

DALI 2 standard 12 / 48 Vdc single channel dimmer

Code: EK-GD2-DL-1-L-01



Datasheet STEKGD2DL1L01_EN

DALI bus dimmer with single-channel 12 / 48 Vdc voltage supply, with brightness control function of LED sources, dimmable in PWM modulation.



Description

The ekinex® EK-GD2-DL-1-L-01 device is a very low voltage 12, 24 and 48Vdc PWM dimmer suitable for controlling LED strips and PWM dimmable LED loads. The dimmer can be controlled via DALI1 or DALI2 bus, push button control (N/O - normally open) at mains voltage or 12 / 24 / 48 V, 0-10V or 1-10V analogue signal coming from an active actuator (which generates therefore a variable voltage between 0 and 10V) or passive, 47kΩ linear potentiometer or presence sensor. The operating modes of the EK-GD2-DL-1-L-01 dimmer can be selected via on-board dip-switches.

Functional characteristics

- Dimmer with isolated push input, potentiometer/0-10V/1-10V active and passive, switch, sensor, Phase cut, DALI2 DT6 and DALI2 DT6 high compatibility for voltage-current converters
- Master/slave functionality
- Programmable timed start-up
- Menu for minimum dimming change, fade ON-OFF, curve type and frequency setup ("flicker-free") accessible via input button
- Signaling LED for identifying the correct power supply
- Protection against: reverse polarity, short circuit, open circuit, voltage peaks
- UL Printed Circuit Board

- LED di segnalazione per l'identificazione della corretta alimentazione
- Protezione da: inversione polarità, cortocircuito, circuito aperto, picchi di tensione
- Circuito Stampato UL

Technical data

Inputs

- Input constant voltage: 12 / 48 Vdc
- Supply voltage: min: 8 Vdc .. max: 53 Vdc
- Control: DALI2 / 0-10V / 1-10V push / potentiometer / switch / sensor / phase cut



Warning! In the event of a change in input type, it is necessary to remove the power supply voltage and restore it.

Outputs

- PWM voltage output 12 / 24 / 48 Vdc
- Output current: 12A
- Output channels: 1
- Rated power: 120W @12V, 288W @24V, 576W @48V
- Load type: single color

Dimming

- PWM frequency: 390Hz-3000Hz

Environmental conditions and other characteristics

- Operating temperature: -20 °C ... + 50 °C
- Storage temperature: - 40 °C ... + 60 °C
- Maximum case temperature (tc): 85 °C
- Relative humidity: 93% non-condensing
- Protection degree IP10 (device installed)
- Wiring of power supply and output terminals: 0.05 - 3.0 mm² (30+12 AWG)
- Stripping: 5.0 - 6.0 mm
- Housing in plastic material
- Device suitable for installation in flush-mounting wall boxes or panels/cabinets ((with DIN rail accessory)
- Safety class II
- Weight 35 g
- Dimensions (L x H x P): 49 x 61 x 22.8 mm

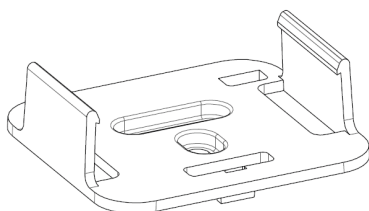


Warning! t_c is positioned on the screw of the terminal corresponding to the indication in the figure in the paragraph "Control, signaling and connection elements".

Accessory

Rail mounting support

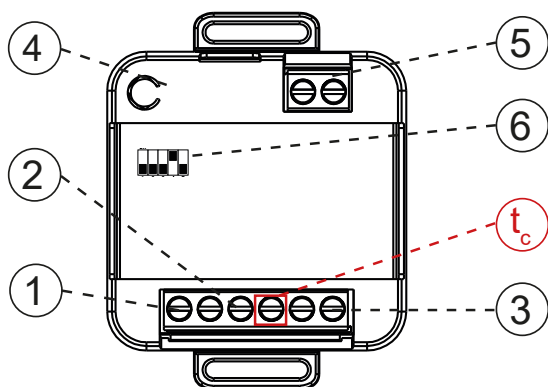
The device can be mounted on 35 mm rail (according to EN 60715) with the plastic support included in the delivery.



Control, signaling and connection elements

The device is equipped with a screw terminal in the lower part, for connecting the 12 / 48 Vdc input power supply (1), the output loads (2) and an input for making the 0-10V / 1-10V / active and passive / potentiometer connections (3). There is also a signaling LED (4) and a DALI2 / PUSH / phase cut / switch input terminal in the upper part (5). The dip-switches (6) to set the type of installation and the PWM output frequency are located on the back of the device.

The dimmer must be powered according to the indicated polarity.

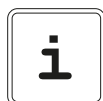


EK-GD2-DL-1-L-01

Nr.	Label	Connection
1	DC IN (-)	DC (-) input
	DC IN (+)	DC (+) input
2	OUT L+	LED L+ load output
	OUT L-	LED L- load output
3	INPUT SYNC COM INPUT SYNC IN	0-10V / 1-10V / active and passive / potentiometer input connections
4	-	Signaling LED
5	DA P1 / DA P2	DALI pole 1 / DALI pole 2
	PUSH	Push / phase cut / switch input
6	-	Dip-switches (on the back of the device)

Mounting

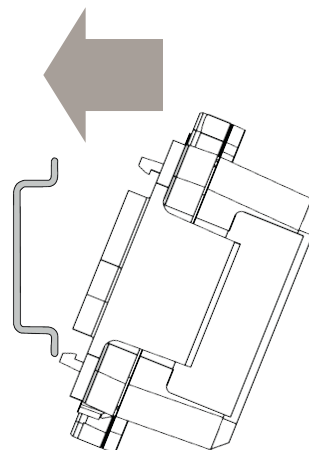
The device has degree of protection IP10, and is therefore suitable for use in dry interior rooms. It can be installed in wall-mounted boxes, while the plastic support allows mounting on a profiled rail according to EN 60715 inside electrical distribution panels and cabinets.



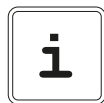
Note: Before starting the assembly operations, set the dip-switches located on the back of the device, according to the type of installation and the PWM output frequency chosen.

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

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.



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 for installing the device are as follows:

- Set the dip-switches for the desired mode, as described in the technical data sheet; the available modes are:
 - Push;
 - DALI DT6;
 - 1 or 2 pole phase cut;
 - 0-10V/1-10V active/passive and 47kΩ linear potentiometer;
 - dimming on power failure;
 - timed shutdown;
 - slave.
- Again using the dip-switch, set the PWM output frequency;
- Connect the LEDs to the "OUT L+ / L-" output terminals of the device;
- Connect to the DA / DALI / PUSH terminal, depending on the application:
 - Switch;
 - DALI and DALI master power supply;
 - Phase-cut dimmer and mains voltage dimmable load (optional).

5. If expected, connect a 0-10V/1-10V control voltage coming from an active or passive actuator, or a 47k Ω linear potentiometer, or the signal coming from another master dimmer to the INPUT / SYNC terminal
6. Connect the 12/48 Vdc power supply to the DC IN input 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 an electrical panel protected against overvoltages.**
- **Check that the input and output connection cables are inserted correctly in the terminal trolley and not under the trolley itself. Incorrectly inserting the cable inside the trolley can lead to overheating or malfunctions.**
- **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.**

DALI bus line and PUSH 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.

The length of the connection cables between the local commands (if expected) 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).

Characteristics of the DALI terminal block

- Screw tightening of the conductors
- Command and bus wiring: 0,05÷3 mm² (30÷12 AWG)
- Conductor stripping recommended: 5.0 - 6.0 mm
- Maximum length of the connection between dimmer-driver and control device < 20 m
- Length of DALI 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.

