

Description

The ekinex dimmers DALI 2 standard with 1/2/4-channel EK-GD2-DL-x-LV and EK-GD1-DL-4-LV allow brightness control of LED loads from 12 to 48 Vdc in constant voltage, dimmable in PWM modulation.

- The 1 CH model is DALI DT6 only and equipped with a local control device (N.O. button), connected directly to the dedicated input, with stand-alone or status update function on the DALI bus;
- the 2 CH model can be configured with a single DT6 output channel, 2 single DT6 channels or a single channel in TW DALI DT8 mode;
- the 4 CH model is set up with the "4 in 1" function to control RGBW color (DALI DT6), TW dynamic white temperature (DALI DT8), on 4 independent channels or a single channel.

DT6 / DT8 setting (where foreseen) is done via local selector switch. The devices have an integrated bus communication module, DALI 2 certified.



Warning! Dimmers require to use a power supply in accordance with EN 61347-2-13, such as the Mean Well mod. HLG-480H-24A.

Functional characteristics

- Memory function configurable via DALI bus: it stores the last brightness level, in case of power failure
- Soft switching on and off
- Brightness adjustment to full power off (dim-to-dark)
- Min. brightness level: 0.1% (1% with push for 1 CH)
- DALI-settable dimming curve: linear/logarithmic for 1CH, 2 CH, linear/quadratic/exponential for 4 CH
- On and off times settable via DALI
- Control inputs: N.O. push button (1 CH), DALI
- Optimized output curve
- Button for mode change and / or DT6 / DT8 selection (depending on the device version)
- Status LED (switch to stand-by after 1 min.)



Note: the 1-CH device factory default values are: automatic detection of the local command set to N.O. pushbutton and minimum dimming value set to 1%.

Technical data

Inputs

- Input (constant voltage): 12 / 48 Vdc
- Supply voltage: min: 10.8 Vdc .. max: 52.8 Vdc
- Power absorbed while awaiting command: <500 mW

Outputs

- Output voltage PWM 12 / 48 Vdc
- 1 CH: output current from 0 A to 10 A (5+5 for 2 CH)
- 4 CH: output current from 0 A to 20 A (4x max. 5 A)
- Rated power @12V: 120 W
- Rated power @24V: 240 W
- Rated power @48V: 480 W
- Command supply current (EK-GD2-DL-1-LV only): 0.5 mA (for 1-10V)
- Command required max. current (EK-GD2-DL-1-LV only): 0.1 mA (for 0-10V)



Note: values for output current and nominal power have to be intended as maximum values, depending on the ventilation conditions. The reported values are measured with a room temperature of 40 °C

Dimming

- "Flicker-free" PWM modulation: 2000Hz for 1CH and 2 CH, adjustable 300/600/1200/2000Hz for 4 CH
- PWM resolution: 16 bit
- PWM dimming range: 0.1-100%

Environmental conditions and other characteristics

- Operating temperature: -20 °C ... + 40 °C
- Storage temperature: - 40 °C ... + 60 °C
- Transport temperature: - 40 °C ... + 60 °C
- Maximum case temperature (t_c): 80 °C
- Relative humidity: 93% non-condensing
- Protection degree IP10 (device installed)
- Wiring: 1.5 mm² solid – 1.0 mm² stranded, 16-17 AWG
- Stripping: 5.0 - 6.0 mm
- Housing in plastic material
- Device suitable for installation in flush-mounting wall boxes (1 and 2 CH) or panels/cabinets 4 UM (4 CH)
- Safety class II
- Weight 37 g (1 and 2 CH) - 200 g (4 CH)
- Dimensions (LxHxP): 53 x 61 x 29 mm (1 CH e 2 CH), 72 x 91 x 62 mm (4 CH)

Protections

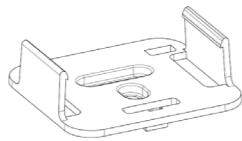
- OVP Over voltage protection¹
- RVP Reverse polarity protection¹
- OCP Open circuit protection

¹⁾ Control logic protection only

Accessory for 1 CH and 2 CH models

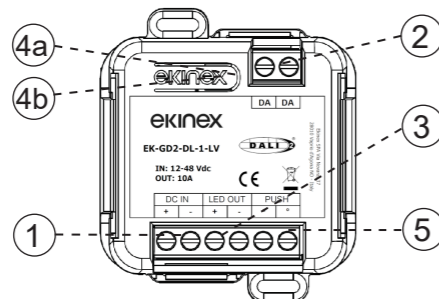
Rail-mounting support

The devices EK-GD2-DL-1-LV and EK-GD2-DL-2-LV can be mounted on 35 mm rail (according to EN 60715) with the plastic support included in the delivery.

