

Operating instructions

DALI gateway Colour, 1-gang
Order no. 2111 00

DALI gateway Colour, 2-gang
Order no. 2112 00



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1 Safety instructions



Electrical devices may be mounted and connected only by electrically skilled persons.

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

Danger of electric shock. Always disconnect before carrying out work on the device or load. In so doing, take all the circuit breakers into account, which support dangerous voltages to the device and or load.

DALI is an FELV (functional extra-low voltage). On installing, ensure safe isolation between KNX and DALI and mains voltage. A minimum distance of at least 4 mm must be maintained between bus conductors and DALI mains voltage cores.

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

2 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 for proper understanding.

The function of this device depends upon the software. Detailed information on software versions and the respective scope of functions as well as the software itself can be obtained from the manufacturer's product database.

The device can be updated. Firmware can be easily updated with the Gira ETS Service App (additional software).

The device is KNX Data Secure capable. KNX Data Secure offers protection against manipulation in building automation and can be configured in the ETS project. Detailed technical knowledge is a prerequisite. A device certificate, which is attached to the device, is required for safe commissioning. During mounting, the device certificate must be removed from the device and stored securely.

Planning, installation and commissioning of the device are carried out with the aid of the ETS, version 5.7.7 and higher or 6.1.0.

Intended use

- Controlling of luminaires and other applications with DALI operating device in KNX installations, e.g. electronic ballast
- Integration of DALI sensors possible from device version I01 onwards
- Mounting on DIN rail according to EN 60715 in distribution boxes

Product characteristics

- DALI-2 certified

- Control of up to 64 DALI devices in up to 32 groups ("1-fold" device variant)
- Control of max. 2x 64 DALI devices in max. 2x 32 groups ("2-fold" device variant)
- Multi-master capable; DALI-2 sensors can be used as application controllers
- DALI-2 sensors are supported as input devices in instance mode
- Setting the colour temperature or light colour (RGB, RGBW) for luminaires with DALI Device Type 8 in accordance with IEC 62386-209
- Short-circuit, overload and overvoltage protected
- Operating hours counter
- Automatic colour wheel sequence or brightness sequence
- HCL mode (Human Centric Lighting), automatic daytime colour temperature profile
- CT (Colour Transition) mode, automatic daytime colour profile
- Suitable for operation of emergency lighting systems with DC voltage
- Individual, group or central addressing
- 16 light scenes per DALI system
- Reading out of DALI device states via KNX, e.g. brightness or luminaire error
- Manual operation of the DALI groups, single devices or central (broadcast) separately for each DALI system
- Restraint or disabling functions
- Feedback of switching state and brightness value in bus and manual mode
- Collective feedback
- Central switching and dimming function
- Disabling function for each DALI group or each single device
- Separate switch-on and switch-off delay
- Staircase lighting timer with run-on time
- Online or offline project design of the DALI devices with ETS-DCA
- Standby switch-off of the DALI devices
- An individual DALI device of the same type can be exchanged during operation without software

Delivery state: Construction site mode, manual operation is enabled. The connected DALI operating devices of both DALI systems can be controlled via the keypad via the broadcast function.

- i** The complete functionality of the DALI system can only be ensured if DALI-2 operating device is used exclusively.
- i** A complete list of DALI-2 operating and control devices can be found here: <https://www.DALI-alliance.org/products>

