DALI 2 90-230 Vac 4-channels phase cut dimmers

Code: EK-GD1-DL-4-HV

Datasheet STEKGD1DL4HV_EN

DALI 2 standard bus dimmer with 90-230 Vac power supply and 4 channels, for controlling the brightness of LED and halogen sources with 90-230V AC 50/60Hz voltage for a maximum of 200W on 4 channels each.

Description

The ekinex DALI 2 phase-cut dimmer powered at 90-230 Vac with 4 channels EK-GD1-DL-4-HV allows the brightness control of luminous loads with voltage 90 - 230 Vac at 50/60 Hz. The device has a max. of 200 W for each channel. The loads that can be used with the EK-GD1-DL-4-HV dimmer can be incandescent lamps, mains voltage halogen lamps, dimmable mains voltage LED lamps, dimmable mains voltage LED strips, switching power supplies for Phase cutting dimmable LEDs.

The dimmer cuts the phase in Trailing Edge mode (on the falling edge).

The dimmer is DALI2 certified (GTIN:8050054980065) with reference to parts 101, 102, 205.

Main functional characteristics

- Memory function settable via DALI bus: it saves the last brightness level in the event of a power failure
- Fade time, minimum and maximum brightness level settable via DALI bus
- Soft on and off
- Min level brightness: 0.1%
- Logarithmic adjustment curve settable via DALI bus
- On and off times settable via DALI
- Optimized output curve
- Channel buttons 1-2-3-4 for local on / off test only in case of DALI bus absence
- Signaling in case of short circuit, lack of voltage and overload

Technical data

Inputs

- Power supply: 90 - 230 Vac 50/60 Hz
- Maximum input current: 4 A
- Inputs according to DALI 2 protocol certified to IEC 62386, parts 101, 102, 205.

Outputs

- Power supply: 90 - 230 Vac 50/60 Hz
- Output power per channel 110 W @ 110 Vac, 220 W @ 220 Vac, 230 W @ 230 Vac
- Minimum load power: 1 W per channel
- 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 whose PFC or harmonic distortion is not known, consider the maximum power halved compared to the nominal value.*

Dimming

- Trailing edge dimming mode with open load control (OPEN CIRCUIT) and short circuit on the load (SHORT CIRCUIT)
- 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: 91% 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 panels/cabinets 4 UM
- Weight 200 g
- Dimensions (LxHxP): 71 x 91 x 62 mm

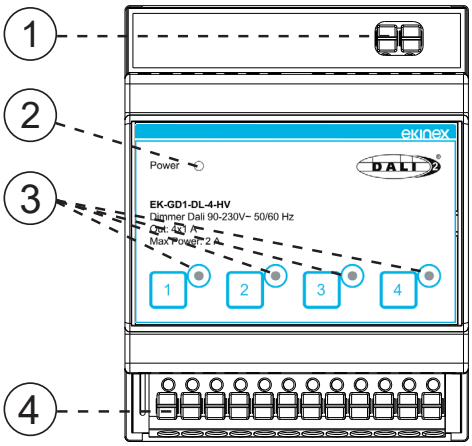
Protections

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

Control, signaling and connection elements

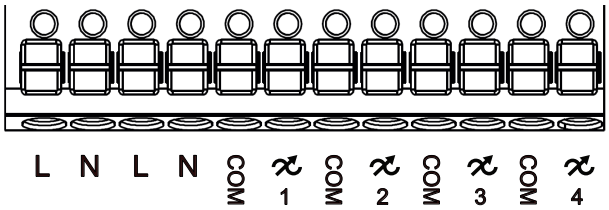
The device is equipped with a spring clamp for connecting the output loads on 4 channels and the 90 - 230 Vac input power supply (4). There is also a signaling LED for the presence of the power supply (2), a button and LED for each channel (3), for local on / off test only in case of DALI bus absence and finally a spring terminal for connection of the DALI line (1).



EK-GD1-DL-4-HV

Nr.	Label	Connection
1	-	DALI bus - pole 1 and 2 spring clamp
2	Power	Signalling LED
3	x	LED and channel x (x = 1,2,3,4) button
4	-	Power supply and loads clamps

The terminals for power supply and loads follow the diagram in the table:



Label	Connection
x	Channel x (x=1,2,3,4) AC output - Live
COM	Channel x (x=1,2,3,4) AC output - Neutral
N	AC input - Neutral
L	AC input - Live