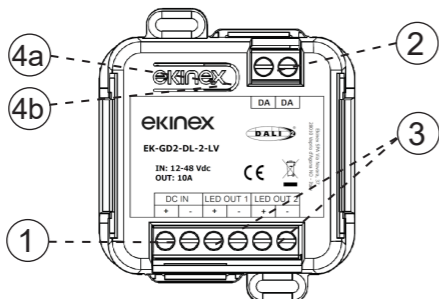


Control, signaling and connection elements

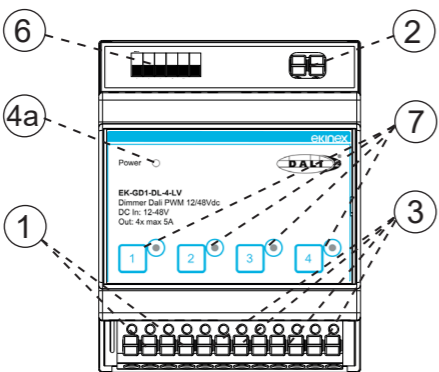
The 1 CH and 2 CH devices are equipped with screw terminals for connecting the 12 / 48 Vdc input power supply (1), the output loads (3) and the DALI bus (2). In the 4 CH models, the same terminals are of the spring type. The 1 CH model is equipped with 2 poles for local control (5). The 4 CH model is equipped with a DT6 / DT8 configuration selector (6) and status LEDs (4a). The 1CH and 2 CH models have internal status LEDs (4a) and button for mode change (4b, 1 CH only) or DT6 / DT8 selection (4b, 2 CH only). The 4 CH model has an LED for each channel (7), lit if active. By pressing the button, the load connected to the channel flashes.



EK-GD2-DL-1-LV



EK-GD2-DL-2-LV



EK-GD1-DL-4-LV

Nr.	Label	Connection
1	DC IN (+)	DC (+) input
	DC IN (-)	DC (-) input
2	DA	DALI pole 1
	DA	DALI pole 2
3	LED OUT x (+)	Output x (+)
	LED OUT x (-)	Output x (-)
4a	-	Status LED (internal for CH1 and CH2)
4b	-	Feedback (*) or DT6 / DT8 selector (**)
5 (*)	PUSH	N.O. input button, pole 1
5 (**)	PUSH	N.O. input button, pole 2
6 (***)	-	DT6 / DT8 selector switch (under the removable cover) - pls see datasheet
7 (***)	-	Pushbutton and active channel LEDs

(*) EK-GD2-DL-1-LV only

(**) EK-GD1-DL-2-LV only

(***) EK-GD1-DL-4-LV only

The meaning of the status LED for EK-GD2-DL-1-LV and EK-GD2-DL-2-LV devices is as follows:

- Green steady on: normal operation and DALI line present;
- Green flashing: no DALI line;
- Flashing red: generic output error.

For EK-GD1-DL-4-LV is as follows:

- Green steady on: normal operation and DALI line present
- Green flashing 1 time/sec: DALI line missing
- Green flashing every 0.5 sec: generic output error

The button (4b) for EK-GD2-DL-1-LV activates the feedback function, while for EK-GD2-DL-2-LV it allows the selection of DT6 (1 or 2 channels) or DT8 Tunable White. The same configuration for EK-GD1-DL-4-LV model is done via the selector switch, positioned under the removable cover.

The configuration details are shown in the data sheet.

Mounting

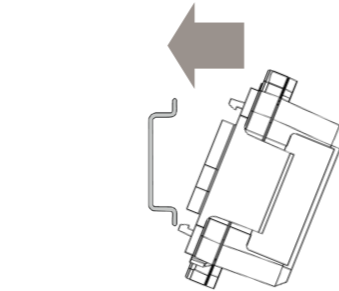
The devices have degree of protection IP10, and are therefore suitable for use in dry interior rooms. The 1 CH and 2 CH models are suitable for installation in wall-mounting boxes. The plastic support allows mounting on a profile rail according to EN 60715 inside electrical distribution panels and cabinets.

Before removing the device, be sure that inputs, outputs, and the DC power supply have been disconnected.

Mounting for 1 CH and 2 CH versions

Insert the mounting support in the appropriate shaped profile of the back side of the device, then hook the teeth to the profile guide starting from the bottom. Finally, push the upper part towards the guide for final coupling.

