Operating instructions

DALI actuator Colour, 4-gang
Order no. 2113 00

Product image non-binding

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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.
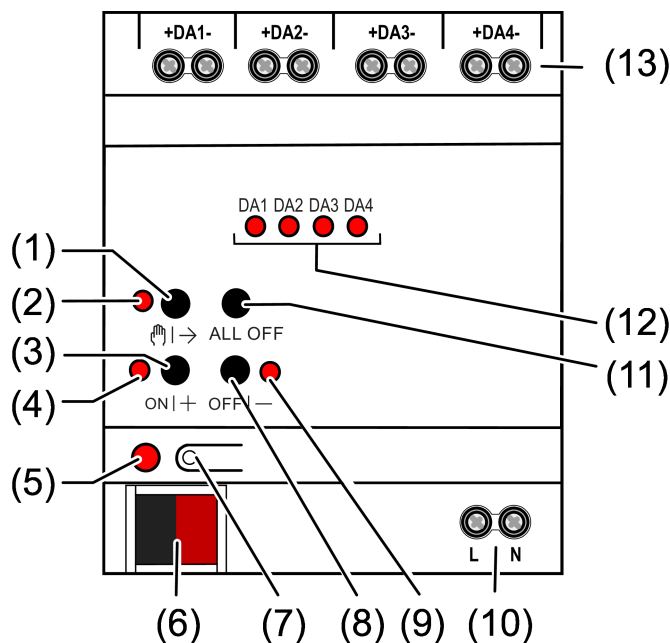
2 Device components

Figure 1: Device components

(1)   Button ⬛|→
       Manual operation

(2)   LED ⬛|→
       On: continuous manual mode active
       Flashing: temporary manual mode active

(3)   Button **ON|+**
       Short press (< 1 s): ON / long press (1...5 s): dims brighter.

(4)   LED **ON|+**
       LED ON in manual operation indicates a switched-on DALI system (brightness: 1...100 %).

(5)   Programming LED

(6)   KNX connection

(7)   Programming button

(8)   Button **OFF|–**
Short press (< 1 s): OFF / long press (1...5 s): dims darker.

(9)   LED **OFF|–**
LED ON in manual operation indicates a switched-off DALI system (brightness: 0 %).

(10)   Terminals for mains supply

(11)   Button **ALL OFF**
All DALI subscribers OFF (only in permanent manual operation).

(12)   Status LED of the DALI systems DA1 ... DA4
On: DALI system switched on
Flashes slowly: manual operation mode active
Flashes quickly: DALI system blocked

(13)   Terminals for DALI systems DA1 ... DA4

3   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.

4   Intended use

– Controlling of luminaires and other applications with DALI operating device in KNX installations, e.g. electronic ballast

– Mounting on DIN rail according to EN 60715 in distribution boxes

5   Product characteristics

– DALI-2 certified

– Multi-master capable; DALI-2 sensors can be used as application controllers

– Control of up to 128 DALI devices in 4 DALI systems

– Broadcast control of each of the four DALI systems

– 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

– Suitable for operation of emergency lighting systems with DC voltage

– Manual operation of DALI systems

– Restraint or disabling functions

– Collective feedback

– Central switching and dimming function

– Disabling function for every DALI system

– Separate switch-on and switch-off delay for each DALI system

– Staircase lighting timer with run-on time

– Standby switch-off of the DALI devices

Delivery state: Construction site mode, manual operation is enabled. The connected DALI operating devices of the four 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

6 Operation

When operating the DALI systems 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

Switching on temporary manual operation mode

Operation using the button field is programmed and not disabled.

■ Press the ✋|→ (1) button briefly.

The LED (12) of the first DALI system flashes.

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) lights up, LED (12) of the first DALI system flashes. Permanent manual operation is switched on.

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

LED ⏻|→ (2) is off, LED (12) is off, bus mode is switched on.

Operating DALI systems

The device is in permanent or temporary manual operation mode.

■ Keep pressing the button ⏻|→ (1) until the LED (12) of the desired DALI system flashes.

