

ekinex

CONTROL YOUR LIVING SPACE

KNX 12/24/48 Vdc 4-channel dimmer Tunable White

Code: EK-GD1-TP-4-LV-T



KNX standard bus device with 12/24/48 Vdc power supply, 4 channels, with brightness control function of LED sources and white color temperature management, dimmable in PWM modulation. Use in KNX standard home and building automation systems.



Description

The ekinex EK-GD1-TP-4-LV-T 4-channel KNX 12/24/48 Vdc Tunable White (TW) dimmer allows PWM brightness control of monochromatic LED loads and CCT with white color temperature management. Designed specifically for dimmable LED strips and loads, it is compatible with the KNX system and suitable for use with 4 single channels or with dynamic TW color temperature control (warm or cold) white on 2 channels, each consisting of 2 coupled channels. Installation is simple via DIN rail mounting, ensuring perfect integration into electrical panels. The device has an integrated SELV 30 Vdc bus communication module, KNX certified.

Main functional features

- ON/OFF control and light intensity regulation of single or grouped lighting fixtures
- Selection of the PWM output frequency via ETS, from 250 Hz to 6 kHz
- Available configurations: 2 TW coupled channels, 1 TW coupled channel and 2 independent channels, or 4 independent channels
- TW function: allows you to control two LED strips, one warm white and the other cold white, so that by appropriately adjusting the brightness of each channel, you can gradually switch between the minimum and maximum white color temperature

- Possibility of connecting the outputs in parallel to increase the output power
- Fade time in switching ON and OFF, minimum and maximum brightness level, linear or logarithmic regulation curve can be set from ETS
- Soft or instantaneous switching ON and OFF, with adjustable delay
- Configuration of the behaviour after power recovery, bus ON/OFF, download via ETS
- Channels can be set from ETS as independent, in parallel or with copy function from another channel
- Block function, forced operation, stair light, scenarios, night, counter and logic functions for each channel, can be set from ETS
- Automatic temperature regulation based on light intensity: as the brightness decreases, the color temperature of the strips connected in TW warms up, gradually moving from a neutral white to a warmer and more intense color
- Power failure alarm
- Manual control with membrane buttons for local ON/OFF testing of channels 1-2-3-4: in manual mode, a short press on a channel button activates/deactivates the load, pressing it for at least 2 seconds makes the load flash approximately every 1 s
- Relay contact for switching off the AC/DC power supply when the 12/24/48 Vdc outputs are off, or alternatively as a relay for auxiliary output
- Relay for auxiliary output function with status indication via KNX

Technical data

Input

- Input constant voltage: 12/24/48 Vdc
- Supply voltage: min: 10,8 Vdc .. max: 52,8 Vdc

Output

- PWM voltage output 12/24/48 Vdc
- Output current: 6A for single channel, or 12A for 2 channels connected in parallel
- Rated power per channel @12Vdc: 72 W
- Rated power per channel @24Vdc: 144 W
- Rated power per channel @48Vdc: 288 W

Dimming

- PWM dimming modes 250 Hz ÷ 6 kHz
- 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): 65 °C
- Relative humidity: 91% non-condensing
- Protection degree: IP00 (IP20 inside a wall-mounting box or electrical panel)
- Loads and supply wiring: 0,2 ÷ 4,0 mm² (24 ÷ 11 AWG), solid – 0,2 ÷ 6 mm² (24 ÷ 9 AWG) stranded
- KNX bus wiring: 0,6 ÷ 0,8 mm² (19 ÷ 18 AWG)
- Stripping: 8.0 mm
- Housing in plastic material
- Device suitable for installation in panels/cabinets 4 UM
- Weight 200 g
- Dimensions (LxHxW): 71 x 91 x 62 mm

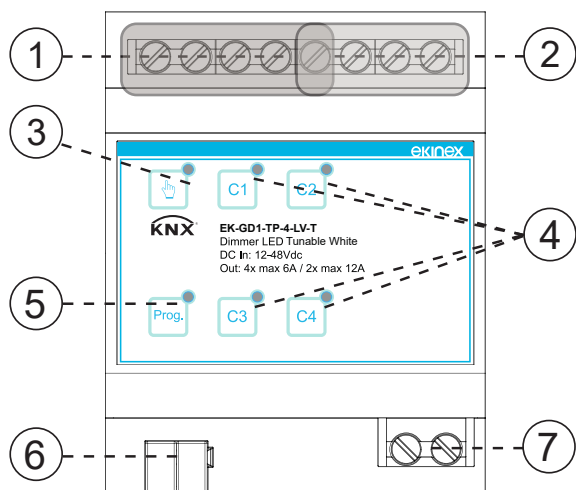
Protections

- Input overvoltage protection
- Output overvoltage protection
- Reverse polarity protection

