

## DALI gateway

### Operating instructions

## 1 Safety instructions

Electrical equipment may only be installed and fitted by electrically skilled persons.

Serious injuries, fire or property damage possible. Please read and follow manual fully.

**Danger of electric shock. Always disconnect before carrying out work on the device or load. At the same time, take into account all circuit breakers that supply dangerous voltage to the device or load.**

**Danger of electric shock. Device is not suitable for disconnection from supply voltage.**

The DALI control voltage is a functional extra-low voltage (FELV). On installing, ensure safe isolation between KNX and DALI.

These instructions are an integral part of the product, and must remain with the end customer.

## 2 Device components

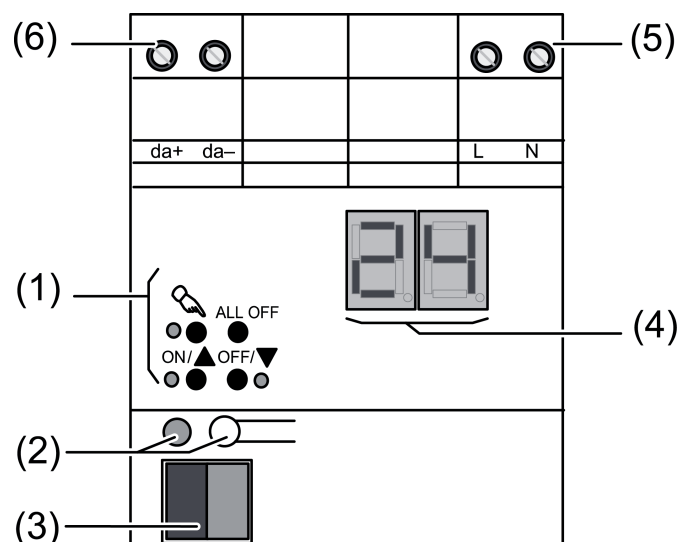


Figure 1

- (1) Button field for manual operation
- (2) Programming button and LEDs
- (3) KNX connection
- (4) Display of DALI devices or DALI group
- (5) Connection for mains supply
- (6) DALI output

## 3 Function

### System information

This device is a product of the KNX system and complies with the KNX directives. Detailed technical knowledge obtained in KNX training courses is a prerequisite to proper understanding.

The function of this device depends upon the software. Detailed information on loadable software and attainable functionality as well as the software itself can be obtained from the manufacturer's product database.


Planning, installation and commissioning of the device are carried out with the aid of KNX-certified software. Full functionality with KNX commissioning software version ETS3.0f onwards.

An updated version of the product database, technical descriptions and conversion programs and other auxiliary programs are available on our Internet website.

#### Intended use

- Controlling of luminaires and other applications with DALI operating device in KNX installations e.g. electronic ballast
- Installation on DIN rail according to EN 60715 in distribution boxes

#### Product characteristics

- Control of up to 64 DALI devices in up to 32 groups
  - Individual, group or central addressing
  - Suitable for operation in emergency lighting systems
  - 16 light scenes
  - Effect control for dynamic lighting effects or colour games
  - Read out DALI device state via KNX, e.g. brightness or luminaire error
  - Manual operation of the DALI groups
  - Restraint
  - Feedback of switching state and brightness value in bus and manual mode
  - Collective feedback
  - Central switching function
  - Disabling function for each DALI group
  - Separate ON and OFF delay
  - Staircase lighting timer with run-on time
  - Corridor function: when combined with motion detectors, reduced continuous lighting, if no motion is detected
  - Online or offline project planning of the DALI devices with ETS plug-in
  - Short circuit protection
  - Surge protection
  - Overload protection
  - Operating hours counter
  - Signal of the global switching status of the DALI devices, e.g. to switch off the mains voltage of the DALI devices to avoid standby losses
  - An individual DALI device can be exchanged during operation without software.
-  Delivery state: construction site mode, the DALI groups can be operated using button field. All DALI devices are controlled jointly.