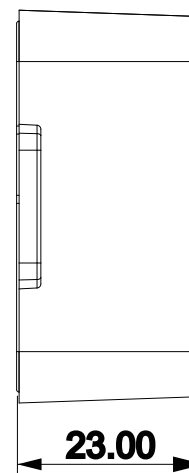
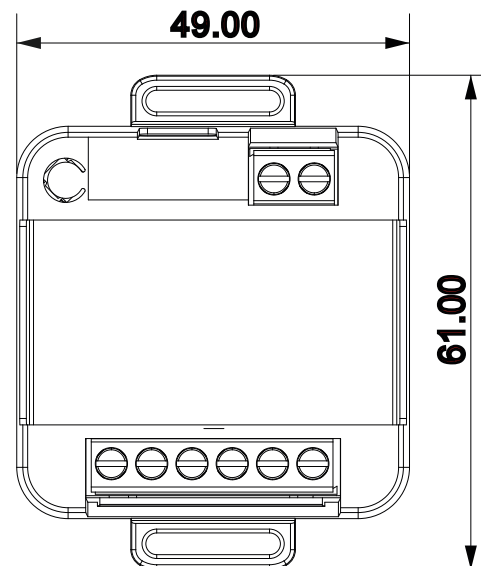
Characteristics of the supply and LEDs terminal block

- Screw tightening of the conductors
- Power and LEDs wiring: 0.05÷3 mm² (30÷12 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

Dimensions [mm]



Installation diagrams

Below are the installation diagrams.

1. PUSH mode

In order to activate this control/operation mode it is necessary to set the dip-switches as indicated.



Control via the button can take place directly using the mains voltage (110 ÷ 230Vac) as in Fig. 1, or the output voltage of the power supply (8 ÷ 53Vdc), as in Fig. 2.



Note. For installing the dimmer in the system, it is preferable to use the diagram shown in Fig. 1. In this configuration the dimmer guarantees isolation from the mains voltage.

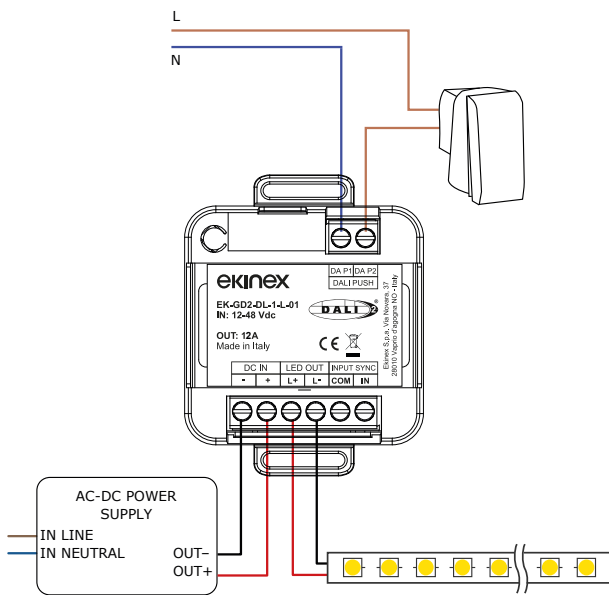


Fig. 1 - Mains voltage push-button connection

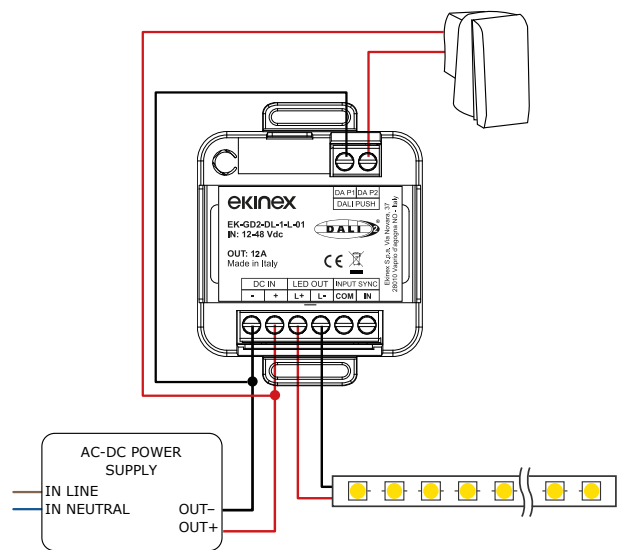


Fig. 2 - Push button connection with voltage coming from the power supply

The input voltage range between the DA P1 and DA P2 poles is

- DC: 10 ÷ 265Vdc
- AC: 12 ÷ 265Vac @50 ÷ 65Hz

The maximum current absorbed by the PUSH interface is approximately 2mA.

The maximum distance of the dimmer from the button must not exceed 20m; the use of shielded cables is recommended.

The dimmer, in the event of a power failure, saves the state of the output so as to restore the set level upon return.

PUSH interface operation

- Single click (short press <1sec): turns the output on or off (ON/OFF).
- Double click (short press <1sec): Set maximum brightness (output= 100%). Fast maximum light mode.
- Long Press (long press >1sec):

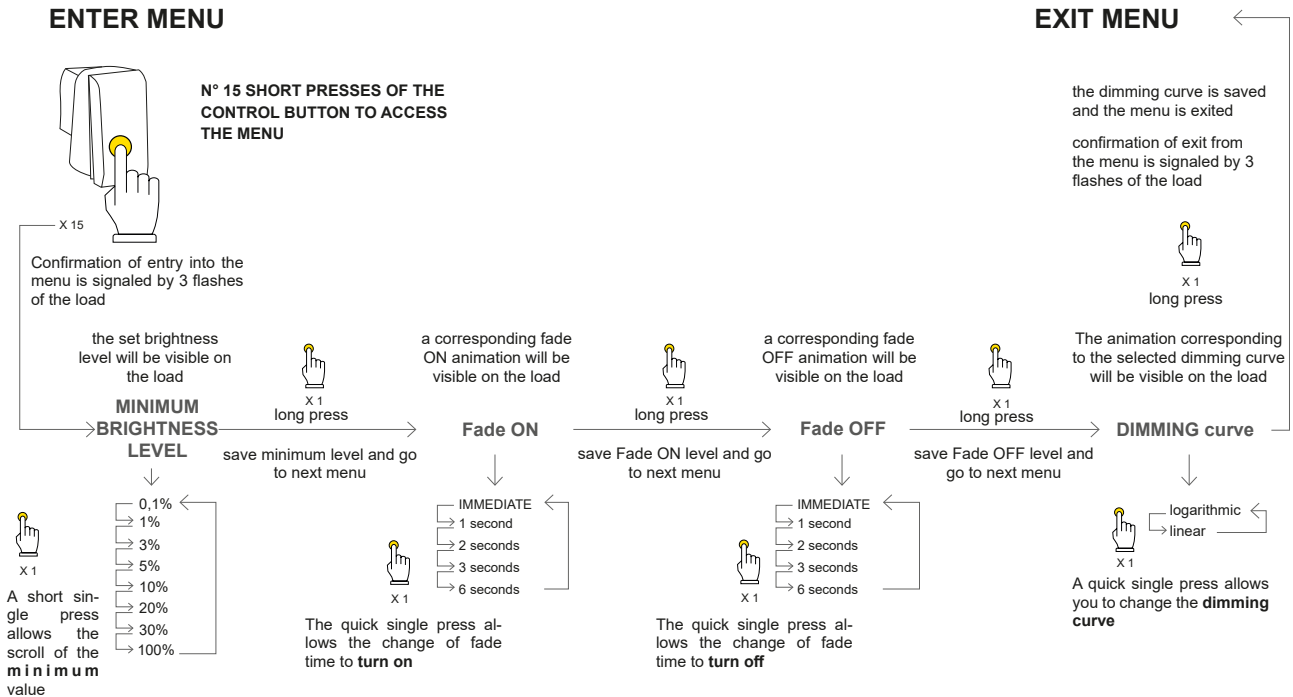
If the dimmer is in the OFF state, set the output to the minimum value (default= 1%). Anti-disturbance night mode function.

