DALI 2 90-230 Vac 1-channel phase cut dimmer

Code: EK-GD2-DL-1-HV

Datasheet STEKGD2DL1HV_EN

DALI 2 bus single-channel phase-cut dimmer with 90-230 Vac power supply, with brightness control function for LED and halogen sources up to a maximum of 230 W.

Description

The ekinex DALI 2 phase-cut single channel dimmer powered at 90-230 EK-GD2-DL-1-HV allows the brightness control of luminous loads with voltage 90 - 230 Vac at 50/60 Hz. The device has a maximum output power of 230 W and allows the operation and adjustment of the brightness of incandescent lamps, low voltage halogen lamps, dimmable low voltage LED lamps, dimmable compact fluorescent lamps, dimmable inductive transformers with halogen lamps or low voltage LED lamps, dimmable electronic transformers with halogen lamps or low voltage LED lamps. The dimmer automatically selects between Trailing edge or Leading edge. The device has an integrated bus communication module, DALI 2 certified, which does not require an auxiliary power supply.

Main functional characteristics

- Memory function settable by DALI software: it saves the last brightness level in the event of a power failure
- Fade time, minimum and maximum brightness level settable by DALI software
- Soft on and off
- Brightness adjustment until completely switched off (dim-to-dark)
- Min level brightness: 0.1%
- Linear or logarithmic adjustment curve settable by DALI software
- On and off times settable via DALI
- Optimized output curve

Technical data

Inputs

- Power supply: 90 - 230 Vac 50/60 Hz
- Maximum input current: 1 A
- Inputs according to DALI 2 protocol certified to IEC 62386

Outputs

- Power supply: 90 - 230 Vac 50/60 Hz
- Output power: 110 W @ 110 Vac, 220 W @ 220 Vac, 230 W @ 230 Vac
- Minimum load power: 1 W
- Maximum output current: 1 A

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. For electronic loads and/or LEDs consider the maximum power halved compared to the nominal value.*

Dimming

- Phase cut dimming mode with automatic Trailing edge / Leading edge selection
- Dimming range: 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: IP00 (IP20 inside a wall-mounting box or electrical panel)
- Loads and supply wiring: 1.5 mm^2 solid – 2.5 mm^2 stranded (16 - 13 AWG)
- Stripping: 5.0 - 6.0 mm
- Housing in plastic material
- Device suitable for installation in flush-mounting wall boxes
- Safety class II
- Weight 37 g
- Dimensions (LxHxP): 53 x 61 x 29 mm

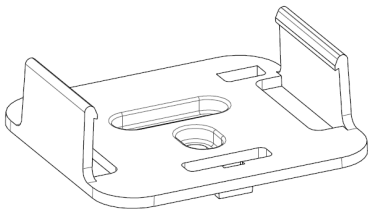
Protections

The device is equipped with the following protections:

- OVP Input voltage peak protection
- RVP Overcurrent protection with 3 A non-resettable fuse
- OCP Output open circuit protection

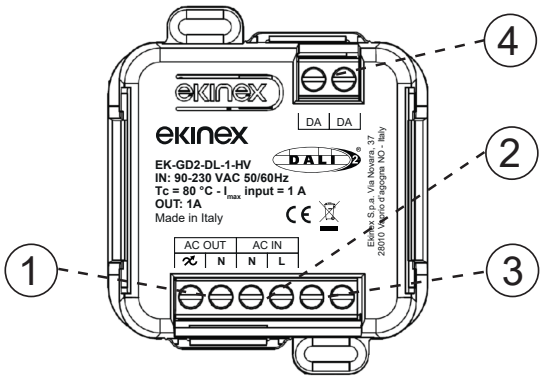
Accessory

The devices EK-GD2-DL-1-HV 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 device is equipped with a screw terminal for connecting the 90 - 230 Vac output loads (1), the 90 - 230 Vac input power supply (2) and a screw terminal for connecting the DALI line (4) . The pair of terminals (3) is not used.



EK-GD2-DL-1-HV

Nr.	Label	Connection
1	⏦	AC Output - Live
	AC OUT (N)	AC Output - Neutral
2	AC IN (N)	AC Input - Neutral
	AC IN (L)	AC Input - Live
3	-	Not used
4	DA	DALI - pole 1
	DA	DALI - pole 2

Mounting

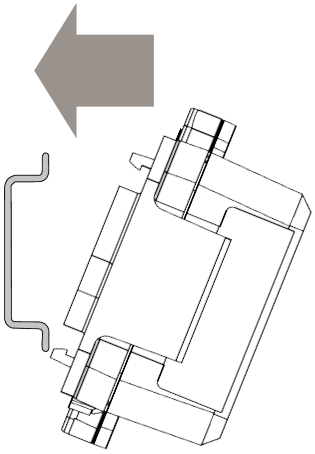
The device has degree of protection IP10, and is therefore suitable for use in dry interior rooms. It is suitable for installation in wall-mounting boxes. The plastic support allows mounting on a profile rail according to EN 60715 inside electrical distribution panels and cabinets.

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

For the mounting proceed as follows:

- 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.

