

## LF-GVT060B-12

120-277V Constant Voltage 60W LED Driver 4-in-1 Dimming

---



### Product family features

- Supports Triac dimming (at 120Vac only)
- Supports 0-10V/PWM/Rx dimming
- Built-in active power factor correction
- Built-in iron case design
- 5-year warranty, 10-year service life
- Suitable for dry and damp environments
- Acc. to UL, FCC, CLASS P
- CLASS 2 output



### Product family benefits

- Flicker-free
- High efficiency, low THD
- Surge protection: L-N: 2KV L/N-PE: 2KV

### Typical applications

- For home and commercial lighting
- For office and decorative lighting

### Product parameters

- |                            |                        |
|----------------------------|------------------------|
| — Output current 5A        | — Output voltage 12Vdc |
| — Output power 0-60W       | — Efficiency 90%       |
| — Input voltage 108-305Vac |                        |
-

## Electrical data

### Input data

|                                            |                                         |                   |
|--------------------------------------------|-----------------------------------------|-------------------|
| Rated AC input voltage                     | 120 ... 277V (Triac DIM at 120Vac only) |                   |
| AC voltage range                           | 108 ... 305V                            |                   |
| Mains frequency                            | 50/60Hz                                 |                   |
| Power factor                               | ≥0.95@120Vac                            |                   |
| Efficiency                                 | 88%@120Vac                              | 90%@277Vac        |
| Input current                              | 0.7A Max                                |                   |
| Inrush current                             | 50A 150uS@120Vac                        | 120A 150uS@277Vac |
| Loading number on circuit breaker 10 A (B) | 9                                       | 5                 |
| Loading number on circuit breaker 10 A (C) | 9                                       | 8                 |
| Loading number on circuit breaker 16 A (B) | 15                                      | 8                 |
| Loading number on circuit breaker 16 A (C) | 15                                      | 13                |
| Protective conductor current               | ≤3.5mA                                  |                   |
| Leakage current                            | ≤0.7mA                                  |                   |
| THD                                        | ≤15%@120Vac                             |                   |

### Output data

|                        |                                 |
|------------------------|---------------------------------|
| Nominal output voltage | 12V                             |
| Voltage tolerance      | ±5%                             |
| Nominal output current | 0... 5A                         |
| Maximum output power   | 60W                             |
| Nominal output power   | 0... 60W                        |
| Dimming depth          | 1% <sup>1)</sup>                |
| Flicker                | According to IEEE Std 1789-2015 |
| CIE SVM                | ≤0.4                            |
| IEC-Pst                | ≤1                              |
| Temperature drift      | ±5%                             |
| Start-up time          | <3S <sup>2)</sup>               |

### Safety

|                           |                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------|
| Withstanding voltage      | I/P-O/P: 3.75kV&5mA&60s;<br>I/P-DIM+/DIM-, DIM+/DIM-/-O/P, I/P-PE, O/P-PE:<br>1.5kV&5mA&60s |
| Surge capability (L-N)    | 2 kV                                                                                        |
| Surge capability (L-N/PE) | 2 kV                                                                                        |
| Insulation resistance     | I/P&O/P, I/P&DIM+/DIM-, DIM+/DIM-&O/P:<br>>100MΩ@500Vdc                                     |
| Lifetime                  | Up to 100,000 hours (for details, please refer to the service life table)                   |
| Guarantee                 | 5 years <sup>3)</sup>                                                                       |

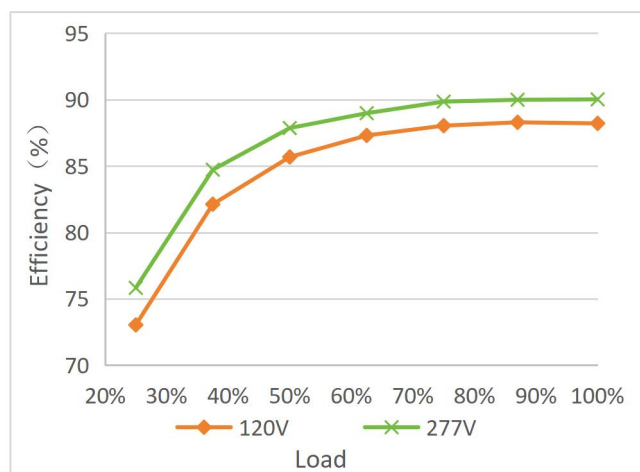
1) Triac dimming performance depends on the dimmer