If the dimmer is in the ON state, prolonged pressing allows the output to be dimmed (ramp up / down).



Warning! Check that the input and output connection cables are inserted correctly in the terminal clamp and not under the clamp itself. Incorrectly inserting the cable inside the clamp can lead to overheating or malfunctions.

Parameters



The ekinex® EK-GD2-DL-1-L01 dimmer is equipped with a configuration menu of the operating parameters.

Entry into the configuration menu of the 4 operating parameters occurs with 15 short presses or more of the control button.

Confirmation of entry into the menu occurs via three slow flashes of the load.

- **First parameter: Minimum level setup**, useful in case of indirect light or to comply with the regulations on minimum room illumination. Minimum levels that can be set: 0,1%, 1%, 3%, 5%, 10%, 20%, 30%, 100%.

Switching between the different levels occurs with a short press of the control button.

A long press saves the minimum level and the menu automatically switches to the second parameter.

- **Second parameter: Fade ON Time**, makes the switching on of the load “soft”.

Settable times: IMMEDIATE, 1 second, 2 seconds, 3 seconds, 6 seconds.

Switching between the different times occurs with a short press of the control button.

In this parameter the dimmer shows a cyclic simulation of a Fade ON (0%-100% in the set time).

A long press saves the Fade ON time and the menu automatically switches to the third parameter.

- **Third parameter: Fade OFF Time**, makes the switching off of the load “soft”.

Settable times: IMMEDIATE, 1 second, 2 seconds, 3 seconds, 6 seconds.

Switching between the different times occurs with a short press of the control button.

In this parameter the dimmer shows a cyclic simulation of a Fade OFF (100%-0% in the set time).

A long press saves the Fade OFF time and the menu automatically switches to the fourth parameter.

- **Fourth parameter: Curve change (logarithmic - linear)**. It allows each quick pressure to change the curve and simulate it.

A long press saves the dimming curve and exits the dimmer from the parameter menu.

The default parameters in this mode are: minimum = 0.1%, Fade ON = 1 second, Fade OFF = 1 second, dimming curve = linear.

RESET: to reset the dimmer to factory settings, double click to bring the load to maximum brightness, then hold down for at least 40 seconds. When the button is released the dimmer will be reset and will restart with maximum brightness.

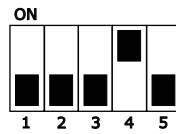
2. DALI DT6 mode

In order to activate this control/operation mode it is necessary to set the dip-switches located on the back of the box as indicated below and connect the DA P1 and DA P2 inputs to the DALI bus. The setting can be done in 3 distinct ways:



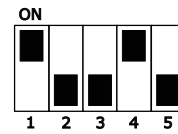
High compatibility for voltage-current converters.

- Short circuit detection: OFF
- Open circuit detection: OFF



High compatibility with open circuit detection

- Short circuit detection: OFF
- Open circuit detection: ON



Full DALI 2 standard compatibility

- Short circuit detection: ON
- Open circuit detection: ON

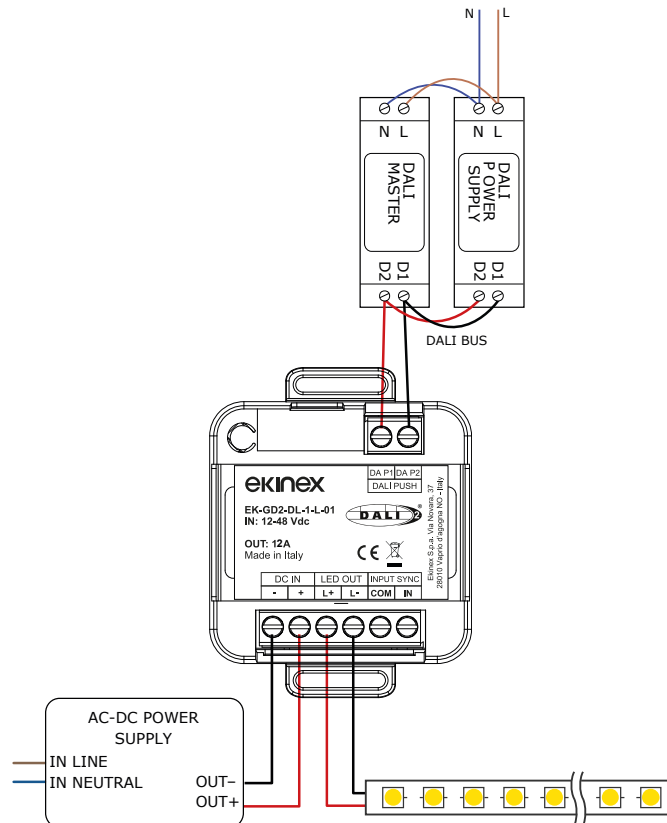
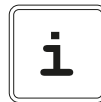


Fig. 3 - DALI connection

The characteristics of the 3 operating modes with DALI 2 input are as follows:

1. The “**High compatibility for voltage-current converters**” mode allows the control of resistive and resistive/capacitive loads such as switching voltage-current converters or other loads with small capacities. In this mode the short circuit and open circuit flags are not reported on the DALI bus.
2. The “**High compatibility with open circuit detection**” mode allows the control of resistive and resistive/capacitive loads such as switching voltage/current converters or other loads with small capacities. In this mode the short circuit flag is not reported on the DALI bus.
3. The “**Full DALI 2 standard compatibility**” mode only allows the control of resistive loads. In this mode, the short circuit and open circuit flags are reported on the DALI bus.



Note. In case of use with loads with capacity, the dimmer switches off once the short-circuit flag has been reported the load. The open circuit flag may be reported for low power loads with reduced dimming.

Once the dimmer has been configured in DALI mode and disconnected from the DALI bus, the output status passes to the POWER ON LEVEL set via the DALI bus (default 255).

The maximum current absorbed by the DALI bus is approximately 2mA.

DALI standard reference regulations:

- IEC 62386-101 ED2
- IEC 62386-102 ED2
- IEC 62386-207 ED2 (DT6)

3. Two-pole phase cutting mode

In order to activate this control/operation mode it is necessary to set the dip-switches located on the back of the box as indicated below and connect an alternating voltage signal to the DA P1 and DA P2 terminals (AC voltage range: 12 ÷ 265Vac @ 50÷65Hz) interrupted by a phase-cut dimmer.