## 4 Operation

### Operating elements

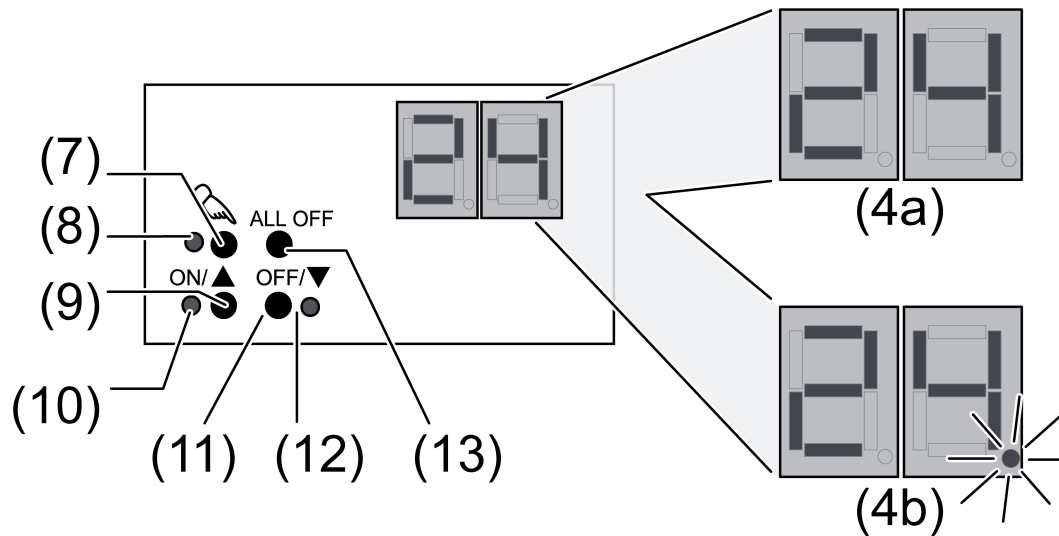









Figure 2

- (4) Display of DALI number (1...64)
  - (4a) DALI group
  - (4b) Individual DALI devices
- (7) Button  – Manual operation
- (8) LED  – On: Continuous manual mode active
- (9) **ON/▲** button – switch on or increase brightness
- (10) LED **ON/▲** – On: DALI device or group switched on, brightness 1...100 %
- (11) **OFF/▼** button – switch off or reduce brightness
- (12) LED **OFF/▼** – On: DALI device or group switched off, brightness 0 %
- (13) **ALL OFF** button – Switch off all DALI devices

In operation with the button field the device distinguishes between a short and a long press.



- Short: pressing for less than 1 second
- Long: Pressing for between 1 and 5 seconds

### Operating modes

- Bus operation: Operation via push-button sensors or other bus devices
  - Short-term manual operation: Manual operation locally with button field, automatic return to bus operation.
  - Continuous manual mode: Exclusively manual operation on the device
-  No bus operation is possible in manual mode.
  -  No manual mode is possible in case of bus failure.
  -  After a bus failure and restoration the device switches to bus operation.
  -  After a power failure and restoration the device switches to bus operation.
  -  The manual mode can be disabled in ongoing operation via a bus telegram.

### Switching on the temporary manual control


Operation using the button field is programmed and not disabled.

- Press the  button briefly.  
Display (4) shows **01**, LED  remains off.
- or -  
Display (4) shows **bc**: all connected DALI devices are controlled jointly.

- i** After 5 seconds without a button-press, the device returns automatically to bus operation.

### Switching off temporary manual operation



The device is in short-term manual mode.

- No button-press for 5 seconds.
- or -
- Press  button briefly as many time as necessary until the device leaves the short-time manual mode.

The display (4) is off.



### Switching on permanent manual control

Operation using the button field is programmed and not disabled.

- Press the  button for at least 5 seconds.
- LED  is illuminated, display (4) shows **01**, continuous manual mode is switched on.
- or -
- Display (4) shows **bc**: all connected DALI devices are controlled jointly.


### Switching off permanent manual control

The device is in continuous manual mode.

- Press the  button for at least 5 seconds.
- LED  is off, display (4) is off, bus operation is switched on.

### Operating DALI devices

The device is in continuous or short-term manual mode.

- Press  button briefly as many times as necessary until the display shows the desired DALI number.

The LEDs **ON/▲** and **OFF/▼** indicate the status.

- Operate output with **ON/▲** or **OFF/▼** button.
- Short: switch on/off.
- Long: dim brighter/darker.
- Release: Stop dimming.