2) Typical 1s, reaches >90% within <3 seconds @120Vac

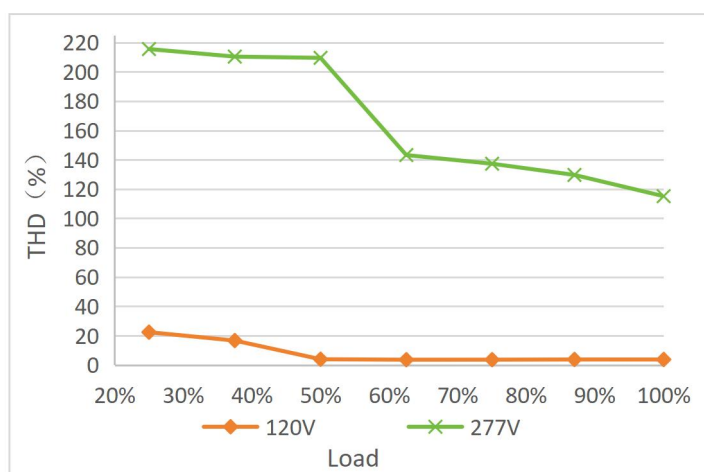
3) 5 years@T<sub>c</sub>≤80°C (176°F)

## Characteristic diagrams

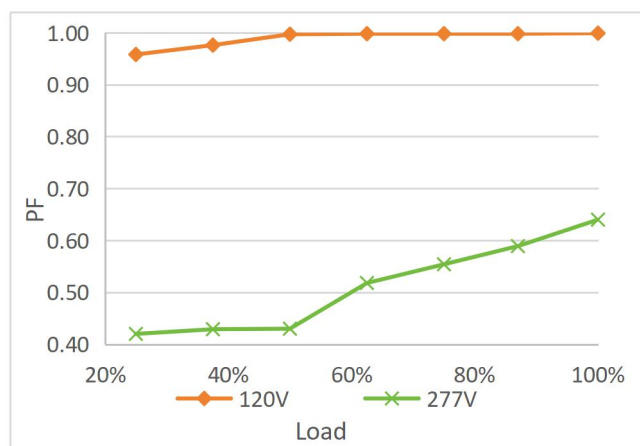
Efficiency vs Load



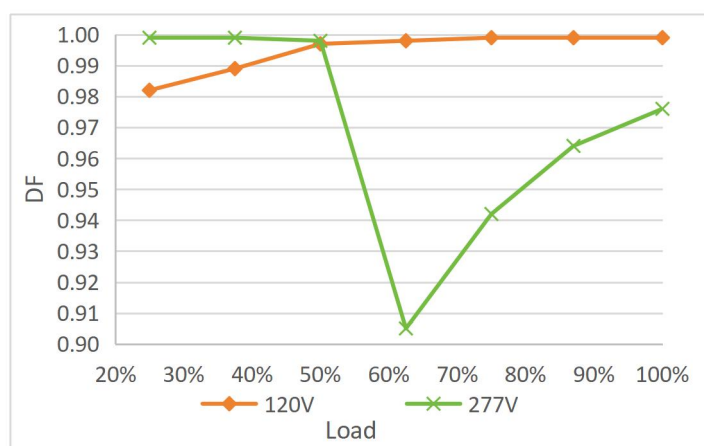
THD vs Load



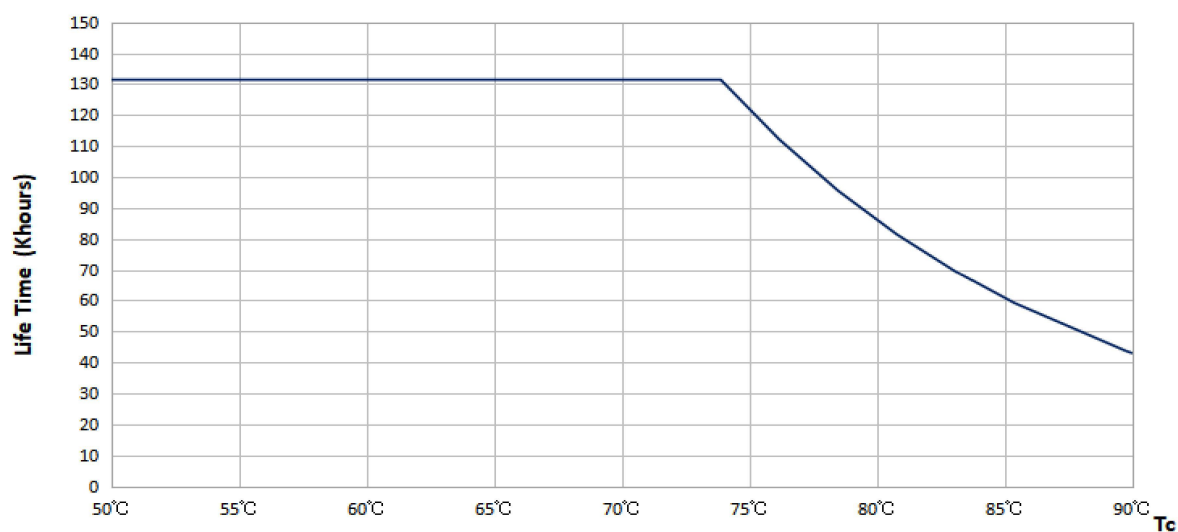
Power Factor vs Load



Displacement Factor vs Load



## Lifespan



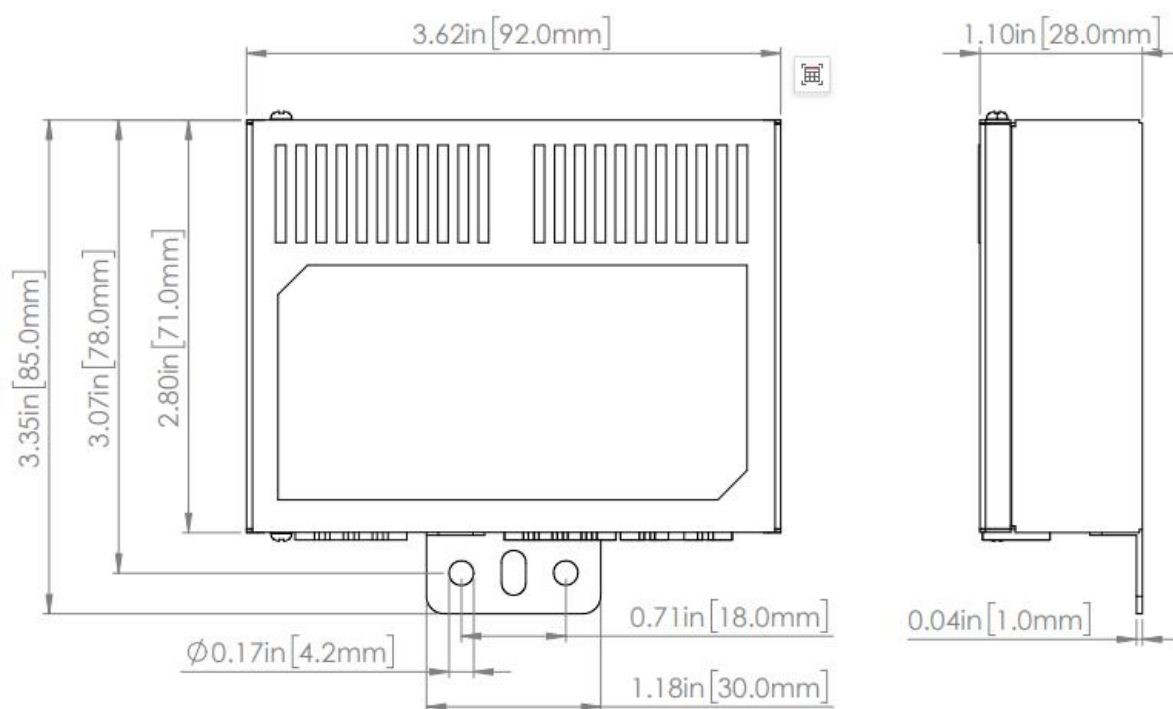
## Service life

| Model      | I <sub>out</sub> | P <sub>out</sub> | T <sub>a</sub> | 50°C/122°F | 55°C/131°F | 60°C/140°F |
|------------|------------------|------------------|----------------|------------|------------|------------|
| GVT060B-12 | 5A               | 60W              | T <sub>c</sub> | 75°C/167°F | 80°C/176°F | 85°C/185°F |
|            |                  |                  | Lifetime       | 100,000h   | 80,000h    | 60,000h    |

Note: The design life of the LED driver is as described above under reference conditions. The failure probability is less than 10%.

The relationship between T<sub>c</sub> and T<sub>a</sub> also depends on the design of the luminaire.

## Dimensions



|                                           |                            |
|-------------------------------------------|----------------------------|
| Mounting hole spacing, length             | 0.71±0.01 in/18±0.3 mm     |
| Product weight                            | 1.01lb/457.2g              |
| Cable cross-section, input & output sides | UL1015 18AWG               |
| Cable cross-section, earth wire           | UL1015 16AWG               |
| Cable cross-section, dimming input sides  | UL1015 20AWG&DIM+/DIM-     |
| Wire preparation length                   | 0.39±0.1 inch / 10±3 mm    |
| Length                                    | 3.62±0.01 inch / 92±0.3 mm |
| Width                                     | 3.35±0.01 inch / 85±0.3 mm |
| Height                                    | 1.1±0.01 inch / 28±0.3 mm  |

