LTSYS

LA-60-24-U1L
LA-96-24-U1L

Triac/ELV
0-10V

Intelligent LED Driver(Constant Voltage)

- Metal casing for easy heat dissipation.
- Supports 0-10V/1-10V/10V PWM/RX dimming, as well as leading-edge (Triac) and trailing-edge (ELV) dimming. It features strong compatibility and is compatible with various American-standard dimmers such as Lutron and Legrand.
- Power parameters can be modified via mobile APP using NFC, enabling driver data interaction function.
- Dimming range: 0~100%, and the LED can start dimming from 0.01%.
- Soft-on and fade-in dimming function enhances your visual comfort.
- The dimming interface is equipped with photoelectric isolation, complies with the latest safety standards, and is more safe and reliable.
- When the signal is floating, it outputs at full load and can be used as a LED driver.
- Innovative thermal management technology intelligently protects the service life of the power supply.
- Overheat, over voltage, overload, short circuit protection and automatic recovery.
- IP20, suitable for indoor LED lighting fixtures.
- Complies with Type HL, and can be used in North American Class 1, Division 2 environments, such as gas stations, chemical plants, sewage treatment plants, etc.
- Normal service life can reach 100,000 hours.
- Certified to UL Class 2 and Class P.
- Complies with IEEE 1789 and UL 8750 standards.
- 5-year warranty(adopting Nippon Chemi-Con capacitors).

6-in-1 Dimming
Triac
ELV
0-10V
1-10V
10V PWM
RX

DIM

T-PWM
Dimming Technology

Flicker Free
IEEE1789

Dimmable:
1:10000MAX

NFC

c UL us LISTED (LED Drivers) E497951 FC CE SELV RoHS Class 2 Class P Type HL

The certification icon represents undergoing certification applications only, and final certification qualification subject to actual product.