3 Operation

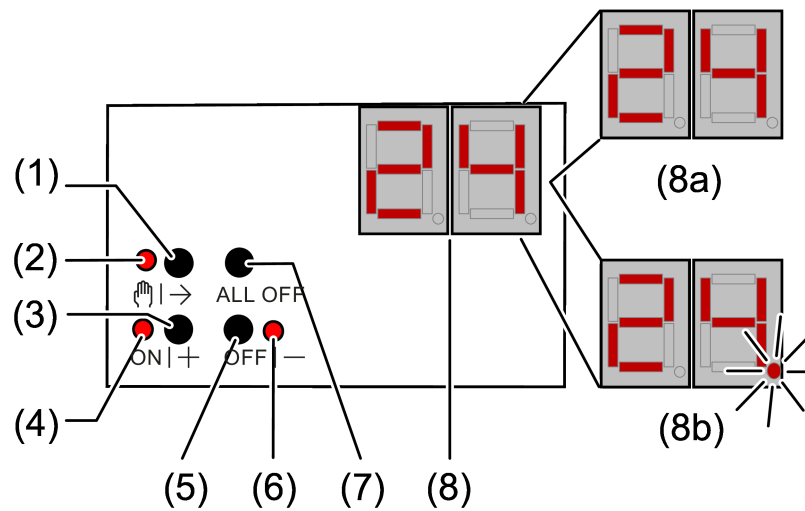


Figure 1: DALI gateway control panel, 1-gang

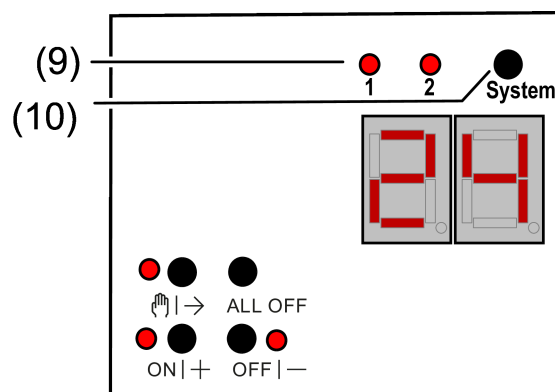


Figure 2: DALI gateway control panel, 2-gang

- (1) button – Manual operation
- (2) LED – On: Continuous manual mode active
LED – Flashing: Temporary manual mode is active
- (3) **ON|+** button – Switch on or increase brightness
- (4) LED **ON|+** – On: DALI device or a DALI group switched on, Brightness 1...100%
- (5) **OFF|-** button – Switch off or reduce brightness
- (6) LED **OFF|-** – On: DALI device or a DALI group switched off, Brightness 0%
- (7) Button **ALL OFF** – Switch off all DALI devices
- (8) Display of DALI number
- (8a) Display of DALI group
- (8b) Display of the short address of the individual DALI devices (1...64)
- (9) LED of the active DALI system lights up in manual mode or after pressing the change-over button (only with "2fold" device variant)

- (10) Change-over button for DALI systems 1 and 2 (only with "2fold" device variant)

If the display (8) shows **bc** (broadcast operation), all devices of a DALI system are controlled jointly. This is done in the following operating conditions.

- The device is not programmed
- Set to master control in the KNX configuration
- In bus mode, broadcast is additionally configured and active

When operating the DALI devices with the keypad, the device differentiates between short and long actuation.

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


Change-over system 1 and system 2


In the case of the "2fold" device variant, the change-over button (10) can be used to switch between an operation of DALI systems 1 and 2. This is possible either while the device is in operation or during active temporary or permanent manual operation.

Only the selected DALI system is ever operated via the keypad of the manual control. The LEDs (9) signal the DALI system effective for manual operation.

Switching on temporary manual operation mode

Operation using the button field is programmed and not disabled.

- Press the  (1) button briefly.


Display (8) shows the first group number, short address or **bc**, LED  (2) flashes. With the "2fold" device version, the LED (9) of the last operated DALI system lights up.

After 5 seconds without a button actuation, the device returns automatically to bus mode.


Switching on/off the permanent manual mode

Operation using the button field is programmed and not disabled.

- Press the  (1) button for at least 5 seconds.

LED  (2) is illuminated, display (8) shows the first group number, short address or **bc**. Permanent manual operation is switched on. With the "2fold" device version, the LED (9) of the last operated DALI system lights up.

- or in case of repeated actuation for at least 5 seconds -

LED  (2) is off, indication (8) is off, bus mode is switched on.

Operating DALI devices

The device is in permanent or temporary manual operation mode.

Press $\text{↵} \rightarrow$ (1) button briefly as many times as necessary until the desired DALI number is indicated (8).

- Operate output with **ON|+** (3) button or **OFF|–** (5) button.
Short: Switch on/off.
Long: Dim brighter/darker.
Release: Stop dimming.
The LEDs **ON|+** (4) and **OFF|–** (6) indicate the status.

The display (8) shows first the numbers of the available DALI groups (8a), followed by the individual addresses of the DALI devices (8b).

Switch off all DALI devices

The device is in permanent manual operation mode.

- Press the **ALL OFF** button (7).

Disabling/enabling individual DALI devices or groups

The device is in permanent manual operation mode and the lock is released.

Press $\text{↵} \rightarrow$ (1) button briefly as many times as necessary until the desired DALI number is indicated (8).

- Press the **ON|+** (3) and **OFF|–** (5) buttons simultaneously for at least 5 seconds.

The selected DALI number flashes in the display (8).

DALI device or group is blocked.

- or in case of repeated actuation -

The display (8) no longer flashes.

DALI device or group is enabled.

- Activate bus mode (see section Switching the permanent manual mode on/off).

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

4 Information for electrically skilled persons

4.1 Mounting and electrical connection



DANGER!

Electric shock when live parts are touched.