■ Operate the system using the button **ON|+** (3) or the button **OFF|–** (8).
Short: switch on/off.
Long: dim brighter/darker.
Release: Stop dimming.
The LEDs **ON|+** (4) and **OFF|–** (9) indicate the status.

ℹ Short-term manual operation: After running through all of the DALI systems the device exits manual mode after another brief press

Switch off all DALI devices

The device is in permanent manual operation mode.

■ Press the **ALL OFF** (11) button briefly.

All DALI systems switch off.

Locking/unlocking an individual DALI system

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

■ Keep pressing the button ⏻|→ (1) until the LED (12) of the desired DALI system flashes.

■ Press the **ON|+** (3) and **OFF|–** (8) buttons simultaneously for at least 5 seconds.

The LED of the selected DALI system (12) flashes quickly.

DALI system is blocked.

- or in case of repeated actuation -

The LED (12) flashes slowly.

DALI system is enabled.

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

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

7 Information for electrically skilled persons

7.1 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.
- Attach the cover cap to the bus cable connection as protection against hazardous voltages.
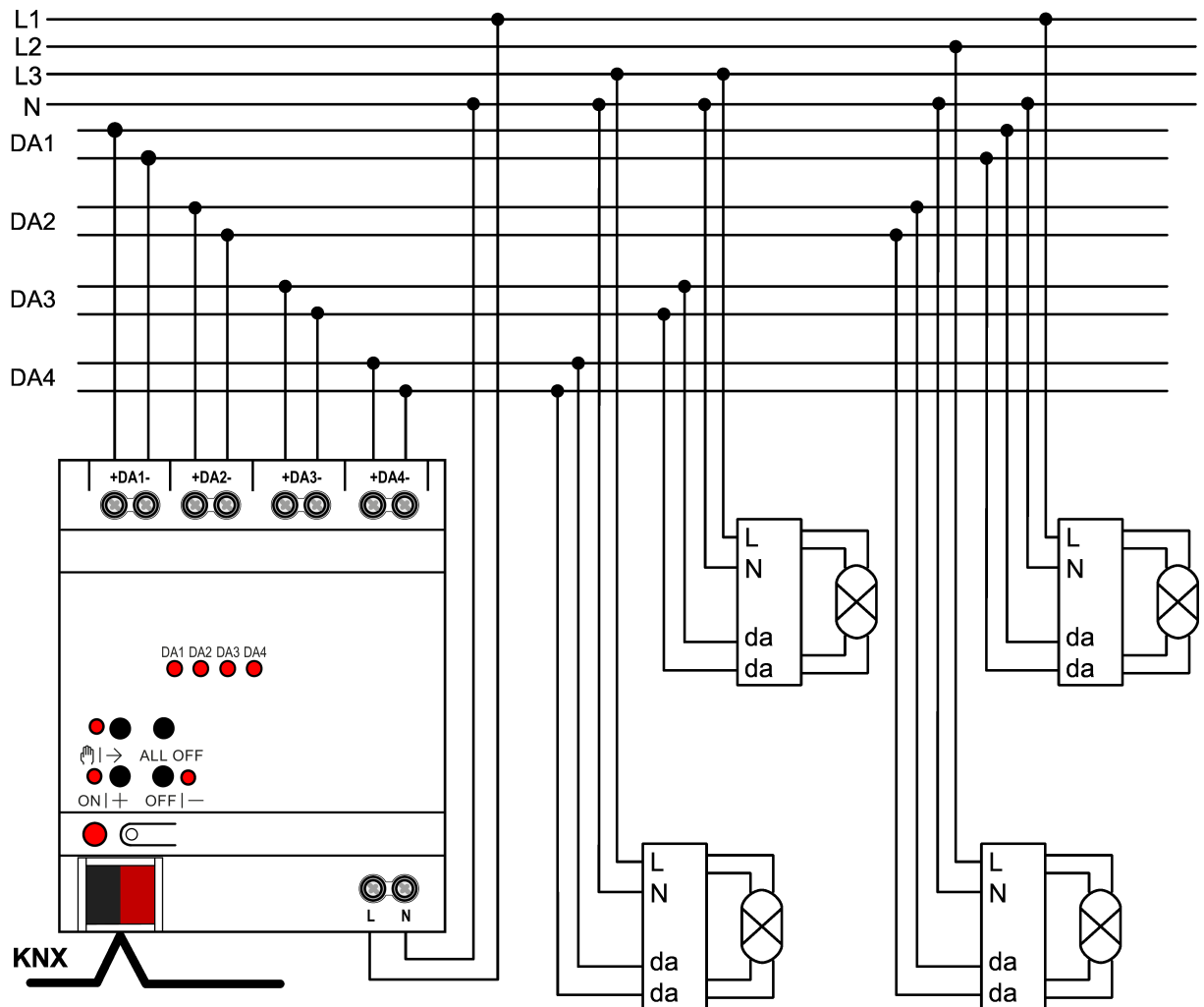
Figure 2: Connection example