Technical Specs

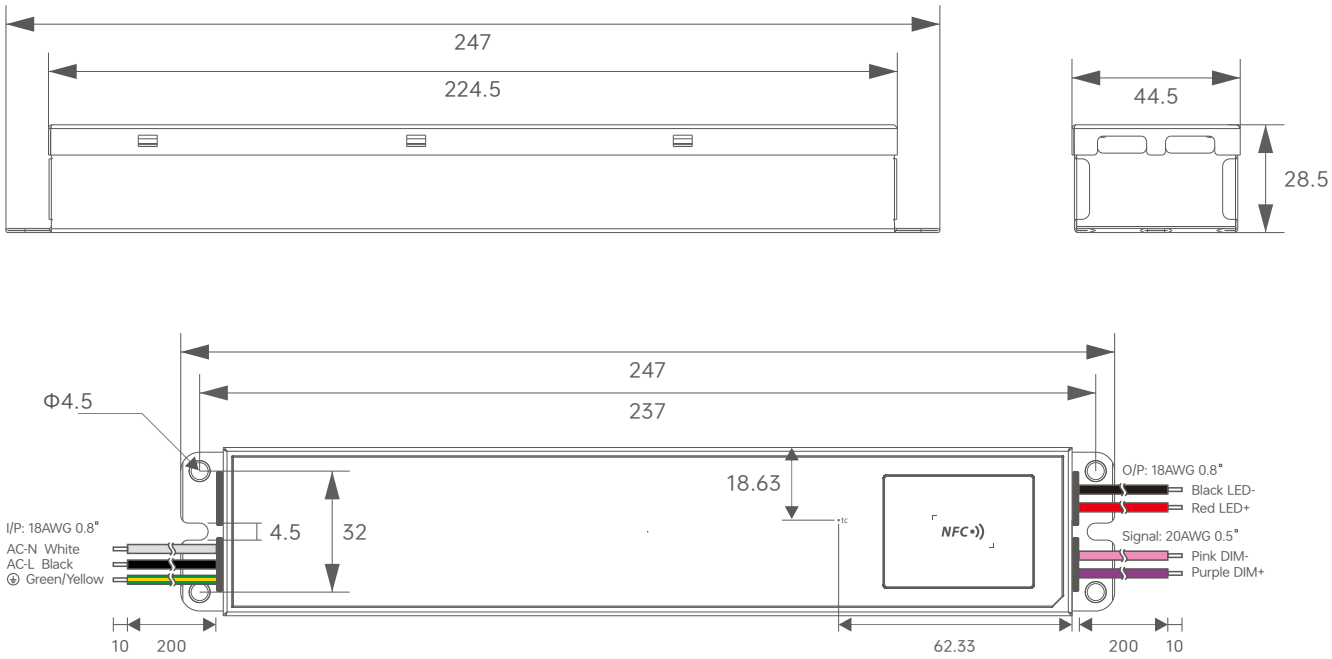
Model		LA-60-24-U1L			LA-96-24-U1L
OUTPUT	Output Voltage	24V⎓			
	Output Voltage Range	24V ± 0.5V⎓			
	Output Current	Max. 2.5A			Max. 4.0A
	Output Power	Max. 60W			Max. 96W
	Output Power Range	0~60W			0~96W
	Strobe Level	High frequency exemption level/IEEE1789			
	Dimming Range	0~100%, down to 0.01%			
	Overload Power Limitation	≥102%			
	Ripple	Switch ripple≤120mV, noise≤500mV			
	PWM Frequency	300-22000Hz			
INPUT	Dimming Interface	Triac/ELV,0-10V(1-10V/10V PWM/RX)			
	Input Voltage	100-277V~			
	DC Voltage Range	220-250V⎓			
	Frequency	0/50/60Hz			
	Input Current	Max. 0.77A/100V~, 0.35A/230V~, 0.32A/277V~(at full load)			Max. 1.2A/100V~, 0.52A/230V~, 0.46A/277V~(at full load)
	Power Factor	PF>0.95/100V~, PF>0.9/230V~, PF>0.85/277V~(at full load)			PF>0.95/100V~, PF>0.95/230V~, PF>0.9/277V~(at full load)
	THD	100V~@THD<6%, 230V~@THD<18%, 277V~@THD<30% (at full load)			100V~@THD<6%, 230V~@THD<15%, 277V~@THD<25% (at full load)
	No-load Power Consumption	< 4.5W@230V~			
	Efficiency (Typ.)	83%/100V~, 87%/230V~, 87%/277V~			84%/100V~, 89%/230V~, 89%/277V~
	Inrush Current	Cold start 27A(Test twidth=340us tested under 50% Ipeak)/230V~			Cold start 29A(Test twidth=340us tested under 50% Ipeak)/230V~
	Anti Surge	L-N: 2KV， L,N-FG: 4KV			
	Leakage Current	Max. 0.5mA			
ENVIRONMENT	Working Temperature	ta: -20 ~ 50°C tc: 75°C			
	Working Humidity	20 ~ 95%RH, non-condensing			
	Storage Temperature/Humidity	-40 ~ 80°C, 10~95%RH			
	Temperature Coefficient	±0.03%/°C(-20 ~ 55°C)			
	Vibration	10~500Hz, 2G 12min/1cycle, 72 min for X, Y and Z axes respectively			
PROTECTION	Overheat Protection	Intelligently adjust or turn off the output current if the PCB temperature ≥110°C, and recover automatically			
	Overload Protection	Shut down the output when rated power≥102%, auto recovers			
	Short Circuit Protection	Enter hiccup mode if short circuit occurs, and recover automatically			
	Overvoltage Protection	Shut down the output when no-load voltage≥28V, and recover automatically			
SAFETY & EMC	Withstand Voltage	I/P-O/P: 3750V~/1min/ < 5mA, I/P-FG: 1500V~/1min/ < 5mA, O/P-FG: 500V~/1min/ < 5mA, Signal-FG: 500V~1min/ < 5mA			
	Insulation Resistance	I/P-O/P: 100MΩ/500V~/1min/25°C/70%RH			
	SafetyStandards	UL	America	UL8750，UL1310，Class P	
		CUL	Canada	CSA C22.2 No.250.13	
		CE	European Union	EN61347-1，EN61347-2-13，EN62384	
	EMC Emission	FCC	America	FCC part15B	
		CE	European Union	EN55015，EN61000-3-2，EN61000-3-3，EN61547	
	EMC Immunity	EN61000-4-2,3,4,5,6,8,11,EN61547			
	Strobe Test	IEEE1789			
OTHERS	Weight(N.W.)	600g±10g			
	Dimensions	247×44.5×28.5mm(L×W×H)			