The LEDs **ON/▲** and **OFF/▼** indicate the status.

- i** Short-term manual operation: after running through all of the available DALI numbers, the device exits manual mode after another brief press.
- i** The display (4) firstly shows the numbers of the available DALI groups (4a), followed by the individual addresses of the DALI devices (4b).


### Switch off all DALI devices

The device is in continuous manual mode.

- Press the **ALL OFF** button.
- All DALI devices switch off.

### Disabling individual DALI devices or groups

The device is in continuous manual mode.

- Press  button briefly as many times as necessary until the display shows the desired DALI number.

Status display via LEDs **ON/▲** and **OFF/▼**.


- Press **ON/▲** and **OFF/▼** buttons simultaneously for at least 5 seconds.
- The selected DALI number flashes in the display (4).
- DALI device or group is blocked.

- Activate bus mode (see section Deactivating permanent manual control).

- i** DALI devices blocked via manual operation can be operated in manual mode.

### Unblocking a DALI device or group

The device is in continuous manual mode.

- Press  button briefly as many times as necessary until the display (4) flashes the desired DALI number.
- Press **ON/▲** and **OFF/▼** buttons simultaneously for at least 5 seconds.  
DALI device or group is enabled.  
The display (4) no longer flashes.
- Activate bus mode (see section Deactivating permanent manual control).

## 5 Information for electrically skilled persons

### 5.1 Fitting and electrical connection



#### **DANGER!**

**Electrical shock when live parts are touched.**

**Electrical shocks can be fatal.**

**Before carrying out work on the device or load, disengage all the corresponding circuit breakers. Cover up live parts in the working environment.**

#### Fitting the device

Observe the temperature range. Ensure adequate cooling.

- Mount device on DIN rail. Output terminals must be at the top.

#### Connecting the device

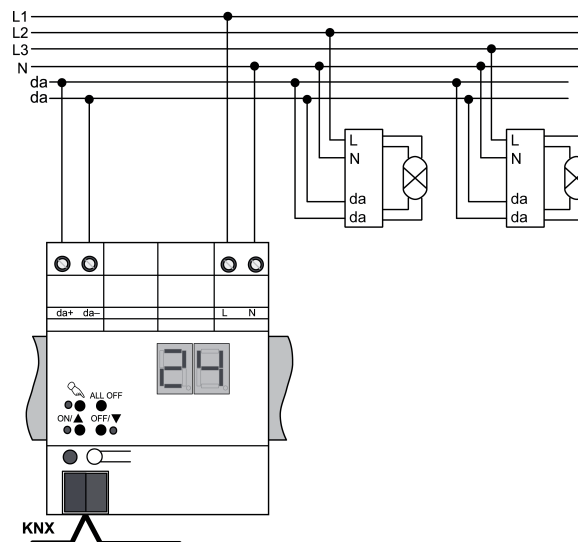


Figure 3

Control cable: appropriate type, cross-section and routing for the specifications for 250 V cables. DALI and mains voltage wires can be run together in a cable, e.g. NYM 5x1.5 mm².

- i** DALI participants from some manufacturers have expanded functions and can e.g. be controlled via mains voltage on the DALI connection. When existing DALI installations are refitted, remove all corresponding operator controls.
- i** The DALI control voltage is a functional extra-low voltage (FELV). When performing installation, perform the installation in such a way that when an area is disconnected the lines carrying both the DALI and also the mains voltage are disconnected.
- Connect device as shown in the connection example (Figure 3).

- If multiple miniature circuit breakers supply dangerous voltages to the device or load, couple the miniature circuit breakers or label them with a warning, to ensure disconnection is guaranteed.
  - Connect bus line with connecting terminal.
- i** DALI devices can be connected to various phase conductors.

### Operation in emergency lighting systems

The device can be used in decentrally-powered or in centrally-powered emergency lighting systems.

In decentrally-powered emergency light systems, emergency luminaires with individual batteries and special DALI devices are used.

- i** Observe the number of DALI devices in the emergency luminaires used.