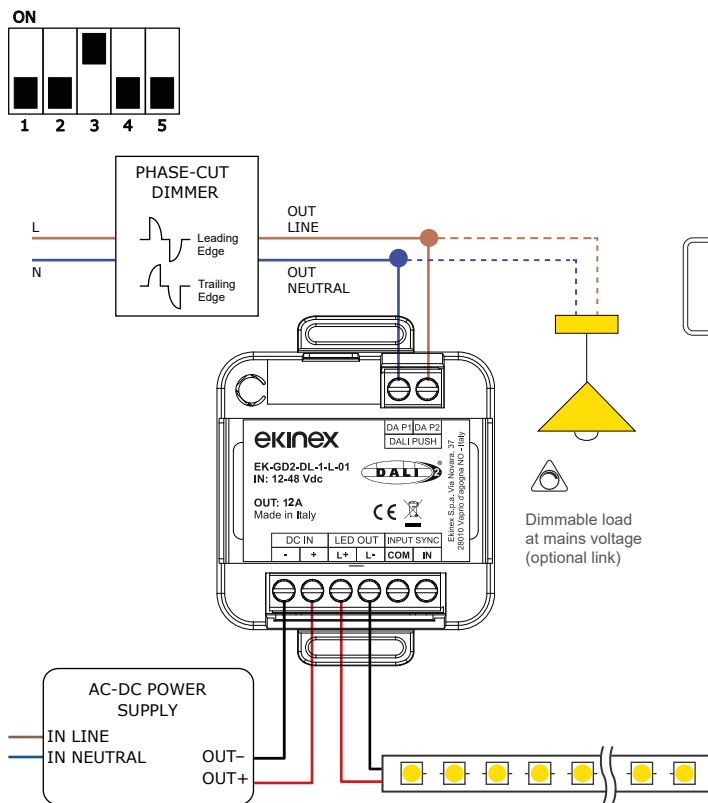


Fig. 4 - 2-pole phase-cut connection

Note. The control input can operate with phase cut or neutral cut.

The input signal does not require polarization. The maximum current absorbed by the phase-cut interface is approximately 2mA.

The image in Fig. 4 represents the connection diagram with a dimmer equipped with two output poles for phase cutting (phase-cut).

The connection of the dimmer is carried out as if the dimmer itself were a dimmable load at mains voltage.

The interface can work with all types of phase cutting:

- TE: Trailing Edge - Descending phase;
- LE: Leading Edge - Ascending phase;
- Hybrid, central, delayed and mixed phase-cut.

Phase-cut dimmers that do not handle a minimum current of 2mA could lead to flashing or flickering of the dimmer output. In the event of flickering or flashing, it may be necessary to increase the output load on the phase-cut dimmer.

To increase the load it is possible to use a load resistor and position it at the output of the phase-cut dimmer between terminals DA P1 and DA P2.

Below are some resistance values and related wattage:

Mains voltage 230V

- Resistor value 27kΩ, minimum resistance power 3W; perceived load of the phase-cut dimmer at full light: 2W.
- Resistor value 10kΩ, minimum resistance power 7W; perceived load of the phase-cut dimmer at full light: 5.5W.
- Resistor value 5kΩ, minimum resistance power 15W; perceived load of the phase-cut dimmer at full light: 10W.

Mains voltage 110V

- Resistor value 13kΩ, minimum resistance power 3W; perceived load of the phase-cut dimmer at full light: 2W.
- Resistor value 5kΩ, minimum resistance power 7W; perceived load of the phase-cut dimmer at full light: 5.5W.
- Resistor value 2.7kΩ, minimum resistance power 15W; perceived load of the phase cut dimmer at full light: 10W.



Warning! The resistor used as a dummy load may become hot. Be careful not to place it near the dimmer.

Several EK-GD2-DL-1-L-01 can be connected in parallel for each phase-cut dimmer. The maximum number of dimmers that can be connected in parallel is given by the ratio

$$\frac{I_{max}}{0.002}$$

Example: phase-cut dimmer with 0.5A maximum current
→ 0.5/0.002 = 250 maximum dimmers in parallel.



Warning! To operate the EK-GD2-DL-1-L-01 dimmer with phase-cut input, coupled with the connected BTicino dimmers with phase-cut output (K4411C, 4411C, L4411C), it is necessary to set the latter in dimmer mode, compared to the default ON/OFF mode with which they are sold.



Note: For a complete list of verified compatibilities, see the tables on page 16.

4. One-pole phase cutting mode

In order to activate this control/operation mode it is necessary to set the dip-switches located on the back of the box as indicated below and connect the NEUTRAL of the system to terminals DA P1 and the cut PHASE to DA P2 (AC voltage range 12 ÷ 265Vac @50 ÷ 65Hz) coming from the phase-cut dimmer.

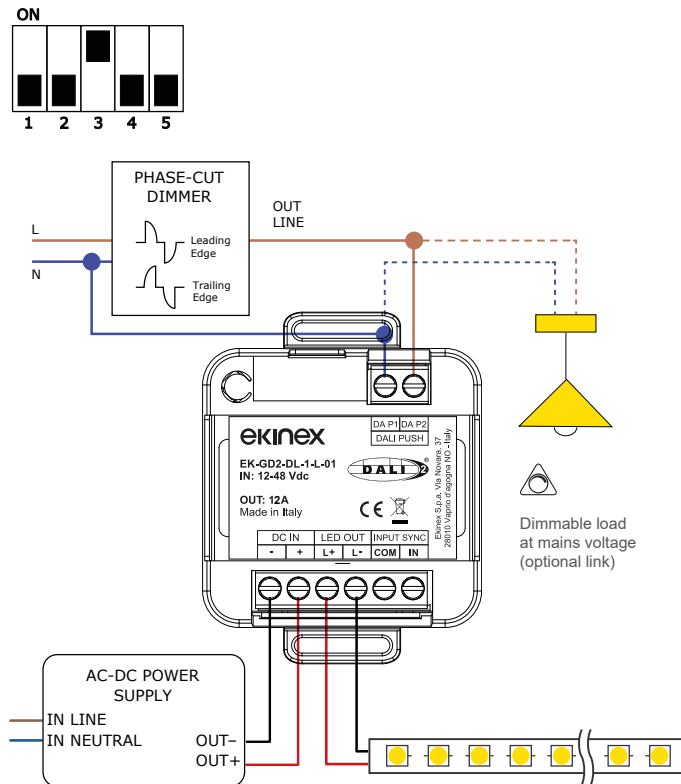


Fig. 5 - One-pole phase cut connection with phase cut

Phase-cut dimmers that do not handle a minimum current of 2mA could lead to flashing or flickering of the dimmer output. In the event of flickering or flashing, it may be necessary to increase the output load on the phase-cut dimmer.

To increase the load it is possible to use a load resistor and position it at the output of the phase-cut dimmer between terminals DA P1 and DA P2.

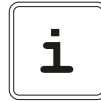
Below are some resistance values and related wattage:

Mains voltage 230V

- Resistor value 27kΩ, minimum resistance power 3W; perceived load of the phase-cut dimmer at full light: 2W.
- Resistor value 10kΩ, minimum resistance power 7W; perceived load of the phase-cut dimmer at full light: 5.5W.
- Resistor value 5kΩ, minimum resistance power 15W; perceived load of the phase-cut dimmer at full light: 10W.

Mains voltage 110V

- Resistor value 13kΩ, minimum resistance power 3W; perceived load of the phase-cut dimmer at full light: 2W.
- Resistor value 5kΩ, minimum resistance power 7W; perceived load of the phase-cut dimmer at full light: 5.5W.
- Resistor value 2.7kΩ, minimum resistance power 15W; perceived load of the phase cut dimmer at full light: 10W.



Note. The control input can operate with phase cut or neutral cut. In case of cut neutral, it will be necessary to bring the system phase directly to DA P1 and the cut neutral to DA P2.

The input signal does not require polarization. The maximum current absorbed by the phase-cut interface is approximately 2mA.

The image in Fig. 5 represents the connection diagram with a dimmer equipped with 1 output pole for phase cutting (phase-cut).

The connection of the dimmer is carried out as if the dimmer itself were a dimmable load at mains voltage.

The interface can work with all types of phase cutting:

- TE: Trailing Edge - Descending phase;
- LE: Leading Edge - Ascending phase;
- Hybrid, central, delayed and mixed phase-cut.



