Operating instructions

Casambi KNX DALI Hybrid Gateway
Art. no. CGW-KNX-01

Casambi KNX DALI Dual Hybrid Gateway
Art. no. CGW-KNX-02

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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

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 V01 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 ("1gang" device variant)
- Control of max. 2x 64 DALI devices in max. 2x 32 groups ("2gang" 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 (Human Centric Lighting) mode, 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 control 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 operation
- 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 control is enabled. The connected DALI operating devices of both DALI systems can be controlled via the keypad via the broadcast function.

The complete functionality of the DALI system can only be ensured if DALI-2 operating device is used exclusively.

A complete list of DALI-2 operating and control devices can be found here: https://www.DALI alliance.org/products

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 the device depends on 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 Casambi 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.

3 Operation

Controls and indicators for manual control

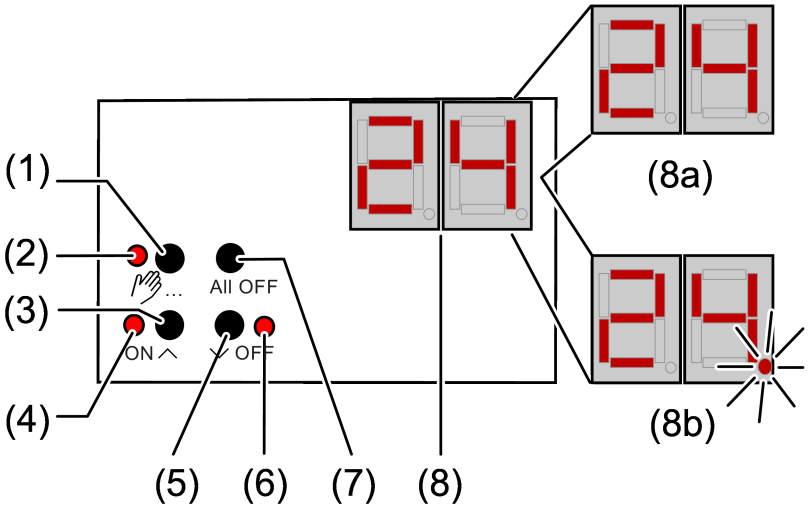

Figure 1: DALI gateway control panel, 1-gang

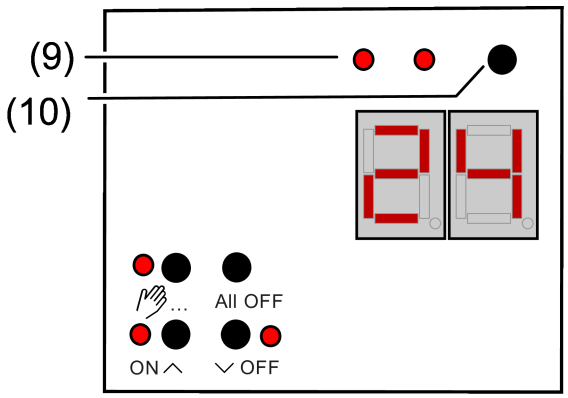

Figure 2: DALI gateway control panel, 2-gang

(1) ... button – Manual control

(2) LED ... – On: Continuous manual operation active
LED ... – Flashing: Temporary manual operation 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) Indication of DALI number

(8a) Indication of DALI group

(8b) Indication of the short address of the individual DALI devices (1...64)

(9) LED of the active DALI system lights up in manual operation 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 indicator (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 control.

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 control.

Switching on temporary manual operation

Operation using the button field is programmed and not disabled.

- Press the (1) button briefly.

  Indicator (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 operation

Operation using the button field is programmed and not disabled.

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

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

Operating DALI devices

The device is in temporary or permanent manual operation.

- Press the ... button (1) briefly as many times as necessary until the desired DALI group number or short address 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 numbers of the available DALI groups (8a) are indicated (8) first, and then the short addresses of the single devices (8b). If configured, **bc** for Broadcast appears at the beginning.

i After a device reset (mains voltage return, ETS programming operation), the switching state "OFF" may be signalled initially, regardless of the actual switching states of the DALI operating devices. In this case, the switching status is displayed correctly only after manual control. This must be observed in particular in broadcast mode when individual operating devices of the DALI system are switched on before manual control is carried out. The status LEDs then show the command of the last broadcast manual control.

Switch off all DALI devices

The device is in permanent manual operation.

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

Disabling/enabling individual DALI devices or groups

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

Press ... (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 on the indicator (8).

  DALI device or group is blocked.

  - or in case of repeated actuation -

  The indicator (8) no longer flashes.