Emergency lighting systems with a central safety supply are required in buildings larger than 2000 m<sup>2</sup>. Depending on the scope of functions of the system, only the emergency luminaires are supplied by the central safety supply (Figure 4), or the KNX system and DALI gateway are also supplied (Figure 5). In the latter case, in emergency operation, the DALI gateway can transmit the appropriate fault messages to a central system and other DALI gateways in the system.

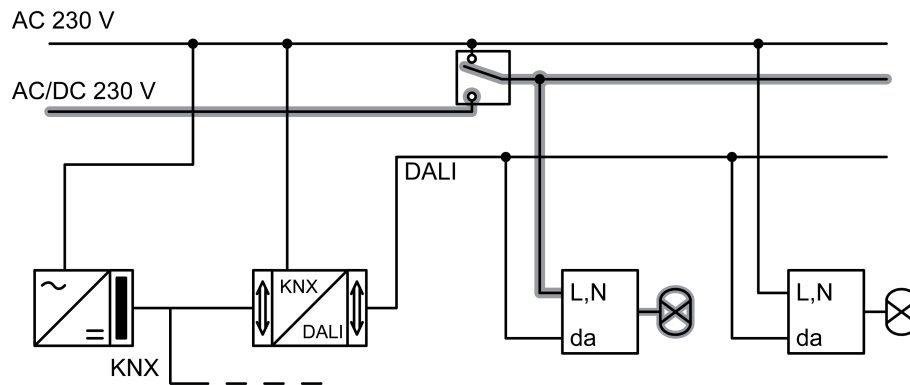


Figure 4: Emergency luminaires supplied through a central safety supply

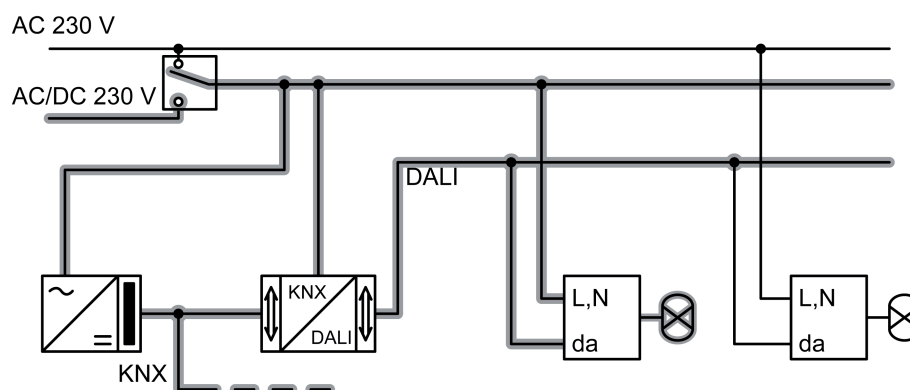


Figure 5: Emergency luminaires, KNX system and DALI gateway supplied through a central safety supply

### Installing the cover

It is necessary to install a cover to protect the bus connection against hazardous voltages in the connection area.

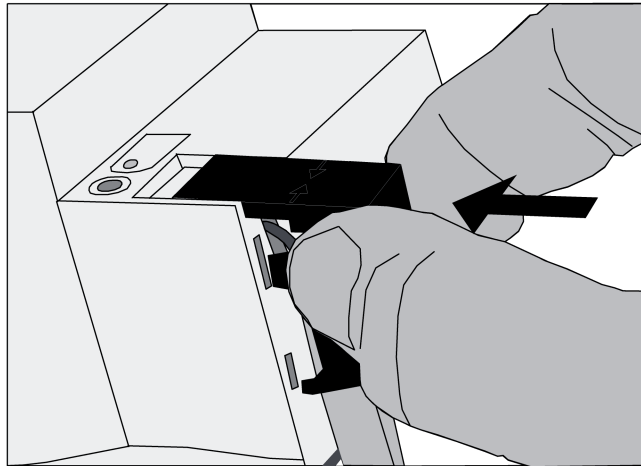


Figure 6: Installing the cover

- Route the bus line towards the rear.
- Install cover on top of the bus terminal so that it snaps into place (Figure 6).