- Connect device as shown in the connection example (see figure 2).

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

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

7.2   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...

Commissioning the device

- Switch on the mains supply to the device.
- 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.

  The DALI actuator initialises all connected DALI operating devices and sets the DALI parameters (power ON level, system failure level ...) according to the ETS programming.

  The DALI actuator is ready for operation.

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

| i | After each mains voltage return, the DALI actuator sends the DALI parameters (power ON level, system failure level ...) to all connected DALI devices. This means that when DALI operating devices are replaced, the DALI parameters within a DALI system are always configured the same.

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 DALI actuator 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.

8 Technical data

KNX

KNX medium	TP 256
KNX commissioning mode	S mode
Rated voltage KNX	DC 21 ... 32 V SELV
Current consumption KNX	3 ... 4 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
Power consumption	< 5.0 W

DALI

> [i] The four DALI systems are supplied with power exclusively via the DALI actuator. The connection of an additional power supply to one of the DALI systems is not permitted.

Rated voltage DALI	DC 15.2 V (typ.)
Output current per DALI system	Typ. 64 mA, max. 250 mA for short periods
Guaranteed bus current per DALI system	80 mA
Number DALI operating devices	max. of 40 per DALI system
	$\sum$ DA1 .. DA4 max. 128

> [i] If additional DALI sensors are connected, it must be ensured that the total current consumption of 80 mA per DALI system is not exceeded.

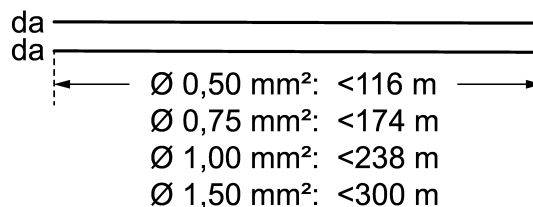|	
DALI transmission rate	1.2 kBit/s
DALI protocol	EN 62386
Duration of the starting operation	max. 5 s
Cable type	Sheathed cable 230 V, e. g. NYM

DALI cable length (see figure 3)

da
da

Ø 0,50 mm²: <116 m
Ø 0,75 mm²: <174 m
Ø 1,00 mm²: <238 m
Ø 1,50 mm²: <300 m

Figure 3: DALI cable length

Ambient conditions

Ambient temperature	-5 ... +45 °C

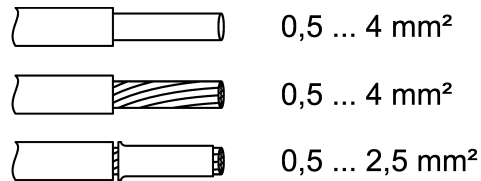|	
Storage temperature	-5 ... +45 °C
Transport temperature	-25 ... +70 °C

Clampable cable cross-sections (see figure 4)

 0,5 ... 4 mm²

 0,5 ... 4 mm²

 0,5 ... 2,5 mm²

Figure 4: Clampable cable cross-sections

Installation width	72 mm / 4 HP

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

9   Troubleshooting

DALI systems cannot be operated

Cause 1: DALI systems 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.

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.

10   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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