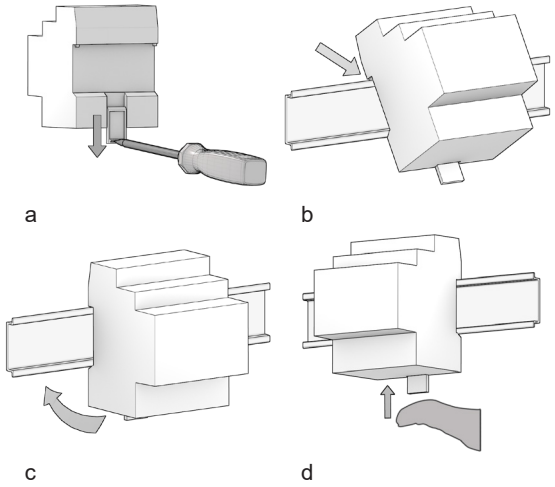
Mounting

The device has degree of protection IP00 (IP20 inside a wall-mounting box or electrical panel), and are therefore suitable for use in dry interior rooms. The mounting must be performed on a profiled rail according to EN 60715 inside electrical distribution panels and cabinets.

To disassemble the device, to have first to disconnect the inputs, outputs and power supply.

When assembling, make sure to leave only the front panel accessible; all other sides must not be accessible. 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 loads to the -x and COM terminals of the device
2. Connect the DALI bus to the corresponding terminals of the device
3. Connect the 90 - 230 Vac power supply to the L, N input terminals of the device

DALI bus line connections

The connection to the DALI bus network is done via the spring clamp terminal, 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).

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.**

Characteristics of the DALI terminal block

- Spring 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

Connection of power supply and loads

The connection to the 90-230 Vac 50-60Hz power supply is done via the spring terminals, located in the lower part of the device.

Characteristics of the supply and loads terminal block

- Spring 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

Output

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 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:

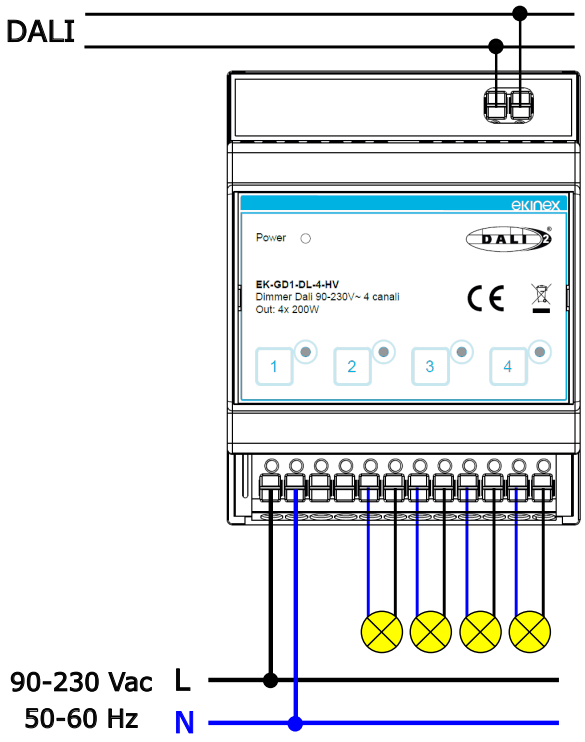
- make the electrical connections as indicated above;
- power up the supply and the DALI bus;
- carry out the device programming via a DALI interface.

By pressing the button relating to a channel for 1 second, a test of the connected load is carried out, which turns on with 2 brightness levels in sequence.

Installation diagrams

The device can be installed by wiring the outputs with either a separate COM pole or a common COM pole. The following schemes can be implemented:

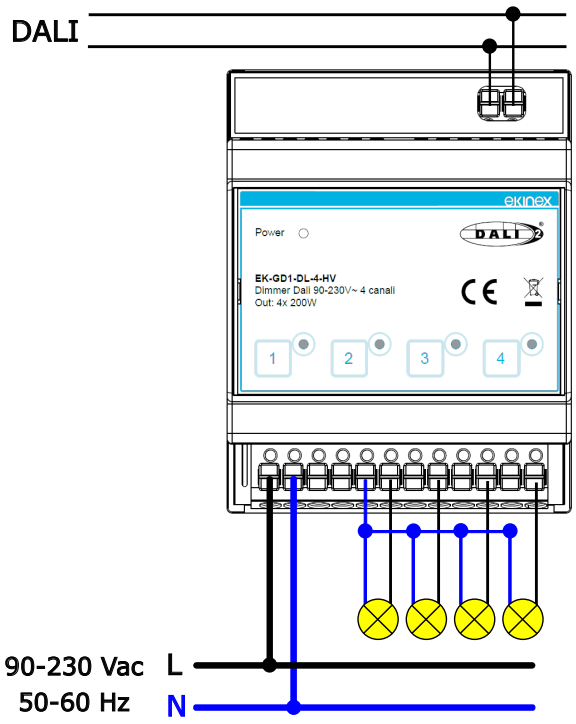
1. Outputs with separate COM pole connection