Electric shocks can be fatal.

Always disconnect before carrying out work on the device or load. To do so, switch off all corresponding circuit breakers, secure them against being switched on again and check that there is no voltage. Cover up any adjacent live parts.

Mount device

- Mount device on DIN rail.

Connect device

Control cable: appropriate type, cross-section and routing for the specifications for 230 V cables. DALI and mains voltage wires can be run together in a cable, e.g. NYM 5x1.5 mm². The connected DALI subscribers may be operated on different phases.

- The DALI control voltage is a functional extra-low voltage (FELV). When installing, 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.
- If multiple circuit breakers supply dangerous voltages to the device or load, couple the circuit breakers or label them with a warning to ensure tripping.
- 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.
- Connect device as shown in the connection example Connection.

i The mains voltage supply can also be provided by the DC voltage of an emergency lighting system.

i The DALI systems are supplied with power exclusively via the DALI Gateway. The connection of an additional power supply to one of the DALI systems is not permitted.

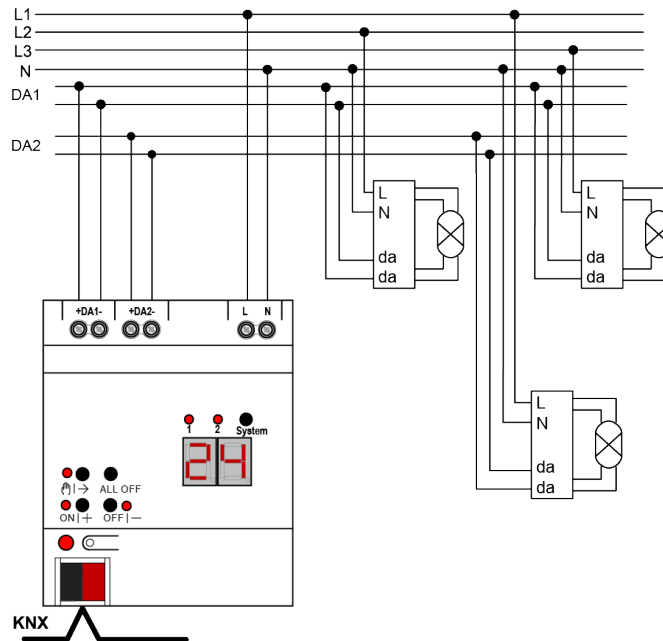


Figure 3: DALI gateway connection example, 2fold

- Attach the cover cap to the bus cable connection as protection against hazardous voltages.

If the display (8) shows **Er** (error), an installation fault occurred that causes mains voltage to reach the DALI cable. In this case disconnect the device and the DALI devices from mains voltage and disconnect bus voltage. Correct installation.

4.2 Commissioning

The device can be put into operation, after mounting of the device and connection of the bus line, the mains supply and the DALI cables. The following procedure is generally recommended...

- Switch on the mains supply of the gateway.
 - Switch on the bus voltage.
- Voltage check: When the programming button is pressed, the red programming LED must light up.
- Configure and program the physical address with the help of the ETS
 - Download the application program using the ETS.
 - Commission the DALI system using commissioning software (DCA).
 - Download the application program using the ETS again.

The gateway is ready for operation.

- i** It is not explicitly necessary to carry out DALI commissioning and reprogram the application program if the gateway has been integrated into an existing DALI installation (e.g. when replacing a device of the same type) and continues to be used with an unchanged DALI configuration (same short addresses,

device types, group assignments, etc.). This is the case, for example, if a device is copied unchanged in the ETS project design or a configuration template is imported.

- i** No ETS programming is possible if no mains voltage supply is connected.

Safe-state mode

If the device does not work properly - for instance as a result of errors in the project design or during commissioning - the execution of the loaded application program can be halted by activating the safe-state mode. In safe-state mode it is not possible to control the DALI operating devices via the KNX or by manual operation. The gateway remains passive in safe-state mode, since the application program is not being executed. Only the system software is still functional so that the ETS diagnosis functions and also programming of the device continue to be possible.

Activating safe-state mode

There are two options for activating the safe state mode.

Option 1:

- Switch off the mains voltage supply.
 - Wait approx. 10 seconds.
 - Press and hold down the programming button.
 - Switch on the mains supply. Release the programming button only after the programming LED starts flashing slowly.
- Safe-state mode is activated.

Option 2:

Prerequisite: The mains voltage supply must be switched on without interruption.

- Switch off the bus voltage or disconnect the bus terminal.
 - Press and hold down the programming button.
 - Switch on the bus voltage or attach the bus terminal. Release the programming button only after the programming LED starts flashing slowly.
- Safe-state mode is activated.