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

- connect the loads to the AC OUT (⏦, N) terminals of the device;
- connect the DALI bus to the corresponding terminals (4) of the device;
- connect the 90 - 230 Vac power supply to the AC IN (L, N) terminals of the device.

DALI bus line connection

The connection to the DALI bus network is done via the screw terminals located on the front of the device in the upper part.

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 connected to the DALI bus must be SELV (the devices connected must be SELV or supply a SELV signal).

Characteristics of the DALI terminal block

- Screw tightening of the conductors
- Command and bus wiring: 0.05 mm^2 solid – 1.5 mm^2 stranded – 30 - 16 AWG
- Conductor stripping recommended: 5.0 - 6.0 mm
- Length of connection cables < 25 m
- Max torque 0.5 Nm for screw terminals

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 a wall mounting box or an electrical panel, where it is recommended to install a surge protector.**
- **The product must be protected by a suitably sized fuse.**
- **The product must be protected by a suitably sized magnetothermic switch on the main input line.**
- **The product must be installed in a vertical position with the front / label facing the front or in a horizontal position with the front / label facing upwards. Other product installation positions are not allowed.**
- **Do not connect inductive loads. Do not connect to UPS (uninterruptible power supply) with output other than Pure Sine Wave. The device is not grounded. Protection from accidental contacts is guaranteed by the casing.**
- **Use in thermally harsh environments could limit the output power.**
- **In the system, keep the 90-230Vac circuits and the non-SELV circuits separate from the SELV circuits at very low safety voltage and from the DALI bus**
- **It is absolutely forbidden to connect, for any reason whatsoever, directly or indirectly, the 90-230Vac mains voltage to the DALI bus or to the loads.**
- **Use double insulated cables.**

Connection of power supply and loads

For the power supply use SELV power suppliers with li-
The connection to the 90-230 Vac 50-60Hz power supply is done via the screw terminals, located in the lower part of the device.

Characteristics of the supply and loads terminal block

- Screw tightening of the conductors
- Power and loads wiring: 1.5 mm^2 solid – 2.5 mm^2 stranded – 16 - 13 AWG
- Stripping recommended approx.: 5.0 - 6.0 mm
- Max torque 0.5 Nm

Outputs

The cables connected to the outputs must be correctly sized and must be isolated from any wiring or parts with different voltages. The length and type of connection cables must comply with the specifications of the respective protocol and the regulations in force.

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.

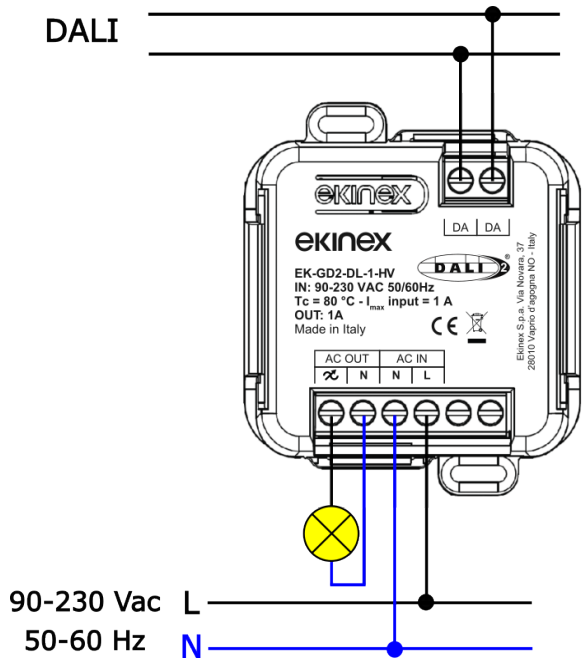
For commissioning the device the following activities are required:

- make the electrical connections as indicated above;
- power up the supply and the DALI bus;
- carry out the device programming via a DALI interface.

Installation diagrams

The device can be installed according to the following schemes:

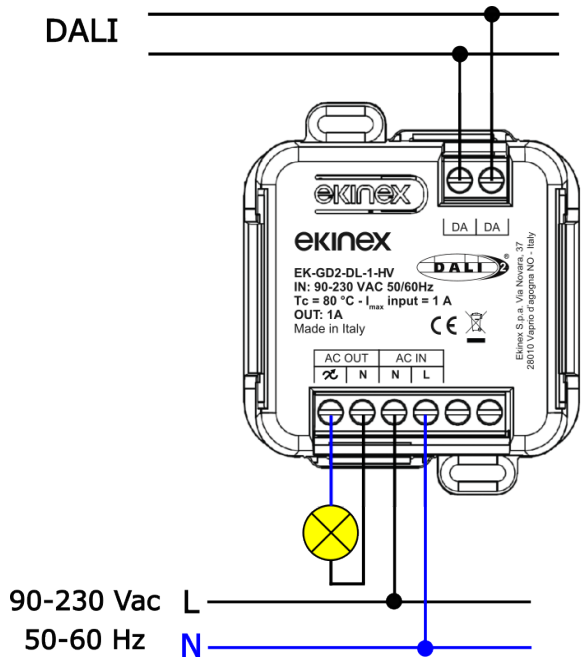
1. “Classic” 4-wire connection



“Classic” 4-wire connection diagram

2. Four-wire connection with phases and neutral reversed

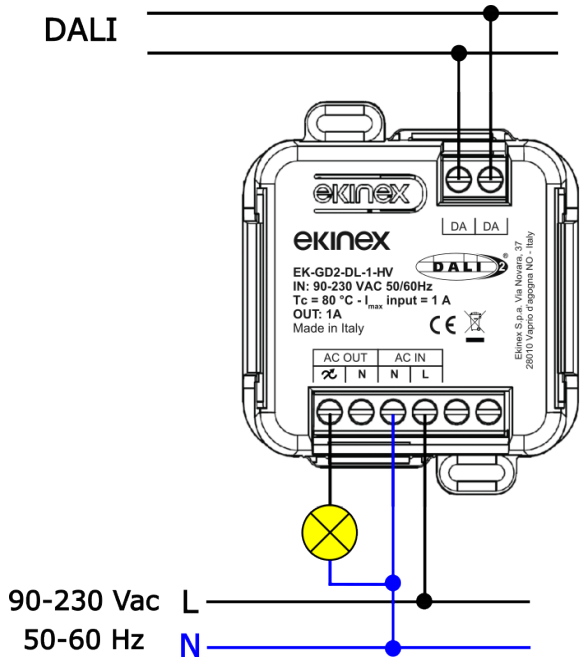
Not having phase and neutral references, the device can also be connected by inverting all the phases with the neutral:



Four-wire connection diagram with phases and neutral reversed

3. Three-wire connection with common neutral

This 3-wire configuration is useful for connecting loads in systems with phase/neutral already connected.



Three-wire connection diagram with common neutral

Warning! In configurations 2 and 3, the internal fuse on the load located between pole 2 and pole 3 of the terminal board, which activates the overcurrent protection, does not operate.

The electronic short circuit protection remains functional.

Configuration change

Subsequently, it is possible to modify the configuration of the devices and the addressing using a parameterization application, for example by downloading the ekinex CGEKBG1TP software onto the PC which allows:

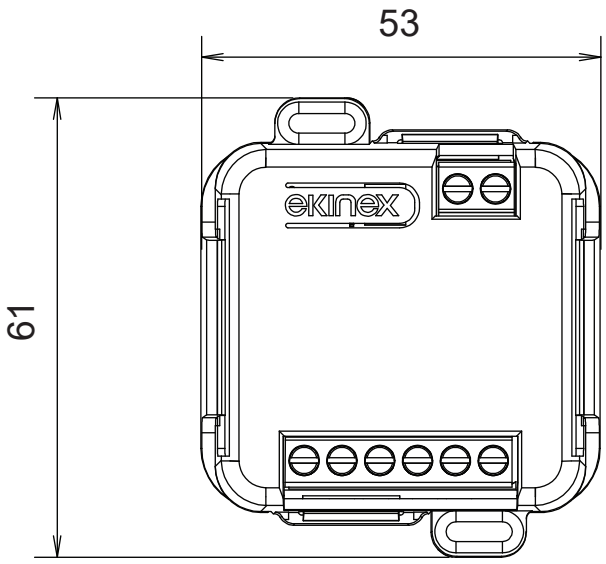
- configure the DALI system and define its parameters;
- set the DALI luminaires (groups, scenes, IDs, etc.);
- test the communication on the DALI bus;
- update the device.

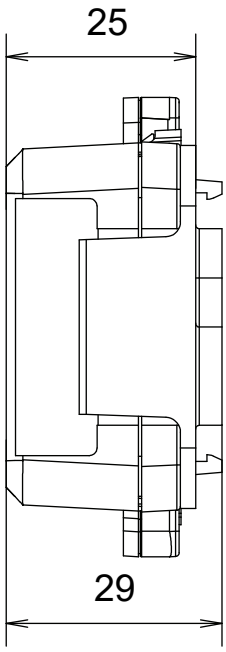
Note. *The programming of the parameters mentioned above must be carried out only during the programming phase. If the customer has a DALI programmer / master, he can reprogram them as he wishes.*

The software can be downloaded from the website www.ekinex.com and its use is described in the application manual of the ekinex EK-BG1-TP DALI Gateway. The software works with Microsoft Windows (7 and later).

Note. *For the CGEKBG1TP configuration software to work, it may be necessary to install .NET Framework 4, which can be downloaded freely from the Microsoft website.*

Dimensions





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).
- 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.

References

- IEC/EN 62386-101 - Digital addressable lighting interface, General requirements - System
- IEC/EN 62386-102 Digital addressable lighting interface, General requirements - Control gear
- IEC/EN 62386-207 Digital addressable lighting interface, Particular requirements for control gear – LED modules (device type 6).
- IEC 60929-E.2.1 Control interface for controllable ballasts - control by DC voltage - functional specification

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
- DALI, DALI2 and their logos are registered trademarks of the Digital Illumination Interface Alliance (DiiA).