## Colors & materials

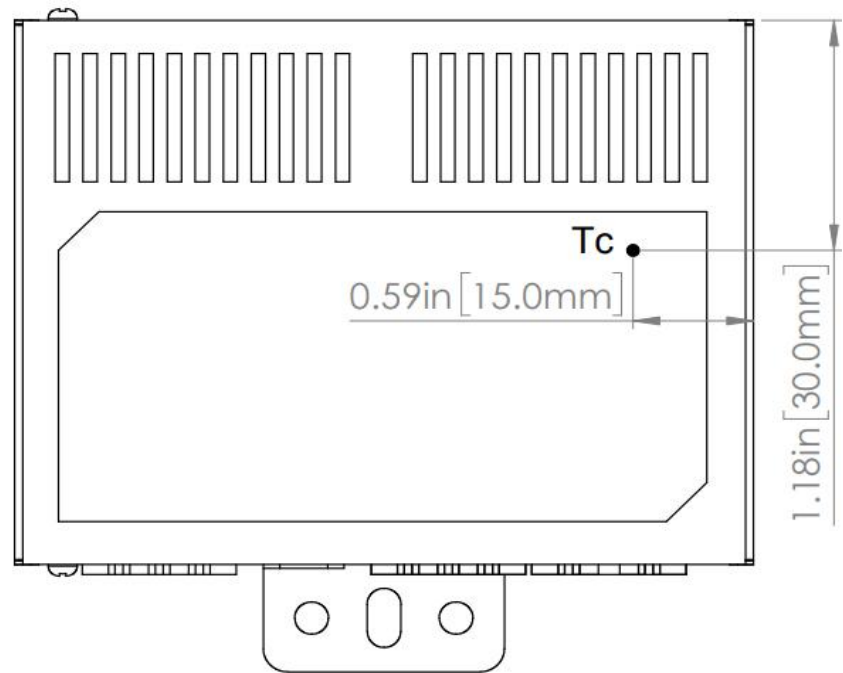
|                 |      |
|-----------------|------|
| Casing material | Iron |
| Casing color    | Blue |

## Temperature & operating conditions

|                           |                               |
|---------------------------|-------------------------------|
| Ambient temperature range | -40 ... +50°C / -40 ... 122°F |
|---------------------------|-------------------------------|

|                                      |                                                                    |
|--------------------------------------|--------------------------------------------------------------------|
| Maximum temperature at tc test point | 85°C / 185°F                                                       |
| Temperature range at storage         | -40 ... +80°C / -40 ... 176°F<br>(6 months in Class I environment) |
| Humidity range at storage            | 20-75%RH (no condensation)                                         |
| Humidity during operation            | 20-95%RH (no condensation)                                         |
| Atmospheric pressure                 | 86-106KPa                                                          |
| RoHS                                 | RoHS 2.0 (EU) 2015/863                                             |

### Tc test point



Note: Tc point is on the top of the product.

### Product terminal

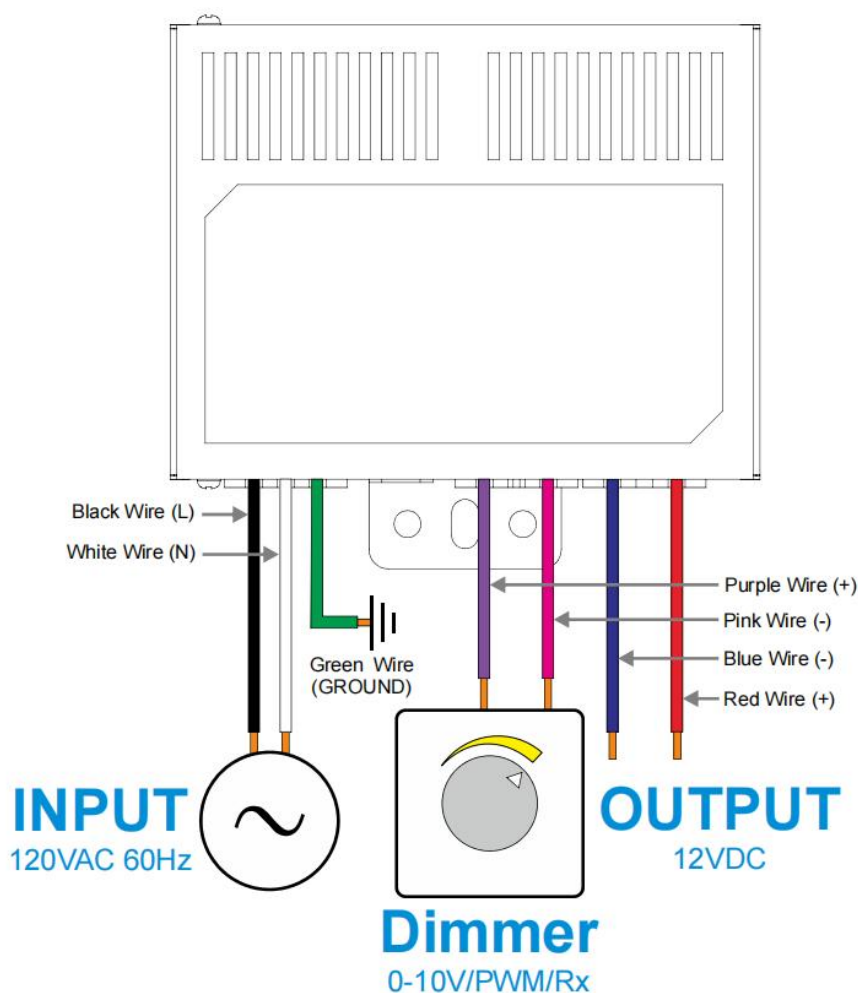
| Input         |                                         | Output      |                                        |
|---------------|-----------------------------------------|-------------|----------------------------------------|
| AC-L (Black)  | AC live wire input                      | LED+ (Red)  | Positive terminal output of LED driver |
| AC-N (White)  | AC neutral wire input                   | LED- (Blue) | Negative terminal output of LED driver |
| ⏏ (Green)     | Earth wire                              |             |                                        |
| DIM+ (Purple) | Positive terminal input of 0-10V/PWM/Rx |             |                                        |
| DIM- (Pink)   | Negative terminal input of 0-10V/PWM/Rx |             |                                        |