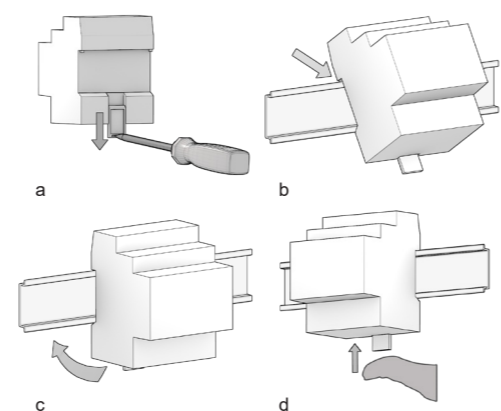
Mounting for 4 CH version



For the mounting proceed as follows:

- with the aid of a tool bring the locking device in the fully lowered position (a);
- place the upper edge of the rear inner profile on the upper edge of the rail (b);
- rotate the device towards the rail (c);
- push the locking device upward until it stops (d).

To remove the device, be sure that inputs, outputs, and



the input power supply have been disconnected. Then use a screwdriver to slide down the locking device and remove the device from the rail.



Note. When mounting the device in boards and cabinets it shall be provided the necessary ventilation so that the temperature can be kept within the operating range of the device.

Setup and installation

The steps to setup the device are as follows:

- 1) connect the load LEDs to the output terminal blocks "LED OUT" of the device.

- 2) connect the local command (where available) to the "PUSH" input for "stand-alone" mode and / or connect the DALI bus to the related DA terminal blocks;
- 3) connect the 12/48 Vdc power supply to the terminal blocks "DC IN" of the device.

DALI bus line and command connections

The connection to the DALI bus network and the local commands is done via the screw or spring terminal, located on the front of the device in the upper part.

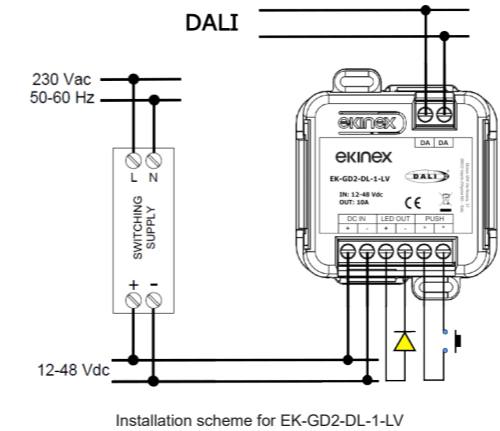
For 1 CH device, the length of the connection cables between the local commands (if available) and the product must be less than 10m; the cables must be correctly dimensioned and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated shielded and twisted cables.

The length and type of the connection cables to the DALI bus must be compliant with the protocol specification and the present regulations and they should be isolated from every wiring or parts at voltage not SELV. Use double insulated shielded and twisted cables.

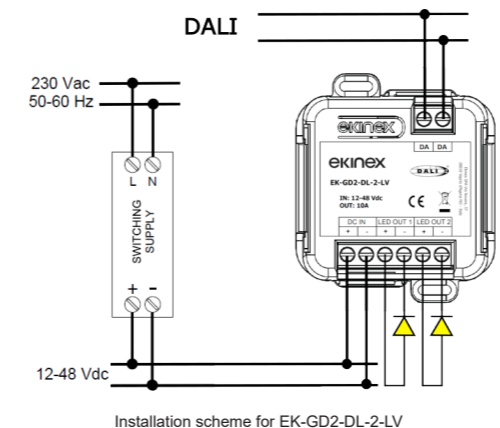
All the devices and the control signal connected to the DALI bus and to the local command (where available) must be SELV (the devices connected must be SELV or supply a SELV signal).

INSTALLATION TECHNICAL NOTES

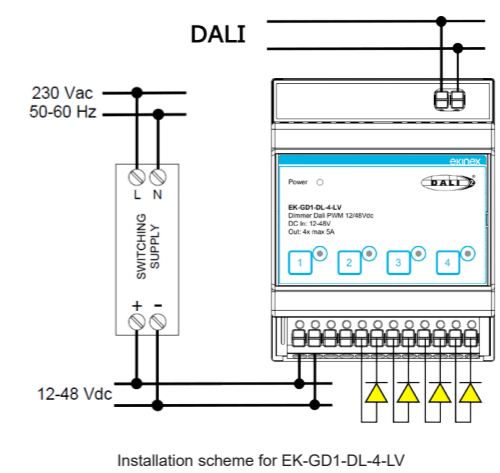
- Installation and maintenance must be performed only if the power supply has been turned off.
- Installation and maintenance must only be performed by qualified personnel in compliance with current regulations.
- The product must be installed inside an electrical panel protected against overvoltages.
- The product must be installed in a vertical position with the front / label facing the front or in a horizontal position with the front panel / label facing down is not allowed.
- Keep separated the circuits at 230V and the circuits not SELV from circuits to low voltage (SELV) and from any connection with this product. It is absolutely forbidden to connect, for any reason whatsoever, directly or indirectly, the 230V mains voltage to the bus or to other parts of the circuit.