#### Removing the cover

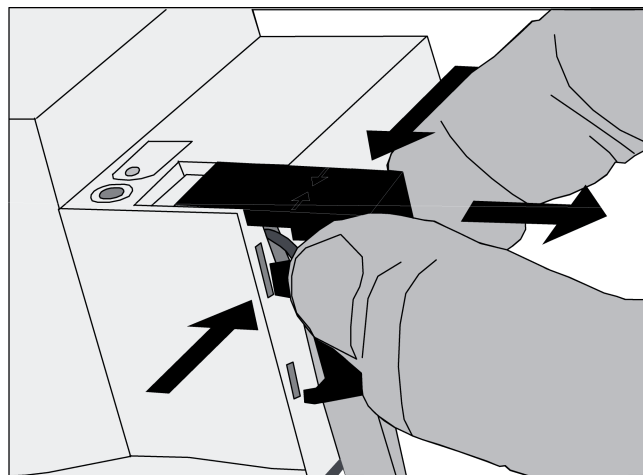




Figure 7: Removing the cover

- Press the cover to the side and pull it off (Figure 7).

## 5.2 Commissioning

### Load the address and the application software

- Switch on mains voltage.
- Switch on the bus voltage.
- Assign physical address and note on the device label.
- Commission DALI system using commissioning software.
-  For more detailed information on commissioning of the DALI system, see the technical product information for this device.
- Load the application software into the device.
-  No programming is possible if no mains voltage is connected.

## 6 Appendix

### 6.1 Technical data

Supply	
Rated voltage	AC 110 ... 240 V ~
Mains frequency	50 / 60 Hz
Rated voltage DC	DC 110 ... 240 V
Power loss	max. 3 W
Ambient conditions	
Ambient temperature	-5 ... +45 °C
Storage/transport temperature	-25 ... +70 °C
DALI	
DALI rated voltage	DC 16 V (typical)
Number of DALI subscribers	max. 64
DALI transmission rate	1.2 kbit/s
DALI protocol	EN 62386
Cable type	Sheathed cable 230 V, e.g. NYM
DALI cable length	
with Ø 1.5 mm <sup>2</sup>	max. 300 m
with Ø 1.0 mm <sup>2</sup>	max. 238 m
with Ø 0.75 mm <sup>2</sup>	max. 174 m
with Ø 0.5 mm <sup>2</sup>	max. 116 m
Housing	
Fitting width	72 mm / 4 modules
Connection of power supply and DALI	
Connection mode	Screw terminal
single stranded	0.5 ... 4 mm <sup>2</sup>
finely stranded without conductor sleeve	0.5 ... 4 mm <sup>2</sup>
Finely stranded with conductor sleeve	0.5 ... 2.5 mm <sup>2</sup>
KNX	
KNX medium	TP
Commissioning mode	S-mode
Rated voltage KNX	DC 21 ... 32 V SELV
Power consumption KNX	typical 150 mW
Connection type for bus	Connection terminal

### 6.2 Troubleshooting

#### Display shows "Er", connected DALI devices have no function, no operation possible

Cause: Mains voltage on DALI cable.

Installation error. Disconnect device and connected DALI devices from mains voltage and disconnect bus voltage. Correct installation.

#### Display shows "bc" in manual mode, control of individual luminaires not possible.

Cause: The device has not been programmed or is programmed to "Broadcast".

Check the device status. If necessary, program the device and put DALI system into operation.

#### Individual DALI devices have no function


Cause 1: Load is defective, e.g. lamp.

Exchange load.

Cause 2: DALI device is defective.

Exchange defective device.

Switch on voltage.

Press  and **ALL OFF** buttons together for at least 10 seconds.

The device detects the exchanges DALI device and loads in the necessary data. The display (4) shows **LE**.



- i** Simultaneous exchange of multiple DALI devices is only possible with commissioning software and project data.

**None of the DALI groups can be operated.**

Cause 1: All DALI groups disabled via bus or manual operation.

Cancel disabling.

Cause 2: Continuous manual mode switched on.

Switching off permanent manual control

Cause 3: Application software has been stopped, programming LED is flashing.

Perform reset: Disconnect device from bus, switch on again after approx. 5 seconds.

Cause 4: Application software missing or faulty.

Check programming and correct.

## 6.3 Warranty

We reserve the right to make technical and formal changes to the product in the interest of technical progress.

We provide a warranty as provided for by law.

Please send the unit postage-free with a description of the defect to our central customer service office:

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