## Capabilities

|                                        |                             |
|----------------------------------------|-----------------------------|
| Dimmable                               | 0-10V/PWM/Rx/Triac dimmable |
| Dimming range                          | 0 ... 100%                  |
| Overload protection                    | Yes                         |
| Short circuit protection               | Hiccup mode <sup>4)</sup>   |
| Overvoltage protection                 | <36V                        |
| Suitable for fixtures with prot. class | I/II                        |
| Control interface                      | 0-10V/PWM/Rx                |
| Number of channels                     | 1 channel                   |

4) Single short circuit within 60s: Self-recovery. Short circuit exceeding 60s: Latching protection; power off for  $\geq 20$ s and restart to recover. Multiple short circuits with short intervals ( $\leq 10$ s): Timing is based on the first short circuit event.

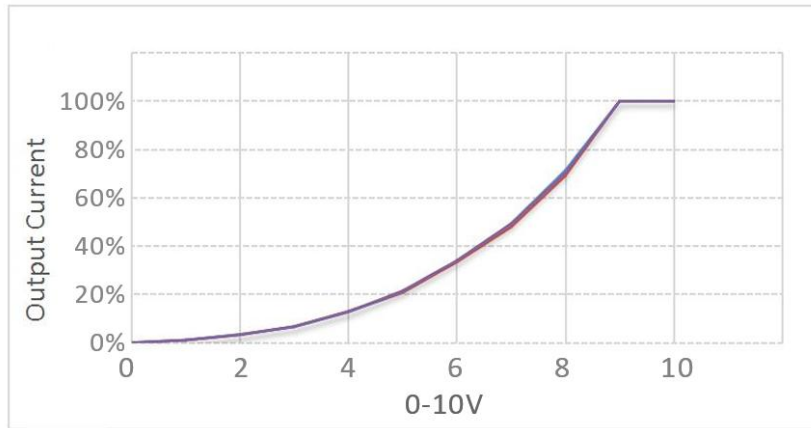
## Dimming function instructions



Wiring diagram of 3-in-1 dimming

### • 0-10V dimming function

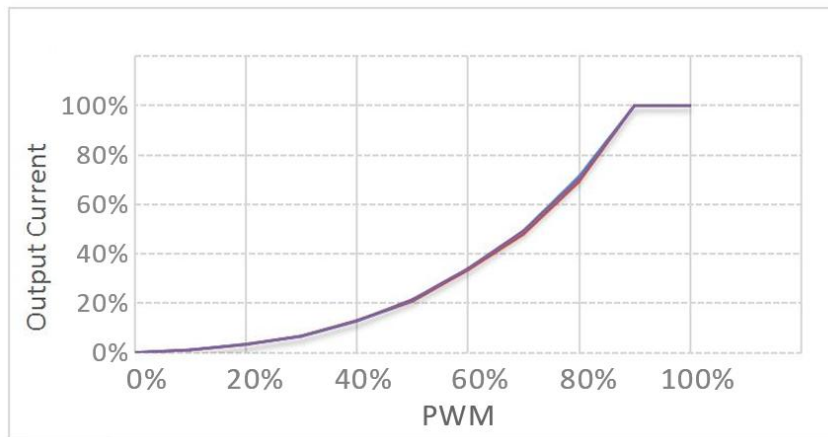
- ① Connect 0-10V signal to DIM+/DIM-.
- ② In 0-10V dimming mode, when the input voltage is  $0.3V \pm 0.2$ , the light turns off; when it's  $0.55V \pm 0.2$ , the light turns on.
- ③ DIM+/- (without signal connected): 100% rated current output



0-10V dimming

### • PWM dimming function

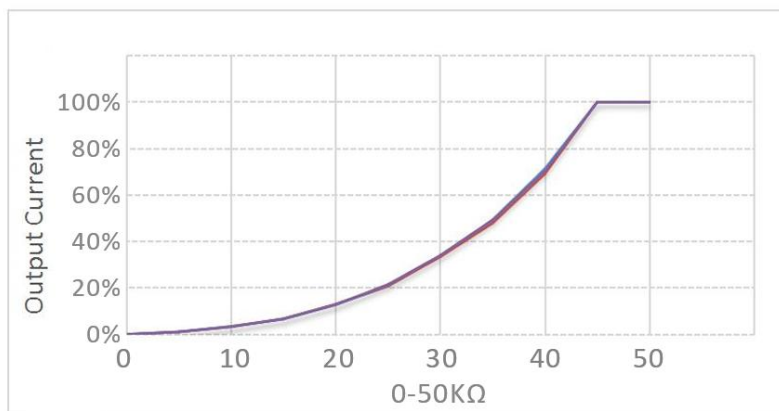
- ① Connect PWM signal to the DIM+/DIM-.
- ② Compatible signal range: 500-3000(Hz), amplitude: 10(V)
- ③ DIM+/- (without signal connected): 100% rated current
- ④ Turn-on signal DIM+ - DIM- : 5%±1.5%
- ⑤ Turn-off signal DIM+ - DIM- : 3%±1.5%