Warning! The resistor used as a dummy load may become hot. Be careful not to place it near the dimmer.

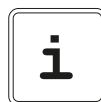
Several EK-GD2-DL-1-L-01 can be connected in parallel for each phase-cut dimmer. The maximum number of dimmers that can be connected in parallel is given by the ratio

$$\frac{I_{max}}{0.002}$$

Example: phase-cut dimmer with 0.5A maximum current → 0.5/0.002 = 250 maximum dimmers in parallel.



Warning! To operate the EK-GD2-DL-1-L-01 dimmer with phase-cut input, coupled with the connected BTicino dimmers with phase-cut output (K4411C, 4411C, L4411C), it is necessary to set the latter in dimmer mode, compared to the default ON/OFF mode with which they are sold.



Note: For a complete list of verified compatibilities, see the tables on page 16.

5. 0-10V/1-10V active/passive mode

In order to activate this control/operation mode it is necessary to set the dip-switches located on the back of the box as indicated in the figure and connect the control signal coming from the actuator to the INPUT COM (negative pole) and INPUT IN (positive pole) terminals. active or passive 0-10/1-10V.

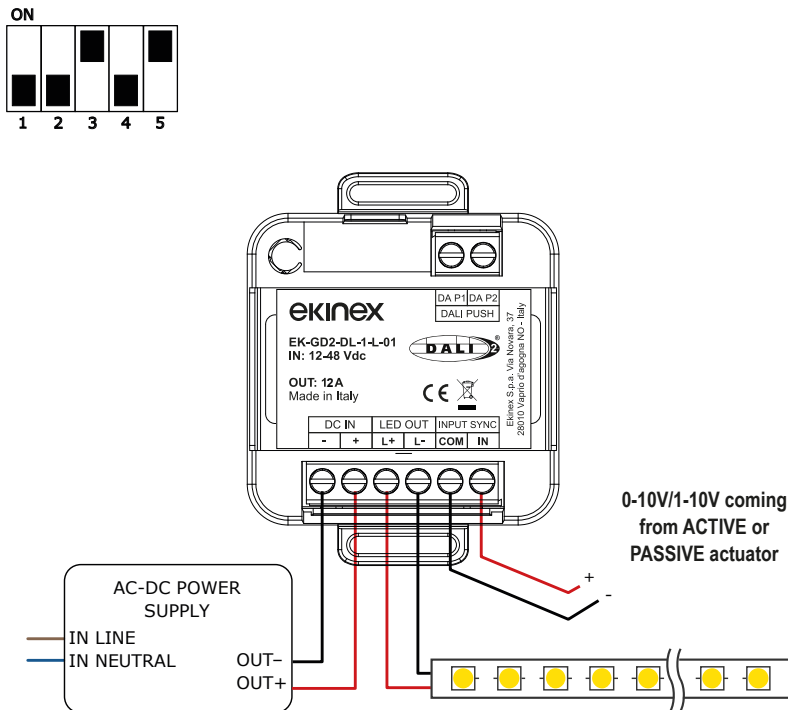


Fig. 6 - Connection 0-10 / 1-10V

The max current absorbed by the dimmer from the 0-10V interface is 0.2 mA.

By default, the dimming curve follows a linear trend which is proportional to the control voltage.

A voltage value lower than 1V is interpreted as a load off.

In case of disconnection of the 0-10V/1-10V signal, the dimmer sets the output to the maximum level.

The maximum distance of the dimmer from the 0-10/1-10V actuator must not exceed 10m; we recommend the use of shielded cables and SELV double insulation separation from the mains voltage.

6. 47k Ω linear potentiometer mode

In order to activate this control/operation mode it is necessary to set the dip-switches located on the back of the box as for mode 5. and connect the control signal coming from a 47k Ω linear potentiometer to the INPUT COM and INPUT IN terminals.

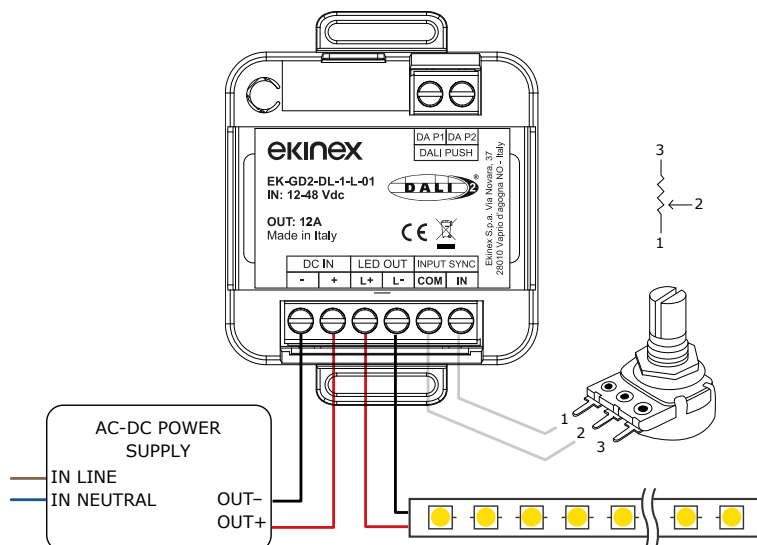


Fig. 7 - Potentiometer connection

A resistance value less than 2.5k Ω is considered as a load off. The maximum brightness value is reached when the value of 45k Ω is exceeded.

If the potentiometer is disconnected, the dimmer sets the output to maximum brightness.

We recommend using good quality potentiometers to avoid flickering or instability of the output.

The maximum distance of the dimmer from the potentiometer must not exceed 2m; we recommend the use of shielded cables and SELV double insulation separation from the mains voltage.

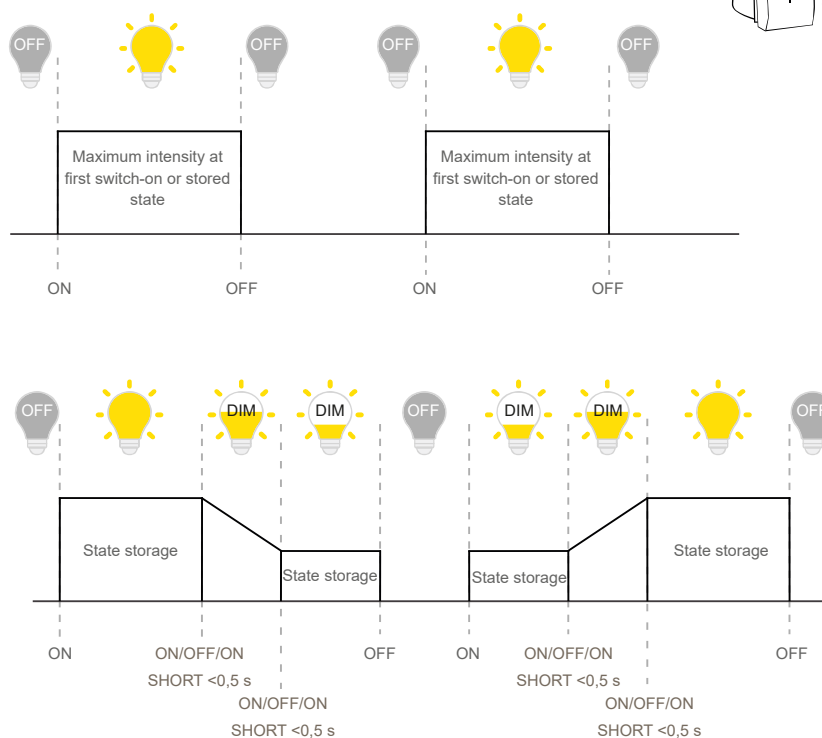
7. Dimming mode on power cut

In order to activate this control/operation mode, it is necessary to set the dip-switches located on the back of the box as in the diagram below and connect the PHASE and NEUTRAL coming from the system to the DA P1 and DA P2 terminals.



