

Description

The ekinex KNX phase-cut dimmer powered at 90-230 Vac with 4 channels and common neutral pole EK-GD1-TP-4-HV allows the brightness control of luminous loads with supply voltage 90 - 230 Vac at 50/60 Hz. The device has a maximum output power of 230 W for each channel and can be installed by connecting the common neutral pole of the system. The loads that can be used with the dimmer can be: incandescent lamps, mains voltage halogen lamps, dimmable mains voltage LED lamps, dimmable mains voltage LED strips, switching power supplies for dimmable phase cut LEDs. The dimmer cuts the phase in Trailing Edge mode (on the falling edge), Leading Edge mode (on the rising edge) or AI Edge (optimized phase cut for 230Vac LED strips). The device has an integrated KNX certified bus communication module with SELV 30 Vdc voltage.

Functional characteristics

- ON/OFF control and regulation of the luminous intensity of single or group lighting fixtures
- Fade time on and off, minimum and maximum brightness level, linear or logarithmic regulation curve settable via ETS
- Soft or instant on and off, with settable delay
- Configuration of behavior after power recovery, bus ON/OFF, download via ETS
- Channels settable via ETS as independent, in parallel or with copy function from another channel
- Phase cut type setting selectable via ETS
- Status indication of the outputs through LEDs
- Block function, forced operation, staircase light, scenarios, night, counter and logic functions for each channel, settable by ETS
- Alarm for power failure
- Auxiliary output function with status advice via KNX
- Manual command via membrane buttons and for local ON/OFF test of channels 1-2-3-4 (if KNX bus is active): if manual mode has been activated, a short press of the channel button activates/deactivates the load, pressing it for at least 2 seconds causes the load to flash approximately every 1 s

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.

Technical data

Inputs

- Power supply: 90 - 230 Vac 50/60 Hz
- Maximum input current: 2 A

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 per channel (max. 2 A)

Dimming

- Trailing edge, Leading Edge and AI Edge (optimized for 230V LED strips) 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 (tc): 65 °C
- Relative humidity: 91% non-condensing
- Protection degree: IP00 (IP20 inside a wall-mounting box or electrical panel)
- Loads and supply wiring: 1.5 ÷ 4.0 mm² solid – 1.5 ÷ 4.0 mm² stranded (26 ÷ 10 AWG)
- KNX bus wiring: 0.26 ÷ 0.5 mm² – 23 ÷ 20 AWG
- Stripping: 8.0 mm
- Housing in plastic material
- Device suitable for installation in panels/cabinets 4 UM
- Weight 200 g
- Dimensions (LxHxW): 71x91x62 mm

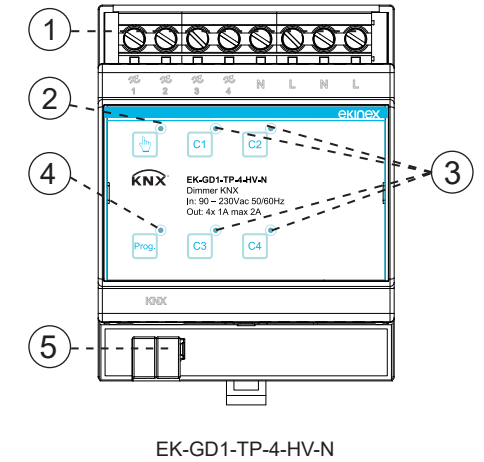
Protections

- OVP Input voltage peak protection
- RVP Overcurrent protection with 5 A non-resettable fuse
- OCP Output open circuit protection

Control, signaling and connection elements

The device is equipped with a screw clamp for connecting the output loads on 4 channels and the 90 - 230 Vac input power supply (1). There are also a signalling LED for manual mode / test (2), a button and LED for each channel (3), for local on/off testing (only if KNX bus is active), a KNX programming button with LED (4) and the KNX bus terminal (5).

To carry out the local on/off test, first activate the manual / test mode: briefly pressing the button turns the connected load on or off, while pressing it for at least 2 seconds makes the load flash approximately every 1 s.



Nr.	Label	Connection
1	-	Power supply and loads clamps
2		Manual mode / Test button with signalling LED
3	Cx	LED and channel x (x = 1,2,3,4) button
4	Prog.	KNX programming button and LED
5	-	KNX bus terminal

The configuration details are shown on the data sheet.

The terminal diagram for power and loads is as follows.

1 2 3 4 N L N L							

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

Mounting

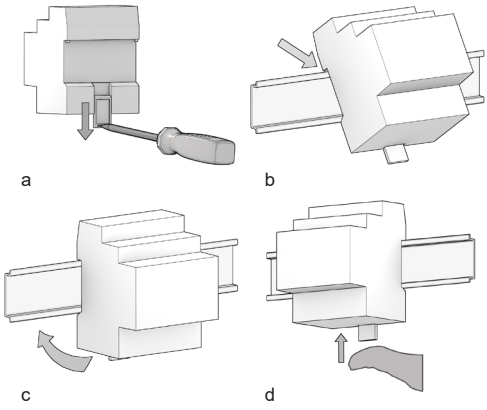
The devices have degree of protection IP00 (IP20 inside a wall-mounting box or electrical panel),and are therefore suitable for use in dry interior rooms.

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

When mounting, make sure to leave only the front panel accessible; all other sides must not be accessible. 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).

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.



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.

Setup and installation

The steps to setup the device are as follows:

- Connect the loads to the AC OUT (-x, N) terminals of the device
- Connect the KNX bus to the corresponding terminal of the device
- Connect the 90 - 230 Vac power supply to the AC IN (L, N) terminals of the device

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 KNX bus - It is absolutely forbidden to connect, for any reason whatsoever, directly or indirectly, the 90-230Vac mains voltage to the KNX bus or to the loads. - Use double insulated cables.