  DALI device or group is enabled.
- Activate bus mode (see section Switching the permanent manual operation on/off).

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

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.

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

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.

- Connect device as shown in the connection example Connection

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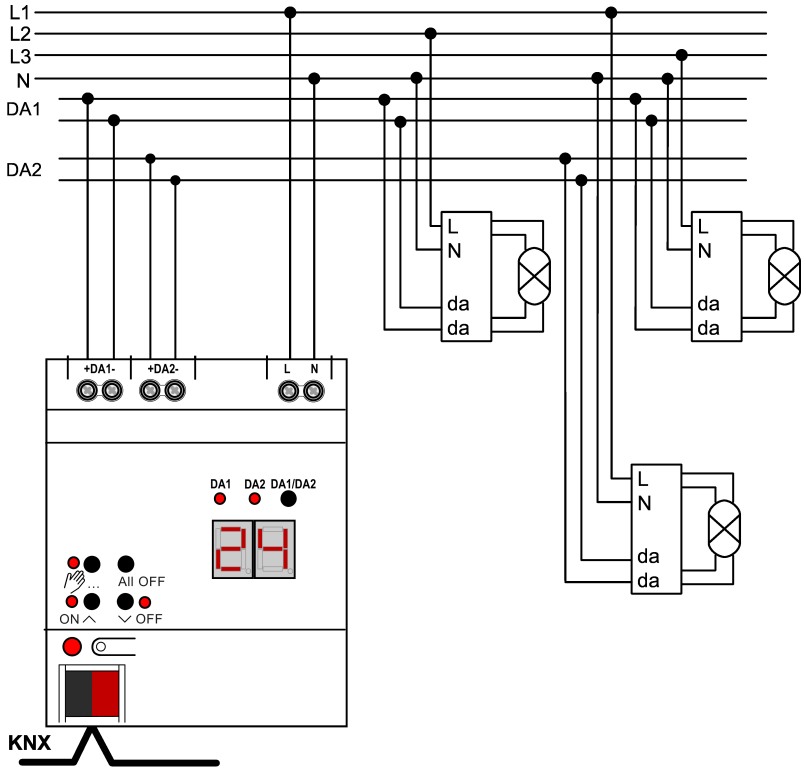

Figure 3: DALI gateway connection example, 2fold

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

If the indicator (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.

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.

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 control. 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.

ⓘ 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 control 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

Precondition: 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 Insta ETS Service App. This function uses the firmware contained in the device that was active at the time of delivery (delivery 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

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

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)

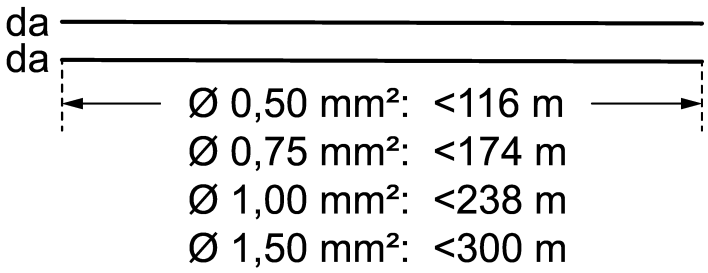

Figure 4: DALI cable length

Ambient conditions

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

Clampable cable cross-sections (see figure 5)

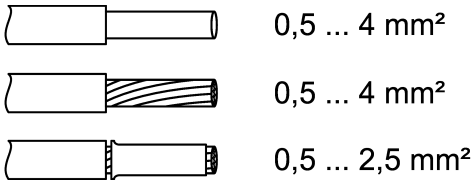

Figure 5: Clampable cable cross-sections

Installation width	72 mm / 4 HP

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 Disposal instructions

GB: Disposal obligations

The symbol with the crossed-out wheeled bin indicates that the product must be disposed of separately from household waste at the end of its useful service life in order to enable correct treatment and recycling. At the end of its service life, the user must therefore take the device free of charge to the municipal collection points responsible for the separate collection of electrical and electronic waste or return it to the dealer. Separate collection for recycling helps to avoid possible negative impacts on the environment and health, and facilitates the reuse, recycling and/or recovery of the materials in the devices. Wherever possible, batteries and rechargeable batteries must be removed from the device prior to disposal.

5.3 Troubleshooting

Indicator 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.

Indicator shows "bc" in manual operation, 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.

DALI groups or single devices cannot be operated

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

Cancel disabling.

Cause 2: Permanent manual operation is switched on.

Deactivate permanent manual operation.

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.

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 indicator (8) shows **LE.**

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

5.4 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.

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