Installation scheme for EK-GD2-DL-1-LV



Installation scheme for EK-GD2-DL-2-LV



Installation scheme for EK-GD1-DL-4-LV

Characteristics of the DALI terminal block

- Screw or spring (for CH4) tightening of conductors
- Command and bus wiring: 1.5 mm² solid – 1.0 mm² stranded – 16 - 17 AWG
- Conductor stripping recommended: 5.0 - 6.0 mm
- Maximum length of the connection between dimmer-driver and control device < 10 m
- Length of bus connection cables < 25 m

Connection of power supply and LEDs

For the power supply use SELV power suppliers with limited current, short circuit protection only and the power must be correctly dimensioned. In case of usage of a power supplier with ground terminals, all points of the protective earth (PE = Protection Earth) must be connected to a valid and certified protection earth.

The connection cables between the power source "low voltage" and the product must be correctly dimensioned and they should be isolated from every wiring or parts at not-SELV voltage. Use double insulated cables.

The power supply must be dimensioned according to the load connected to the device. If the power supply is oversized with respect to the maximum absorbed current, then insert a protection against over-current between the power supply and the device.

Characteristics of the supply and LEDs terminal block

- Screw (spring for 4 CH) tightening of the conductors
- Power and LEDs wiring: 1.5 mm² solid – 1.0 mm² stranded – 16 - 17 AWG
- Power and LEDs stripping recommended approx.: 5.0 - 6.0 mm
- Max torque 0.5 Nm

Outputs

The length of the connection cables between the product and the LED module must be less than 30m; the cables must be correctly dimensioned and they should be isolated from every wiring or parts at not-SELV voltage. It is preferable to use shielded and twisted cables.

Configuration and commissioning

Configuration and commissioning activities of the device must be carried out according to the design of the building automation system done by qualified planners.

For commissioning the device the following activities are required:

- make the electrical connections as indicated above;
- power up the bus;
- for 1 CH device, it is possible to select the "stand-alone" mode through the local command (connection to the DALI bus is not necessary);
- carry out the device programming, as described in the product datasheet.

Programming EK-GD2-DL-1-LV only

For the use of the device in conjunction with a local control, please refer to the technical data sheet.

At the first start-up, in case of lack of the DALI bus, the local control is active and the LED is orange. If the DALI bus is detected, control passes to it and the LED is blue. The programming button on the front of the device allows to select between the 2 modes.

Programming EK-GD2-DL-2-LV and EK-GD1-DL-4-LV

For a description of the device settings, please refer to the datasheet.

Marks

- CE: the device complies with the Electromagnetic Compatibility Directive (2014/30/EU), the Low Voltage Directive (2014/35/EU) and the RoHS III Directive (2011/65/EU).

DALI 2 standard dimmers at 12 / 48 Vdc with 1/2/4-channel

Codes: EK-GD2-DL-1-LV
EK-GD2-DL-2-LV
EK-GD1-DL-4-LV



Instructions



EK-GD2-DL-1-LV EK-GD2-DL-2-LV EK-GD1-DL-4-LV

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FISPEKGDXLXLVIE1

- Reference Standards: EN 61347-1:2015, EN 61347-2-13, EN 55015:2013+A1:2015, EN 61547:2009, EN 50581:2012, IEC/EN 62386-101/102/207, IEC/EN 60929-E.2.1.

Maintenance

The device is maintenance-free. To clean use a dry cloth. It must be avoided the use of solvents or other aggressive substances.

Disposal

At the end of its useful life the product described in this datasheet is classified as waste from electronic equipment in accordance with the European Directive 2012/19/EU (WEEE recast), and cannot be disposed together with the municipal undifferentiated solid waste.



Warning! Incorrect disposal of this product may cause serious damage to the environment and human health. Please be informed about the correct disposal procedures for waste collecting and processing provided by local authorities.

Warnings

- Installation, electrical connection, configuration and commissioning of the device can only be carried out by qualified personnel in compliance with the applicable technical standards and laws of the respective countries
- Opening the housing of the device causes the immediate end of the warranty period
- In case of tampering, the compliance with the essential requirements of the applicable directives, for which the device has been certified, is no longer guaranteed
- ekinex® defective devices must be returned to the manufacturer at the following address: Ekinex S.p.A. Via Novara 35, I-28010 Vaprio d'Agogna (NO) Italy

Other information

- The instruction sheet must be delivered to the end customer with the project documentation
- For further information on the product, please contact the ekinex® technical support at the e-mail address: support@ekinex.com or visit the website www.ekinex.com
- Each ekinex® device has a unique serial number on the label. The serial number can be used by installers or system integrators for documentation purposes and has to be added in each communication addressed to the EKINEX technical support in case of malfunctioning of the device
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