KNX bus line connection

The connection to the bus network takes place via the KNX terminal included in the delivery and inserted in the special housing located on the front of the device in the upper part.

Characteristics of the KNX terminal block

- spring clamping of conductors
- 4 seats for conductors for each polarity
- terminal suitable for KNX bus cable with single-wire conductors and diameter between 0.6 and 0.8 mm
- recommended wire stripping approx. 5 mm
- color codification: red = + (positive) bus conductor, black = - (negative) bus conductor

Warning! In order to supply the KNX bus lines use only a KNX bus power supply (e.g. ekinex EK-AH1-TP or EK-AM1-TP). The use of other power supplies can compromise the communication and damage the devices connected to the bus.

Connection of loads and power supply

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

Characteristics of the supply and loads terminal block

- Screw tightening of the conductors
- Power and loads wiring: 1.5 ÷ 4.0 mm² solid – 1.5 ÷ 4.0 mm² stranded – 26 ÷ 10 AWG
- Stripping recommended approx.: 8.0 mm
- Max torque 0.5 Nm for screw terminals

Warning! The electrical connection of the appliance must be carried out exclusively by qualified personnel. Incorrect installation can cause electrocution or fire. Before making the electrical connections, make sure you have deactivated the mains voltage.

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 regulations in force.

- WARNINGS**
- Before connecting the outputs, check the summary table of load types according to the input power supply in the data sheet.
 - Never connect the transformer without first having connected the load on the secondary, to avoid overvoltages that are destructive to the appliance.
 - Always check the compatibility of the phase cut mode with the connected load.

Configuration and commissioning

Configuration and commissioning of the device require the use of the ETS® (Engineering Tool Software) program V5 or later releases. These activities must be carried out according to the design of the building automation system done by a qualified planner.

For the configuration of the device parameters the corresponding application program or the whole ekinex® product database must be loaded in the ETS program. For detailed information on configuration options, refer to the application manual of the device available on the website www.ekinex.com.

Note. The configuration and commissioning of KNX devices require specialized skills. To acquire these skills, you should attend the workshops at KNX certified training centers.

Commissioning

For commissioning the device the following activities are required:

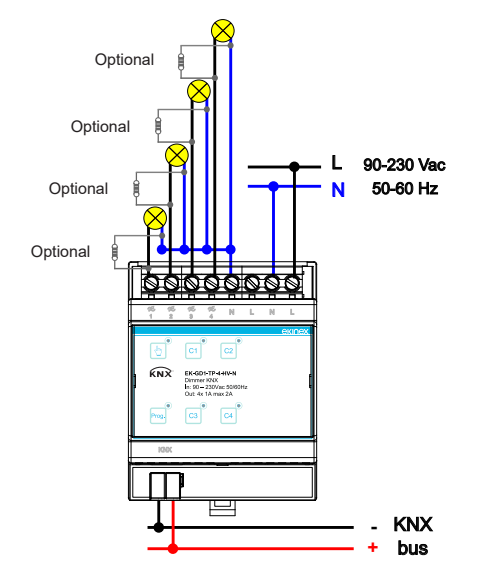
- make the electrical connections as described above;
- turn on the bus power supply;
- switch the device operation to the programming mode by pressing the programming pushbutton (5) located on the front side of the housing. In this operating mode, the programming LED is turned on;
- download into the device the physical address and the configuration with the ETS® program.

At the end of the download the operation of the device automatically returns to normal mode; in this mode the programming LED is turned off. Now the bus device is programmed and ready for use.

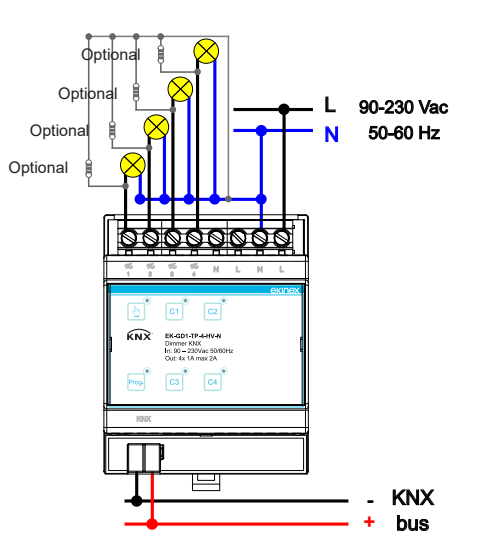
Installation diagrams

Warning! When using low-power loads (<10W) or if there is residual brightness on the load, we recommend using the load resistor supplied with the dimmer. This resistor eliminates any residual brightness when the dimmer is off. Please see the datasheet for more details.

1. Common neutral for outputs



2. Common neutral for inputs and outputs



Warning! In configuration 2, the internal fuse on the load, which implements overcurrent protection, does not trip. The electronic short circuit protection remains functional.

Marks

- KNX
- CE, UKCA: the device complies with the Electromagnetic Compatibility Directive (2014/30/EU), the Low Voltage Directive (2014/35/EU) and the RoHS 2 Directive (2011/65/EU).
- Reference Standards: EN 63044-5-1:2019, EN 63044-5-2:2019, EN 63044-3:2017, EN 62368-1:2020.

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.

ekinex EN

KNX 90-230 Vac ~ 50/60Hz 4-channel phase-cut dimmer with common neutral

Code: EK-GD1-TP-4-HV-N

CE UK CA KNX S TP1

Instructions



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FISPEKGDXTPXHVN1

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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