PWM dimming

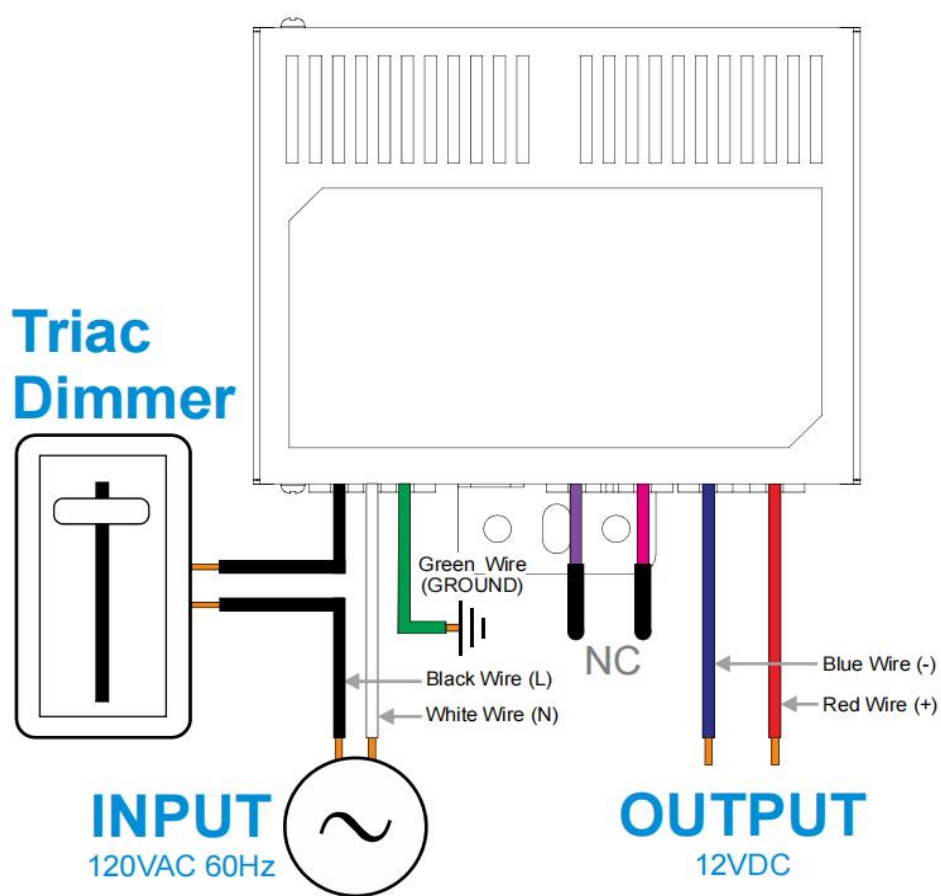
### • Rx dimming function

- ① Connect Rx signal to DIM+/DIM-.
- ② When the resistance is  $3K\Omega \pm 1.5K$ , the light turns on; when it's  $1K\Omega \pm 1.5K$ , the light turns off, range: 0-50K $\Omega$
- ③ DIM+/- (without signal connected): 100% rated current