This PHASE or NEUTRAL can be interrupted by a switch, diverters or inverter to turn on or off the load connected to the dimmer and to dim.

The logic with which the load dimming will be performed is represented by the diagram below:



- Use the wall switch to turn on the lights.
- Quickly turn off the lights with the wall switch and then turn them back on (within a maximum of 0.5 seconds). The brightness will gradually increase.
- Press the switch again to the desired brightness to adjust it. The chosen brightness will be saved automatically.
- If you do not press the switch again within 8 seconds, the brightness will reach the maximum level. This level will be saved automatically.

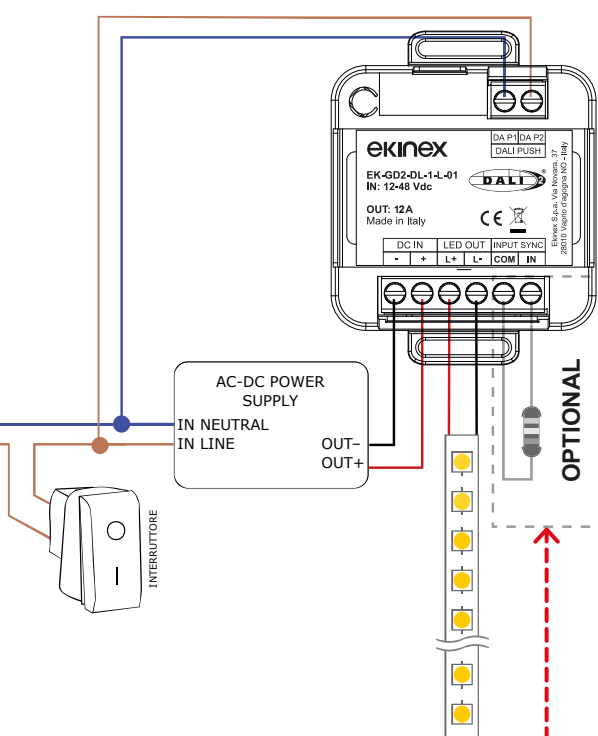


Fig. 8 - Dimming mode on power cut connections

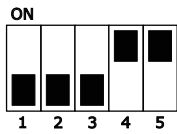
To adjust the minimum brightness level, if different from 5% (default), it is possible to insert a resistor (1/4 Watt or higher) or a potentiometer between the INPUT SYNC COM and IN poles.

The minimum level will vary in relation to the resistance value according to the following table:

Minimum level	Resistance value [kΩ]
5%	Not present or > 47
10%	37
20%	35
30%	30
40%	27

8. Timed switch-off mode on button or non-timed presence sensor

In order to activate this control/operation mode, it is necessary to set the dip-switches located on the back of the box as in the diagram below.



The control via the button can take place directly using the mains voltage ($110 \div 230\text{Vac}$) as in Fig. 9, or the output voltage of the power supply ($8 \div 53\text{Vdc}$), as in Fig. 10.



Note. For installing the dimmer in the system, it is preferable to use the diagram shown in Fig. 9. In this configuration the dimmer guarantees isolation from the mains voltage.

The input voltage range between the DA P1 and DA P2 poles is:

- DC: $10 \div 265\text{Vdc}$;
- AC: $12 \div 265\text{Vac}$ @ $50 \div 65\text{Hz}$.

The maximum current absorbed by the PUSH interface is approximately 2mA. The maximum distance of the dimmer from the button must not exceed 20m; the use of shielded cables is recommended.

The dimmer, in the event of a power failure, saves the state of the output so as to restore the set level when it returns.

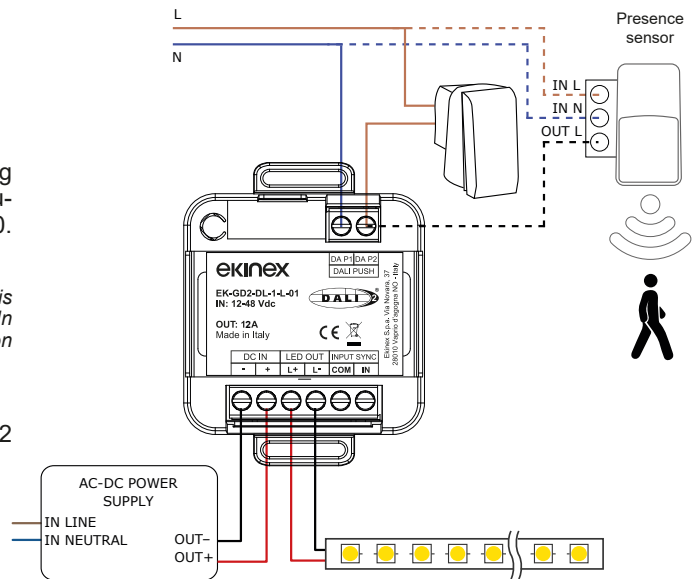


Fig. 9 - Mains voltage pushbutton connection

9. PUSH interface operation

Single click (short press <1sec)

- At the first command pulse the timing begins;
- with each subsequent pulse the timing resumes according to the set time.
- Once the timing is over, the load turns off.

ENTER MENU

EXIT MENU

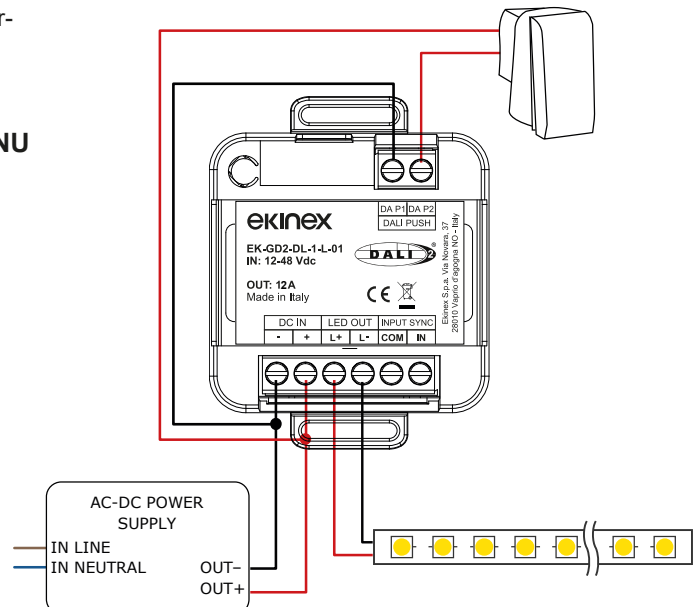
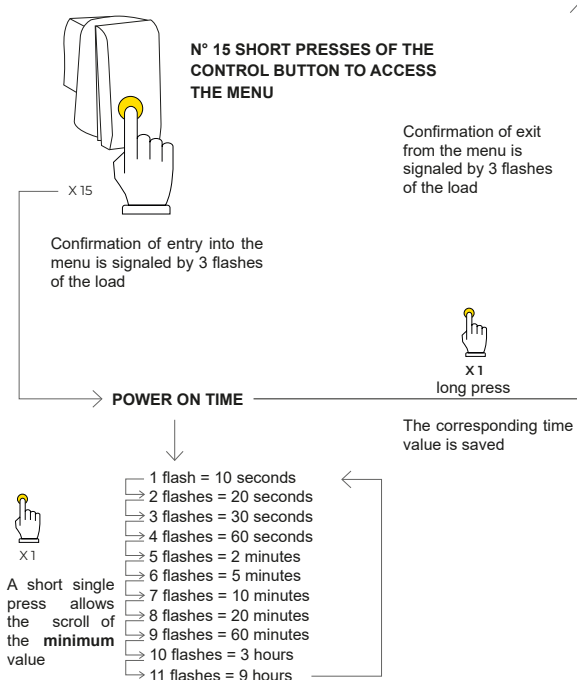
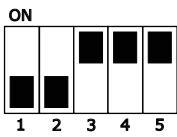


Fig. 10 - Connection of the button with voltage coming from the power supply

10. Slave mode

In order to activate this control/operation mode it is necessary to set the dip-switches as indicated below.