Control, signaling and connection elements

The device is equipped with a screw terminal for connecting the input voltage and output loads on 4 channels (1) and (2). There is also a button for activating/deactivating the manual mode (3), a button and LED for each channel (4), for local ON/OFF testing, a KNX programming button with LED (5), a terminal for connecting the KNX bus (6) and a terminal for the relay contact (7).

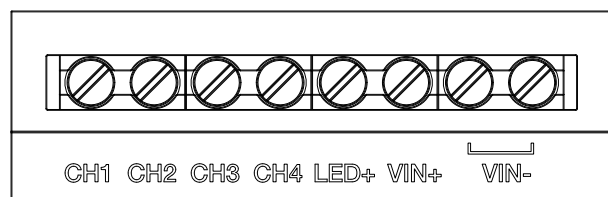
To perform the local ON/OFF test, enter in manual mode, briefly pressing the button of each channel turns the connected load on or off, while pressing it for at least 2 seconds makes the load flash approximately every 1 s.



EK-GD1-TP-4-LV

Nr.	Label	Connection
1	CHx LED+	Output load connection terminal (x=1,2,3,4)
2	Vin+/-	Input voltage connection terminal
3		Manual mode button and LED indicator
4	Cx	Channel x - LED and button (x = 1,2,3,4)
5	Prog.	KNX programming button and LED
6	KNX	KNX bus terminal
7		Relay output

The following is a detail of the terminal for input power and output loads.



Label	Connection
CH1	Channel 1 output (-)
CH2	Channel 2 output (-)
CH3	Channel 3 output (-)
CH4	Channel 4 output (-)
LED+ / Vin+	V+ input power and loads
Vin-	V- power input

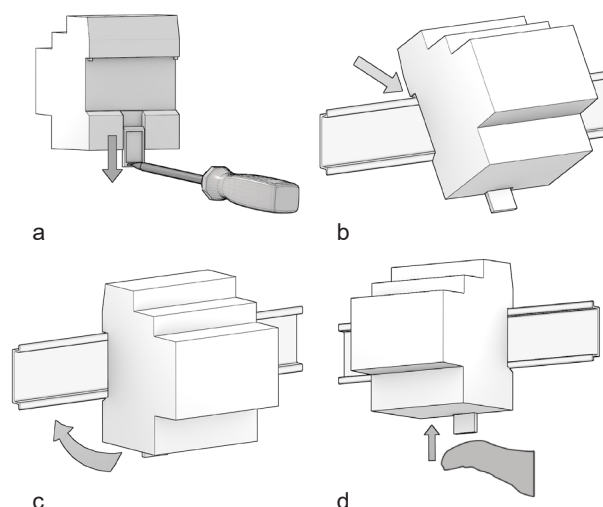
Mounting

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 assembling, 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).



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



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.

The steps for installing the device are as follows:

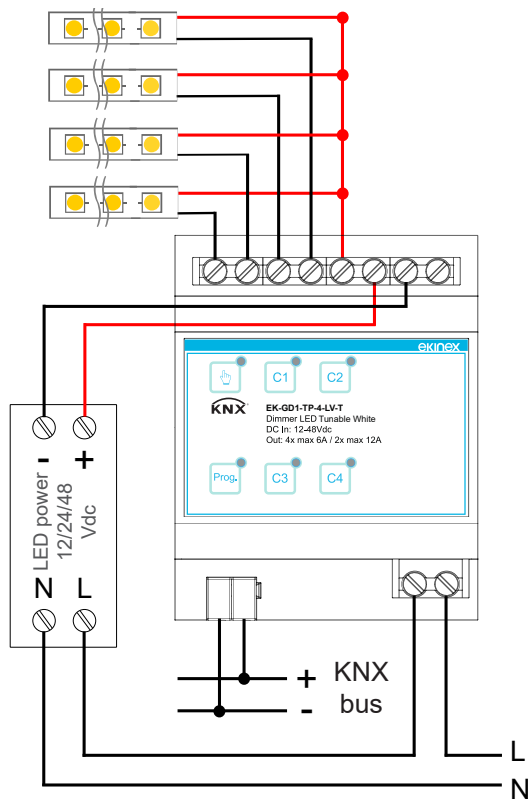
1. Connect the loads to the CHx (-) and LED+ output terminals of the device
2. Connect the KNX bus to the corresponding terminal of the device
3. Connect the 12/24/48 Vdc power supply to the Vin+, Vin- terminals of the device