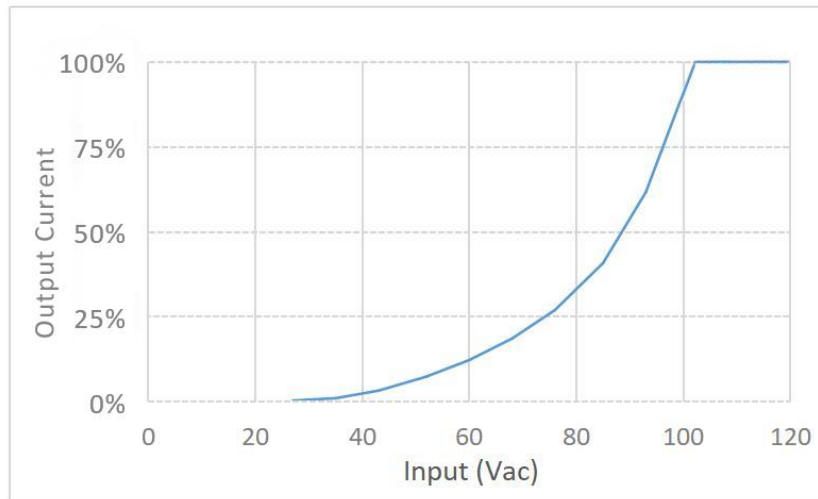
Rx dimming

- **Triac dimming function**



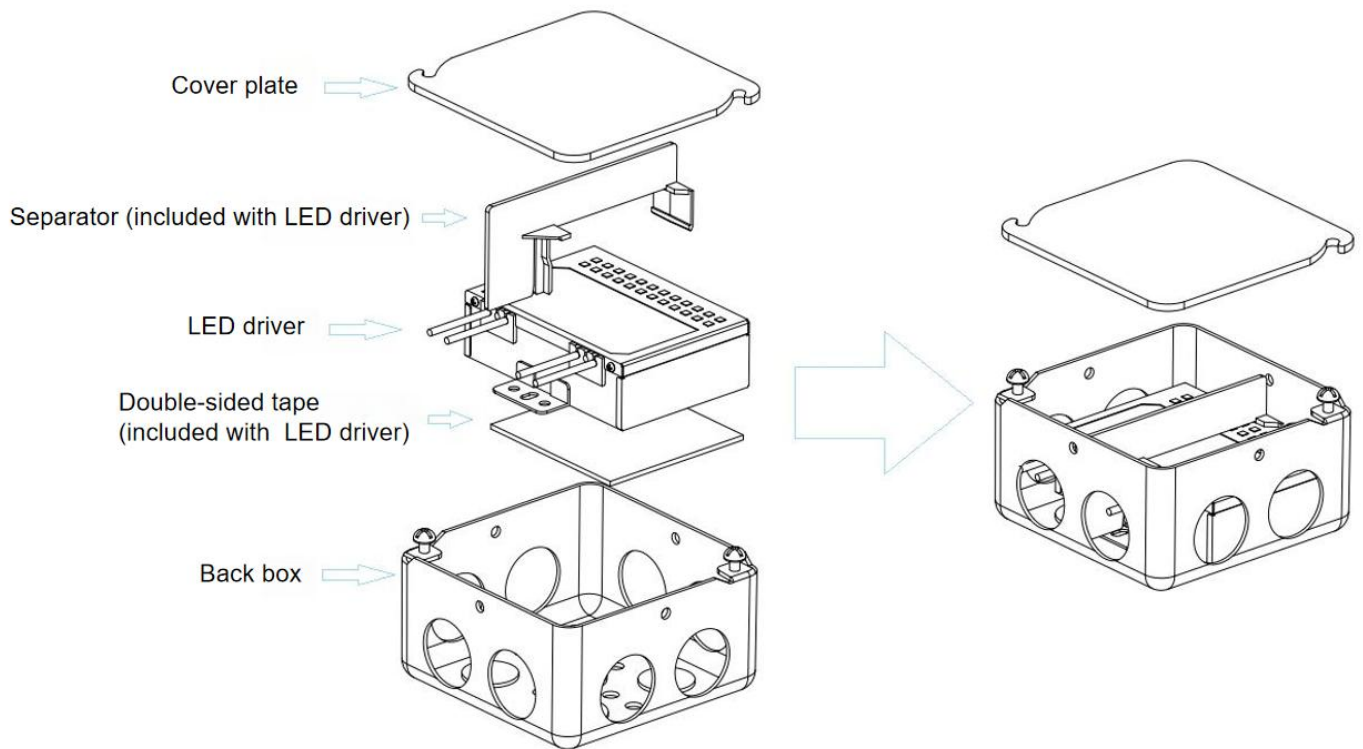
Wiring diagram of Triac dimming

- ① Triac dimming is only applicable for 120 Vac input.
- ② Triac dimming cannot be used with 0-10V/PWM/Rx dimming.
- ③ When using Triac dimming, it is recommended that the output load be  $\geq 30\%$  of the rated power.