In SLAVE mode the dimmer is able to receive a digital synchronization signal coming from another dimmer EK-GD2-DL-1-L-01.

The dimmer that generates the synchronization signal must be configured in any mode except those that use the INPUT SYNC COM and IN poles as input.

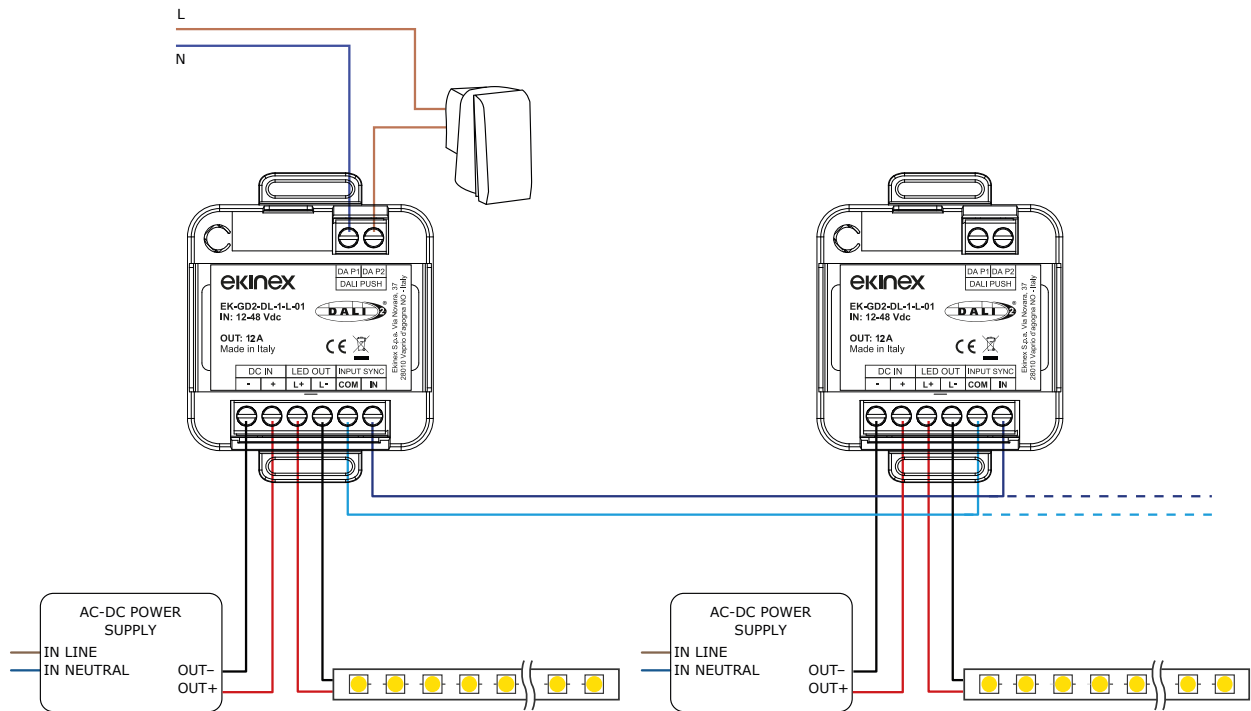


Fig. 11 - Slave connection to EK-GD2-DL-1-L-01 with BUTTON input

The maximum connection distance between the EK-GD2-DL-1-L-01 dimmers must not exceed 20m. We recommend using a shielded cable with a COM pole section suitable for the type of load of the slave used.

In particular:

Current [A]	COM cable section [mm ²]
2 ÷ 4	> 1,5
4 ÷ 12	> 2,5

This indication is necessary for the correct alignment of the negative pole of the DC power supply, which corresponds to the INPUT SYNC COM pole.