Installation diagram with outputs with separate COM pole connection

2. Outputs with common COM pole connection

The terminals indicated by the COM label can be used as a common terminal for the loads



Installation diagram with outputs with common COM pole connection

Warning! For the EK-GD1-DL-4-HV model, the N terminals for input must not be connected to the COM outputs

Warning! In configuration 2, the internal fuse on the load, which activates the overcurrent protection, does not operate.

The electronic short circuit protection remains functional.

Configuration change

Subsequently, it is possible to change the device configuration and addressing using an application for parameterization, for example by downloading the ekinex CGEKBG1TP software to the PC which allows you to:

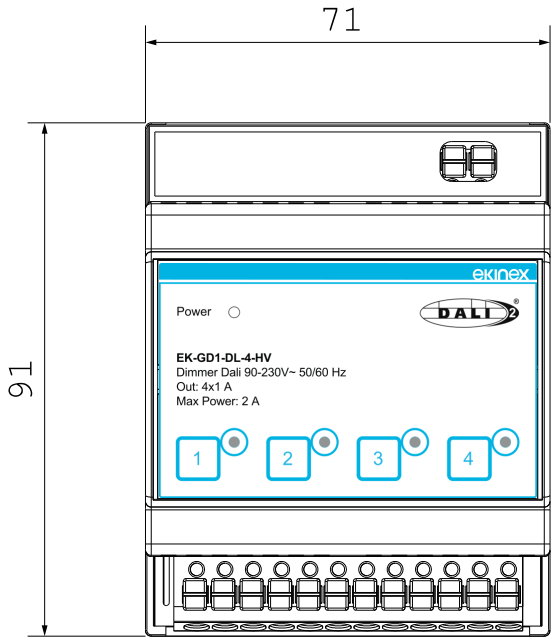
- configure the DALI system and define its parameters;
- set the DALI devices (groups, scenarios, IDs, etc.);
- test the communication on the DALI bus;
- update the device.

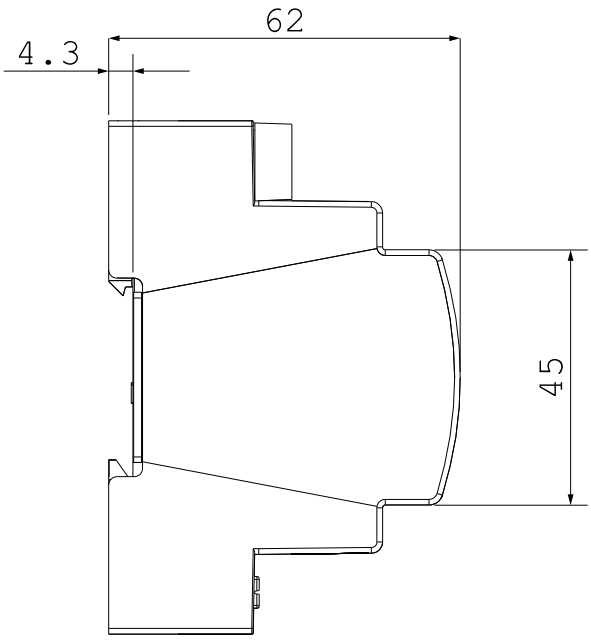
Note. *The programming of the parameters mentioned above must be carried out only during the programming phase. If the customer has a DALI programmer / master, he can reprogram them as he wishes.*

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 [mm]





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 IEC 55015:2019 = CISPR 15:2018; EN 61547:2009 = IEC 61547:2009; EN IEC 61000-3-2:2019 = IEC 61000-3-2:2018; EN 61000-3-3:2013 + A1:2019 = IEC 61000-3-3:2013 + A1:2017. IEC 61347-2-11:2001, AMD1:2017 used in conjuction with IEC 61347-1:2015, AMD1:2017.

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 62386-205 - Digital addressable lighting interface, Particular requirements for control gear – – Supply voltage controller for incandescent lamps (device type 4)
- 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.*

Documentation

This datasheet refers to the release A1.0 of the ekinex® device EK-GD1-DL-4-HV, and is available for download at www.ekinex.com as a PDF (Portable Data Format) file.

File name	Device release	Updating
STEKGD1DL4HV_EN.pdf	A1.0	09 / 2023

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).