KNX line bus 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 lower part.



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

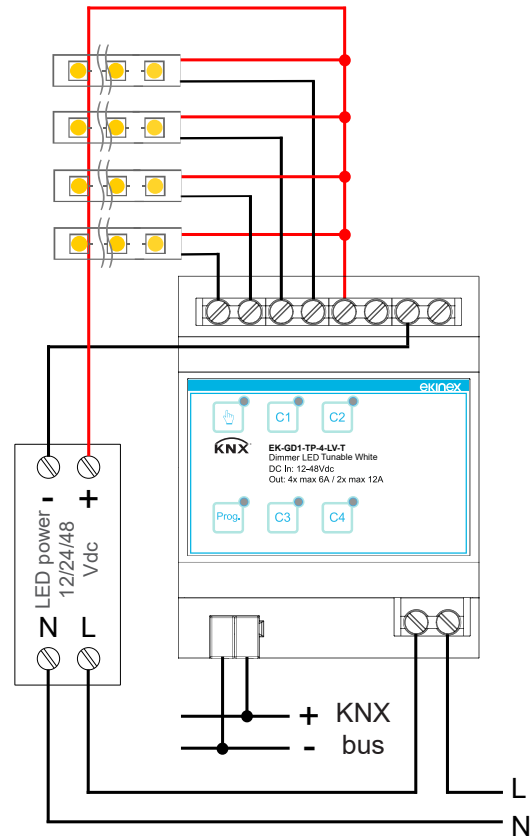


Example 1 - Connecting 4 single strips

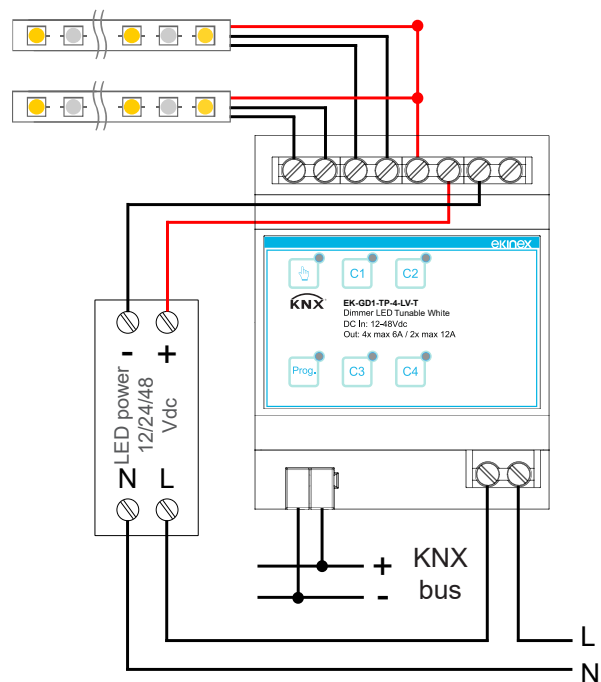


Warning! The electrical connection of the appliance must be carried out exclusively by qualified personnel. Incorrect installation can cause electrocution or fire. Before making the electrical connections, make sure you have deactivated the mains voltage.

The following schemes can be used alternatively.



Example 2 - Connection of 4 single strips with common positive pole



Example 3 - Connecting 2 Tunable White strips



Note. When connecting TW strips, when setting the parallel connection from ETS, refer to the following table.

Clamp	Parallel configuration disabled	Parallel configuration enabled
CH1	Cold White stripe 1	Cold White stripe 1
CH2	Warm White stripe 1	Cold White stripe 2
CH3	Cold White stripe 2	Warm White stripe 1
CH4	Warm White stripe 2	Warm White stripe 2

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.
- 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.