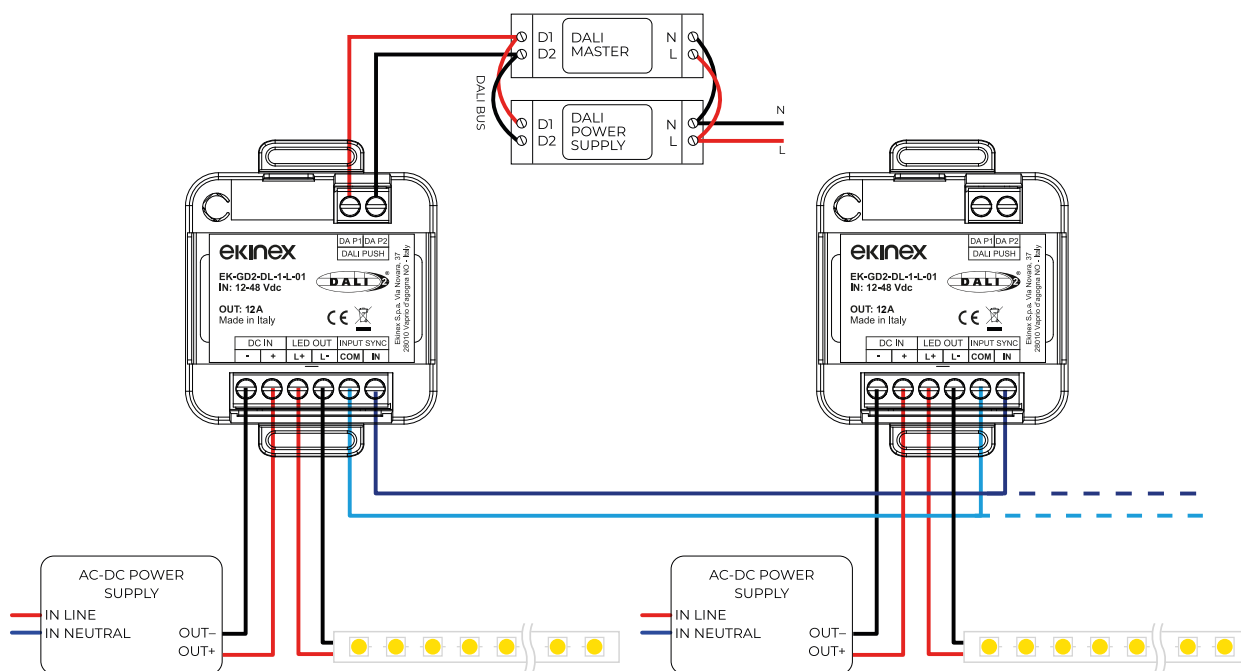


Fig. 12 - Slave connection to EK-GD2-DL-1-L-01 with DALI input

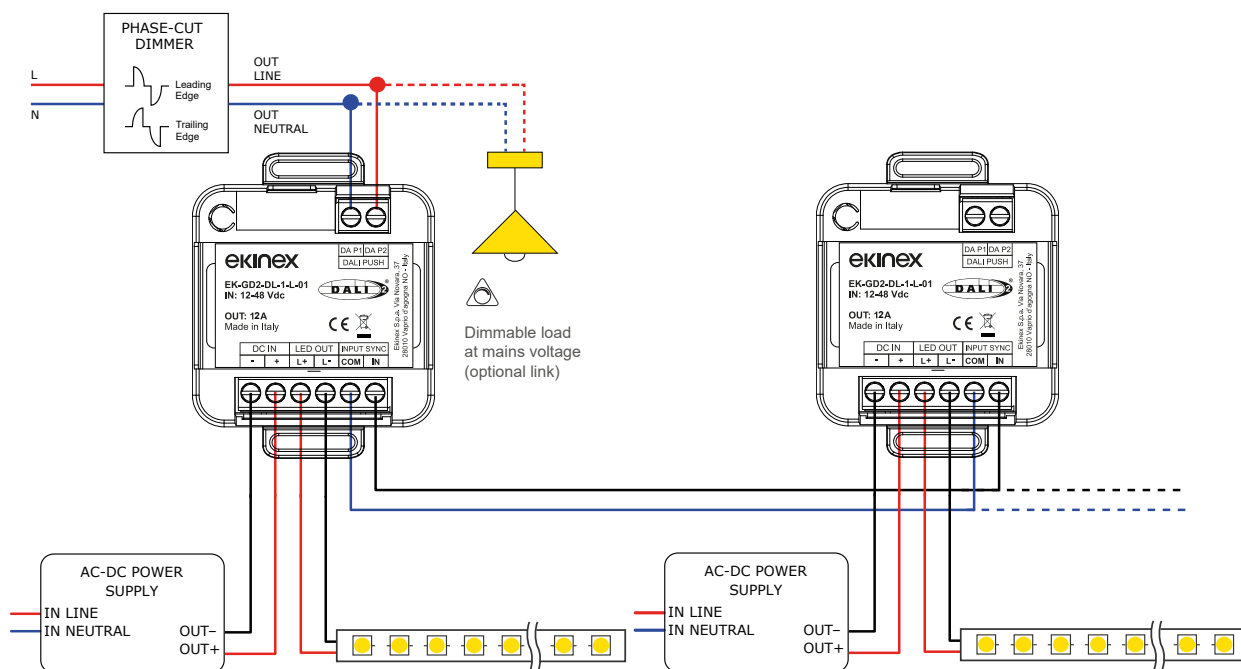
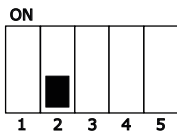


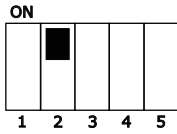
Fig. 13 - Slave connection to EK-GD2-DL-1-L-01 with 2-pole phase-cut input

Setting the PWM output frequency

Setting the dip-switches for changing the PWM output frequency:



PWM output frequency 390Hz (default)



PWM output frequency 3000Hz ("Flicker-Free")

Using dip-switch 2 it is possible to set the PWM output frequency.

The default output frequency (dip-switch 2 to OFF) is 390Hz. This frequency is suitable for the use of all resistive or resistive-capacitive loads, including switching voltage-current or linear converters with limited frequency.

By setting dip-switch 2 to ON, the output frequency is set to 3000Hz. This parameter allows the dimmer to be adapted to the IEEE1789-2015 directive and declared "Flicker-free".

Setting the output with a frequency of 3000Hz does not imply lowering the maximum current of 12A.

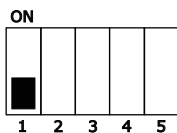
The use of the 3000Hz frequency output must be suitable for the type of load used, which must allow the use of this frequency.



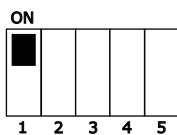
Warning! The use of loads not suitable for being dimmed in PWM with a frequency of 3000Hz could compromise the operation of the dimmer or the load and lead to irreversible damage to the same.

If the 3000Hz output is used with capacitive loads, suitable for dimming via high frequency PWM, it is recommended to disable the active internal short circuit protection. This disabling occurs by setting dip-switch 1 to OFF.

Dip-switch setting for enabling/disabling short circuit protection:



Short circuit protection ACTIVE: OFF

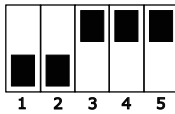


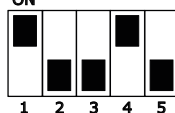
Short circuit protection ACTIVE: ON

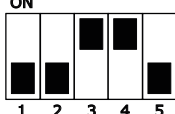


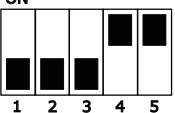
Warning! If you disable ACTIVE short circuit protection, always use a LED power supply compliant with EN61347-1, EN61347-2-13 or equivalent protected against short circuit. Alternatively, use an external fast fuse with a tripping current commensurate with the load. Failure to take these precautions in the event of a short could lead to irreversible damage to the dimmer.

Dip-switch settings summary

PUSH mode	Phase-cut mode	Slave mode
ON  1 2 3 4 5	ON  1 2 3 4 5	ON  1 2 3 4 5

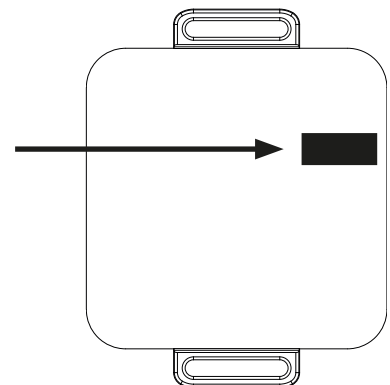
DALI DT6 mode		
ON  1 2 3 4 5	ON  1 2 3 4 5	ON  1 2 3 4 5
High compatibility for voltage-current converters. • Short circuit detection: OFF • Open circuit detection: OFF	High compatibility with open circuit detection • Short circuit detection: OFF • Open circuit detection: ON	Full DALI 2 standard compatibility • Short circuit detection: ON • Open circuit detection: ON

0-10V/1-10V active/passive and 47Kohm linear potentiometer modes	Dimming mode on power cut
ON  1 2 3 4 5	ON  1 2 3 4 5

Timed turn off mode
ON  1 2 3 4 5



Attention! The Dip switch MUST be on the right side of the back of the dimmer case!



Compatibility list0-10/1-10V

Brand	Device
OSRAM	AA589970035
JUNG	F-6661-51165010
ACTEC	SDF30
LUTRON	DVSTV-XX DVSCSTV-XX DVSTV-453PH-VH DVSTV-453PH-VH-C
TCI	REG1-10V

Compatibility listPhase cut

Brand	Device
BTICINO	K4411C 4411C L4411C NT4411N (*)
VIMAR	ARKÉ 19595 PLANA 14135 (*) PLANA 14135.1 PLANA 14136.1 PLANA 14139 PLANA 14595 EIKON 20595.0 LINEA 30805
NEWLAB	PUSH-230V-AI DALI-230V DALI-230V-500W DALI-230V-1KW
TECNEL	TE7636 TE7637
FINDER	TYPE 15, 91
RELCO	RTMOMEGA A RN 0865 (*)
DALCNET	DAC-230-1CH-DALI DAC230-1CH
(*) It is necessary to add a load at the output of the phase-cut dimmer	

Marks

- CE, UKCA: 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.

Documentation

This datasheet refers to the release A1.0 of the ekinex® device EK-GD2-DL-1-L-01 and is available for download at www.ekinex.com as a PDF (Portable Data Format) file.

File name	Device release	Updated
STEKGD2DL1L01_EN_v.1.0.pdf	A1.0	07 / 2024

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).

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