*This driver is suitable for connecting LED lighting fixtures with resistance current limiting (e.g., LED light strips). If connected to fixtures with built-in constant current IC for current limiting, it will generate an instantaneous inrush current dozens of times higher than normal, causing the driver to activate overload protection (manifested as hiccup and strobing). When placing an order, it is necessary to specify such fixtures with built-in constant current IC for current limiting (e.g., MR16 bulbs, underground lights, wall washers, constant current hard light strips, etc.), so that a special program can be flashed into the driver.

*The product complies with the harmonic emission requirements.

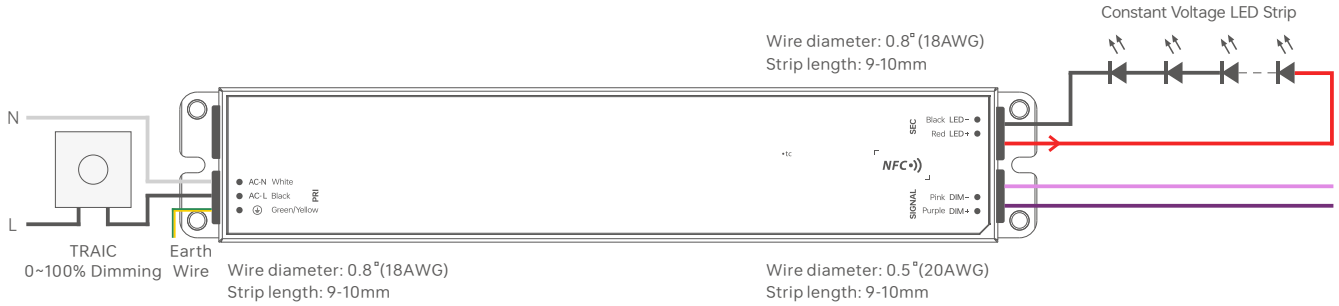
Product Size

Unit:mm



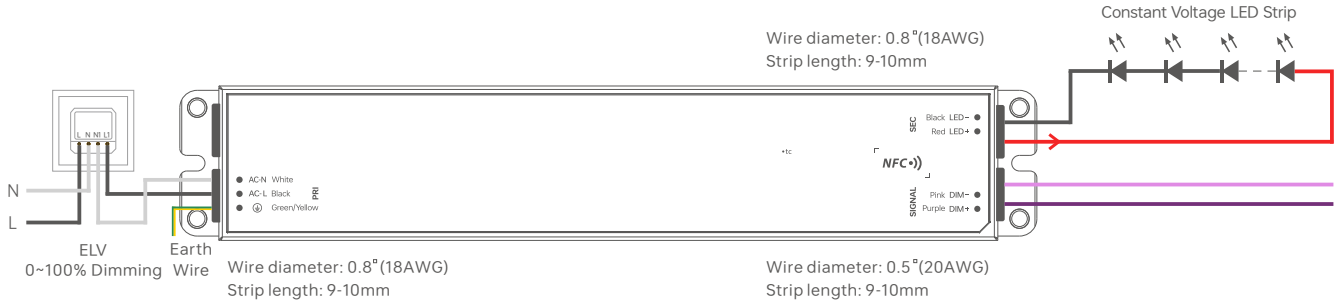
Wiring Application Diagram

Triac Connection Method



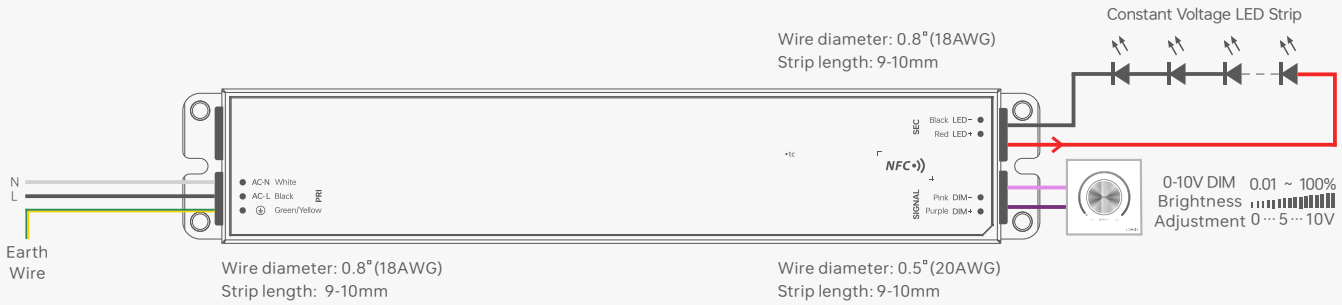
* When using TRIAC dimming, the 0-10V signal must not be short-circuited or grounded; otherwise, the dimming function will be affected.
* The 0-10V dimmer and the TRIAC dimmer must not be connected simultaneously.

ELV Connection Method