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

Connection of loads and power supply

The connection to the 12/24/48 Vdc power supply and the loads is done via the screw terminals located in the upper part of the device.

Characteristics of the supply and loads terminal block

- Spring tightening of the conductors
- Power and loads wiring: 0,2 ÷ 4,0 mm² (24 ÷ 11 AWG), solid – 0,2 ÷ 6 mm² (24 ÷ 9 AWG) stranded
- Stripping recommended approx. 8.0 mm

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.

Configuration and commissioning

The configuration and commissioning of the device requires the use of the ETS® (Engineering Tool Software) V5 program or later versions. These activities must be carried out in accordance with the design of the building automation system created by a qualified professional.



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.

To configure the device parameters, the corresponding application program or the entire ekinex® product database must be loaded into the ETS® program. For detailed information on the configuration possibilities, consult the application manual of the appliance available on the website www.ekinex.com.

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.

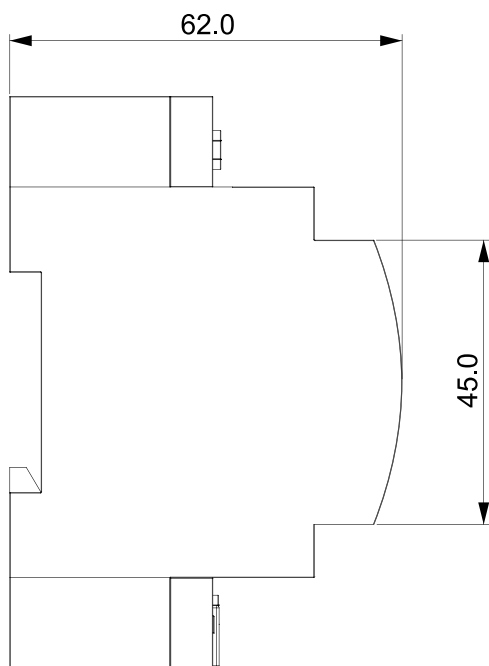
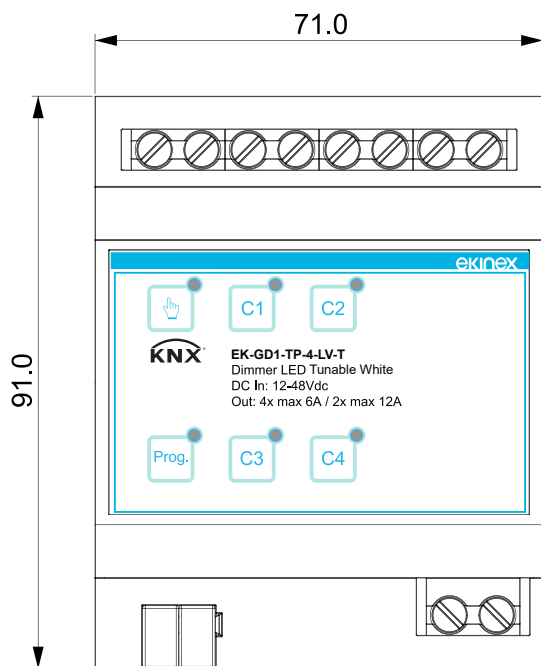
Device reset

To reset the device, remove the power from the KNX bus; then press the programming button and, keeping it pressed, restore power to the KNX bus: if, after approximately 10 s, the programming LED flashes quickly, it means that the reset has been carried out. At this point it is necessary to re-address and configure the device via ETS.



Warning! The reset operation brings back the device to its factory delivery state. The addressing and value of the parameters set during configuration are lost.

Dimensions [mm]



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.

Document

This technical datasheet refers to the A1.0 release of the ekinex® device code. EK-GD1-TP-4-LV-T and is available for download on the website www.ekinex.com in PDF format (Portable Data Format).

File name	Device release	Update
STEKGD1TP4LVT_EN.pdf	A1.0	01 / 2026

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® KNX defective devices must be returned to the manufacturer at the following address: EKINEX S.p.A. Via Novara 37, I-28010 Vaprio d'Agogna (NO) Italy

Other information

- This datasheet is aimed at installers, system integrators and planners
- 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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