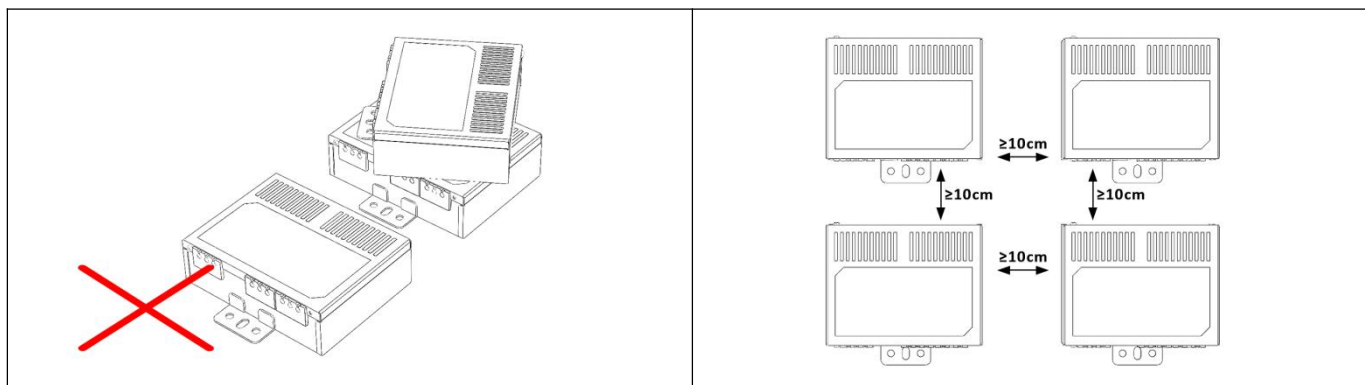


Triac dimming

## Assembly diagram



## Installation precautions



1. Do not stack the LED drivers when in use. Please maintain a minimum distance of at least 10cm between them to avoid affecting their heat dissipation and lifetime.
2. Keep a distance of at least 10cm between the LED driver and any heat source to avoid affecting the heat dissipation and lifetime of the LED driver. It is recommended to install and use the driver with the front side facing upward.
3. Proper heat dissipation must be maintained around the LED drivers to avoid affecting their lifetime.

## Certificates & standards

|                           |                                   |
|---------------------------|-----------------------------------|
| Approval marks – approval | UL, CLASS P, FCC                  |
| Standards                 | UL 8750<br>UL 1310<br>FCC PART15B |

## Logistical data

| Product    | Packaging unit<br>(Pieces/Unit) | Dimensions (L*W*H)   | Volume                | Gross weight |
|------------|---------------------------------|----------------------|-----------------------|--------------|
| GVT060B-12 | 60                              | 460*390*185mm        | 33.19 dm <sup>3</sup> | 28.74±1kg    |
|            |                                 | 18.12*15.36*7.29inch | 1.18 ft <sup>3</sup>  | 63.36±2lb    |

## Test equipment & condition

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Test equipment</b>           | AC power source: CHROMA6530, digital power meter: CHROMA66202, oscilloscope: Tektronix DPO3014, DC electronic load: M9712B, LED board, constant temperature and humidity chamber, lightning surge generator: Everfine EMS61000-5B, rapid group pulse generator: Everfine EMS61000-4A, spectroanalyzer: KH3935, hi-pot tester: EEC SE7440, flicker tester (flicker-free coefficient test): Everfine LFA-3000, etc. |
| <b>Compatibility of dimming</b> | LEVITON SB-742-D26HD-32B, MACL-153M-WH-C, LUTRON DVCL-153P-WH, LUTRON STCL-153M-WH, LUTRON SCL-153P-WH                                                                                                                                                                                                                                                                                                            |

If there are no special remarks, the above parameters are tested at the ambient temperature of 25℃, humidity of 50%, full load and input voltage of 120Vac/60Hz.

## Additional information

1. It is recommended that user install the over voltage protection, under voltage protection and surge protection devices in the power supply circuits of light fixtures to ensure electricity safety.
2. The number of LED drivers that can be connected to a circuit breaker and the inrush current are tested under the same conditions.
3. The PC cover, casing and end cap for assembling the LED driver in the light fixture must meet the fire rating of UL94-V0 or above.
4. In no-load condition, it is recommended that user not directly connect the LED driver to the light fixture in case that the light fixture is damaged.
5. It is recommended that the AC be switched on and off at an interval of more than 6S.
6. When using Triac dimming, it is necessary to confirm the compatibility and matching of the dimmer.
7. This LED driver is suitable for connecting LED light fixtures with limited resistance current (such as LED strips). If the constant current light fixture with built-in IC is connected, it will produce tens of times the instantaneous surge current, causing the LED driver to perform overload protection.
8. If output is connected to capacitive loads, it is necessary to re-verify the feasibility.
9. The product diagram is for reference only, and the specific object shall prevail.
10. Lifud Technology Co., Ltd. reserves the right to interpret any content of this specification.

## Transportation & storage

Suitable transportation means: vehicles, boats and aeroplanes.

In transit, it is necessary to prepare awnings for rain or sun protection. Moreover, please keep civilized loading and unloading to prevent the vibration or impact on LED driver as much as possible.

The storage of LED driver shall conform to the standard of Class I environment.

1. When using the products which have been stored for more than 6 months, please re-test their electrical parameters firstly by powering on. Do not use them unless they are tested to be qualified.
2. When using the products which have been stored for 6 to 12 months, please run them on power for more than 2 hours firstly.

3. When using the products which have been stored for more than 12 months, please conduct an actual assessment of quality risks firstly. Direct use is not recommended.

## **Cautions**

Please use Lifud LED driver according to its parameters in the specification, otherwise the LED driver may malfunction.

Using any incompatible light fixtures or those that have not been certified may cause fire, explosion or other risks.

Man-made damage is beyond the scope of Lifud warranty service.

## **Disclaimer**

Subject to change without notice. Errors and omissions excepted. Always make sure to use the most recent release.