* When using TRIAC dimming, the 0-10V signal must not be short-circuited or grounded; otherwise, the dimming function will be affected.
* The 0-10V dimmer and the TRIAC dimmer must not be connected simultaneously.

0-10V Connection Method



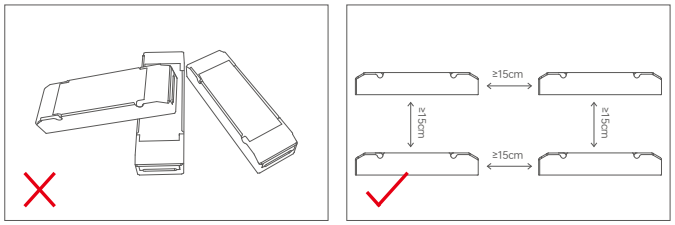
* The 0-10V dimmer and the TRIAC dimmer must not be connected simultaneously.
* In the same 0-10V dimmer circuit, it is recommended to use only products of the same specification and model to achieve better consistent dimming performance.

Recommended TRIAC-Compatible Dimmers

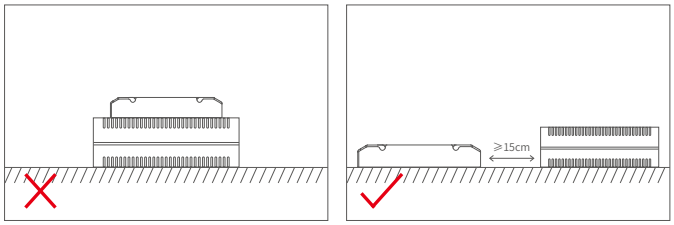
Manufacturer	Lutron	Lutron	Lutron	Lutron	MAXXIMA	Legrand	Legrand
Model	DNG-600P	MACL-153M	DVCL-253P	SCL-153P-WH	DM620	WSCL450W	LS600

* The above list contains recommended dimmers for TRIAC testing. For TRIAC dimmers not included in the recommended list, they can only be used after actual testing confirms no abnormalities; there are no compatibility issues with 0-10V dimmers.

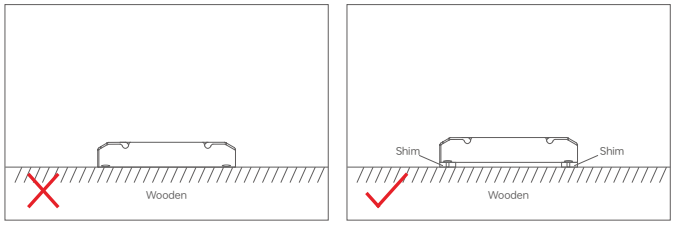
Installation Precautions



Please do not stack the products. The distance between two products should be ≥15cm so as not to affect heat dissipation and the lifespan of the products.

