	X	X	X	X	X	X	X
S10									X	X	X	X	X	X	X	X
S11									X	X	X	X	X	X	X	X
S12									X	X	X	X	X	X	X	X
S13																
S14																
S15																
S16																

This table is entered directly in the DaliControl SC16 through the display and programming keys. or it is loaded into the device by Software Tool. For each scene the corresponding groups are chosen.

Afterwards, the light situation that is desired for the scene can be set and saved, for example via conventional buttons which are di-rectly connected to the device or via EIB-buttons. The scene can be saved through the EIB buttons or through the display and push buttons of the DaliControl SC16.

40%   60%   80%   100%

In this example, scenes for the following functions are envisaged:

S1 = Central OFF
S2 = Central ON morning light
S3 = Central ON evening light
S4 = Alarm situation
S5..S8 = Part scenes Room 1
S9..S12 = Part scenes Room 2
S13..S16 = Not in use
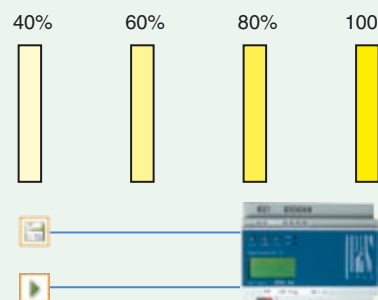
Recognition of Errors and Visualization

Recognition and Reporting of Errors

From the main menu "SYSTEM TEST", the sub-system is accessed through a single press of the Prg/Set-key. Within this menu, potential errors can be called up. If no errors are found, the display indicates this.

The following errors, which cause the simultaneous flashing of the red error-LED, can be recognized by the system and shown on the display:

– DALI-short circuit
– Lampenfehler mit Anzeige der Lampen- bzw. ECG-Nummer
– ECG-error with display of ECG number
– No EIB bus

```
SYSTEM
TEST
```

In the case of a DALI short-circuit no further errors can be detected. In the case of all other error types, several errors may possibly be detected simultaneously. Switching between the different existing errors is done within this menu point by briefly pressing the 'Move' key.

In the case of light and ECG errors, the number of the corresponding ECG is shown, so that errors can be directly localized, even within a group. By pressing the ESC-key (or automatically after 30 seconds) a return to the super-ordinate level takes place.

```
DALI
fault
```

```
ECG
fault:        34
```
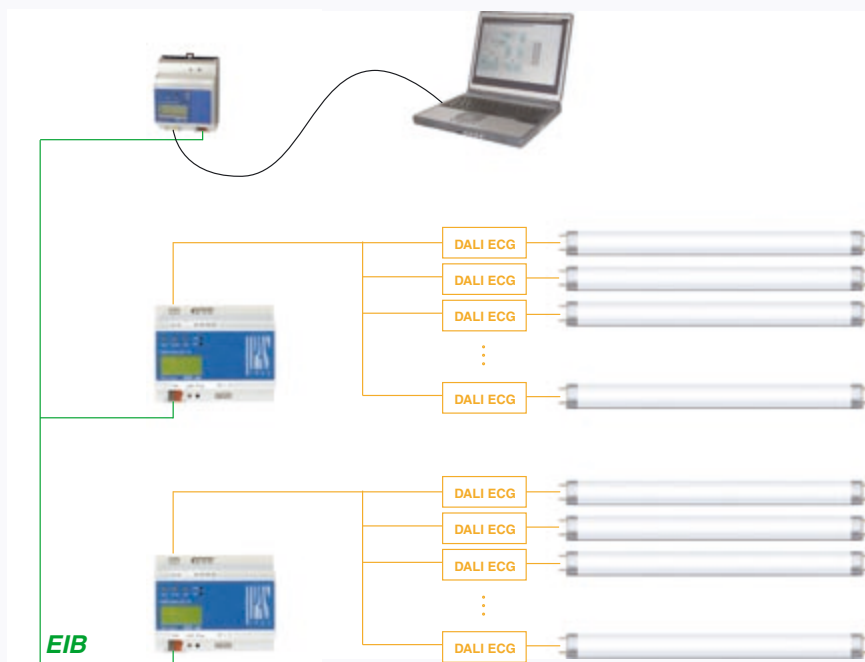
```
LAMP
fault:        23
```

```
EIB
EIB FAILED
```

Web-Visualization

In order to enable visualization it is easiest to connect a PC with ComBridge Studio Software to an EIB with an IP Gateway such as ComBridge MCG. This could also be a permanently installed server.

The combination offers a variety of applications:

- Light control from any PC (within the web browser), makes individual dimming as well as saving of personal light scenes possible without effort

- Calendar dependent time switching of DALI groups

- Super-ordinate scene storage, e.g. for floor control, large rooms, college, festival halls, etc

- E-mail notification in the case of light failure

- Recording of On/Off cycles and function duration of lights for preventative maintenance of light sources
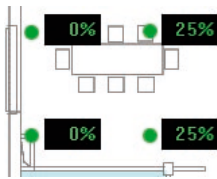
Recognition of Errors and Visualization

Example of visualization:

Visualization of a meeting room with complete scene control, display of values and demonstration of existing operational notifications.

Saving and calling of scenes:

Each button calls one scene.

If the lights of the chosen group are set to the desired level of brightness, the scene can be saved:

- ON-Button "Program Scenes", the control lamp changes from grey to yellow

- The scene button, under which the scene is to be saved, is pressed

- The control lamp automatically reverts to grey. The scene is saved
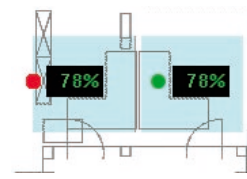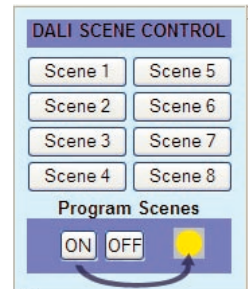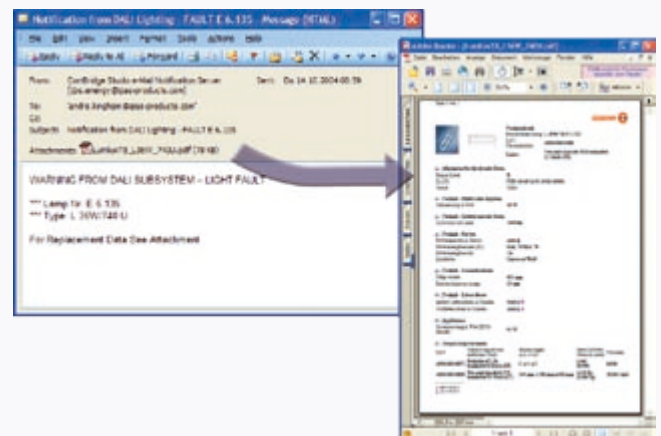

Meeting room:

The DALI lights next to the aisle are dimmed while the lights next to the windows are switched off, e.g. because a presentation is being held. The dimming value for each group of lights can be set.

Error display:

The error status can be shown on the visualization, as for example here on the left. The ECG value is still shown but the error light is red as the light source is defective.

E-Mail notification

If light errors arise, e-mails can automatically be sent to the on-duty staff with ComBridge Studio, so that the light source is quickly replaced. The e-mail describes the correct type of light source and can optionally also send the data sheet as an attachment. This helps to avoid unnecessary delays and means that information does not need to be specifically looked up. Thereby, a smooth operation and the lowest possible costs are guaranteed.

Technical Datas

Technical Datas DALI Control SC16

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 9-32 VDC or 8-26 VAC, 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