- i** Even in safe-state mode, a brief press of the programming button can switch the programming mode on or off as usual as long as the bus power supply is switched on. The programming LED then stops flashing, even though safe-state mode is still active.

Deactivating safe-state mode

- Switch off the mains voltage supply (wait approx. 10 s),
or
- Perform the ETS programming operation,

or

- Cause bus voltage failure.

Master reset

The master reset restores the basic device settings (physical address 15.15.255, firmware remains in place). The device must then be recommissioned with the ETS. Manual operation is possible.

In secure operation: A master reset deactivates device security. The device can then be recommissioned with the device certificate.

Performing a master reset

Prerequisite: The safe-state mode is activated.

- Press and hold down the programming button for > 5 s.
The programming LED flashes quickly.

The device performs a master reset, restarts and is ready for operation again after approx. 5 s.

Restoring the device to factory settings

The device can be reset to factory settings with the Gira ETS Service App. This function uses the firmware contained in the device that was active at the time of delivery (delivered state). Restoring the factory settings causes the device to lose its physical address and configuration.

5 Appendix

5.1 Technical data

KNX

KNX medium	TP 256
KNX commissioning mode	S mode
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption KNX	4.5 ... 5.0 mA
Connection type for bus	Device connection terminal

Supply

Rated voltage	AC 110 ... 240 V ~
Mains frequency	50 / 60 Hz
Rated voltage	DC 110 ... 240 V
Power loss	max. 3 W

DALI

Rated voltage DALI	DC 16 V (typ.)
Output current per DALI system	Typ. 128 mA, max. 250 mA for short periods
Guaranteed bus current per DALI system	148 mA

i The DALI systems are supplied with power exclusively via the DALI Gateway. The connection of an additional power supply to one of the DALI systems is not permitted.

Addressable DALI operating devices	max. of 64 per DALI system
Addressable DALI sensors	Max. of 32 per DALI system

i The number of DALI operating devices and DALI sensors must be designed in such a way that the total current consumption of 148 mA per DALI system is not exceeded.

DALI transmission rate	1.2 kBit/s
DALI protocol	EN 62386
Duration of the starting operation	max. 20 s
Cable type	Sheathed cable 230 V, e. g. NYM
DALI cable length (see figure 4)	

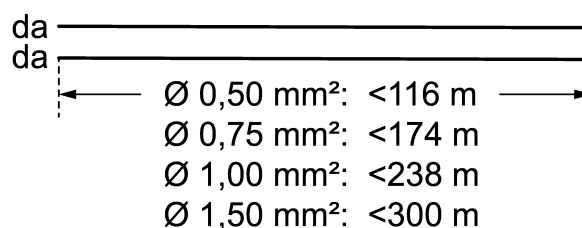


Figure 4: DALI cable length

Ambient conditions

Ambient temperature	-5 ... +45 °C
Storage temperature	-5 ... +45 °C
Transport temperature	-25 ... +70 °C
Clampable cable cross-sections (see figure 5)	

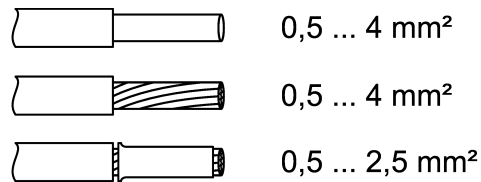


Figure 5: Clampable cable cross-sections

Installation width	72 mm / 4 HP
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Terminals

Connection mode	Screw terminal
Stripping length	8 mm
Suitable tool	
Phillips screwdriver (recommended)	PZ1 Plusminus (Pozidriv/slotted)
Phillips screwdriver	PZ1
Slotted screwdriver	4 mm
Connection torque	max. 0.8 Nm

5.2 Troubleshooting**Indication 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.

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

Cause: The device is not programmed or is programmed for central control.

Check device status or change operation from broadcast to group or individual control.

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 (8) shows **LE**.

Simultaneous exchange of multiple DALI devices is only possible with commissioning software (DCA) and project data.

DALI groups or single devices cannot be operated

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

Cancel disabling.

Cause 2: Permanent manual mode is switched on.

Deactivate permanent manual operation mode.

Cause 3: Application programme has been stopped; programming LED is flashing.

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

Cause 4: Application programme is not loaded.

Check and correct the programming.

5.3 Warranty

The warranty is provided by the specialist trade in accordance with statutory requirements. Please submit or send faulty devices postage paid together with a fault description to your responsible salesperson (specialist trade / installation company / electrical specialist trade). They will forward the devices to the Gira Service Center.

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