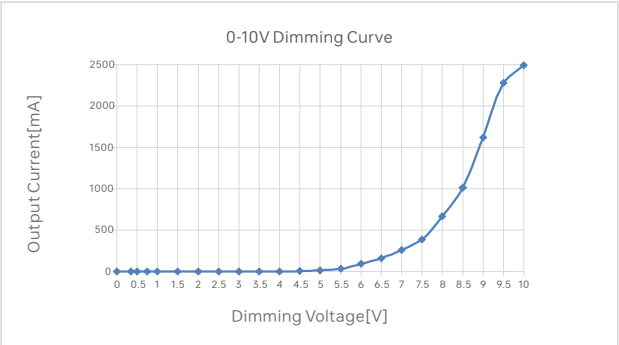


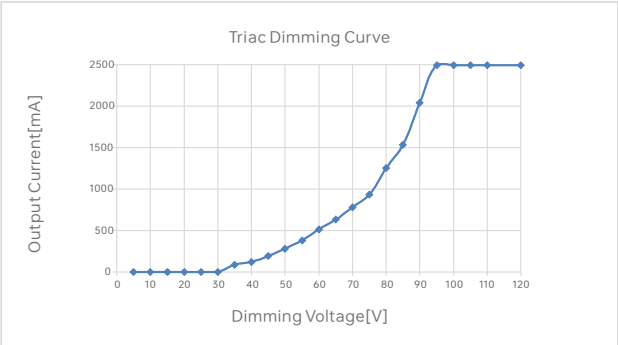
Please not place the products on LED drivers. The distance between the product and the driver should be ≥15cm so as not to affect heat dissipation and shorten the lifespan of the products.

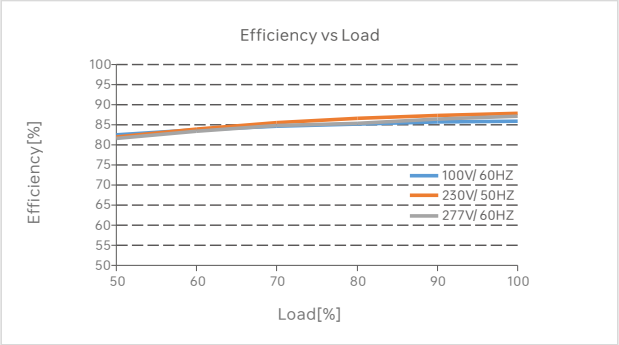


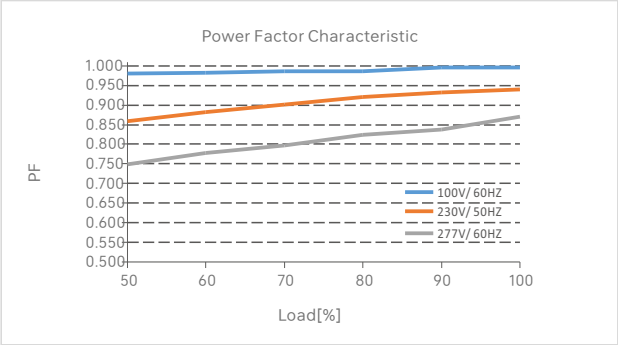
Please do not fasten the product screws tightly against the wooden board. Instead, add a washer of ≥7mm under the fixing screws. Leaving a gap can effectively dissipate heat, preventing any impact on the product's heat dissipation and service life.

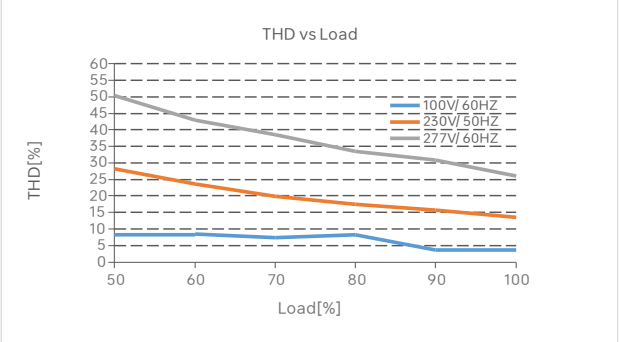
Relationship Diagrams

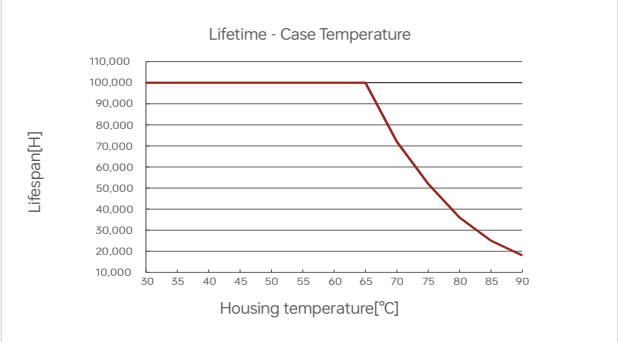




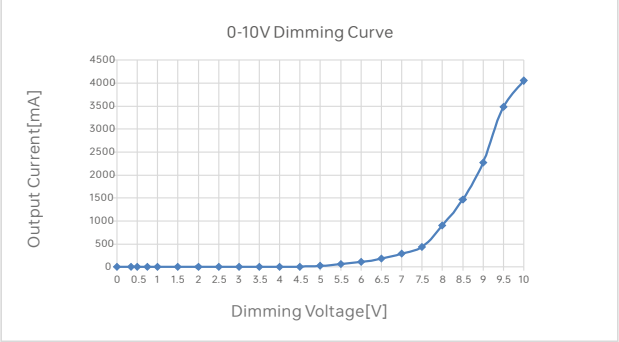


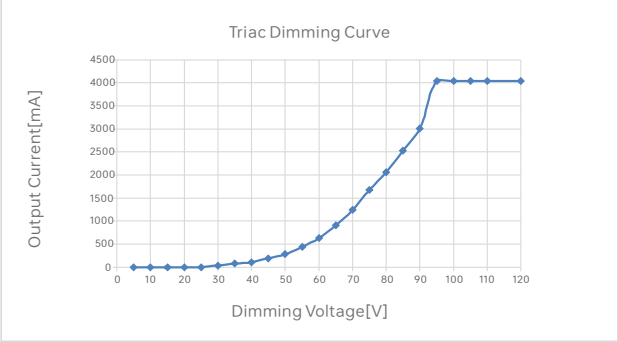




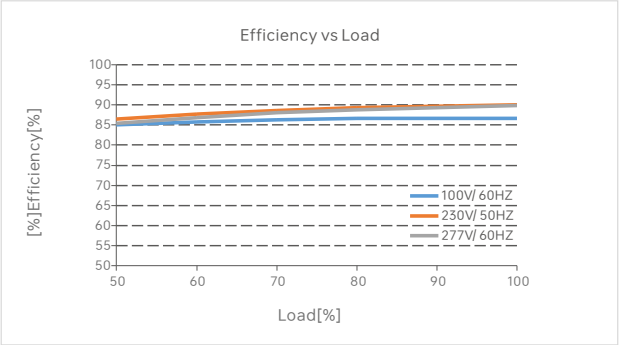


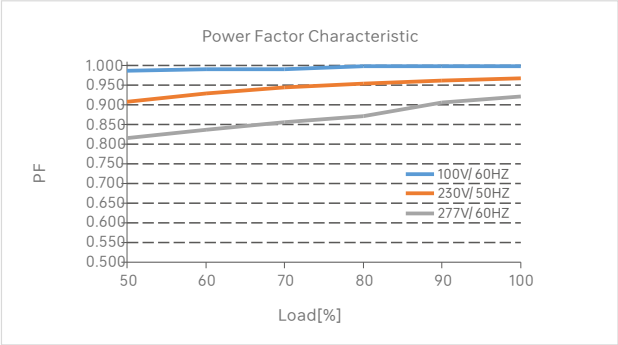
LA-60-24-U1L

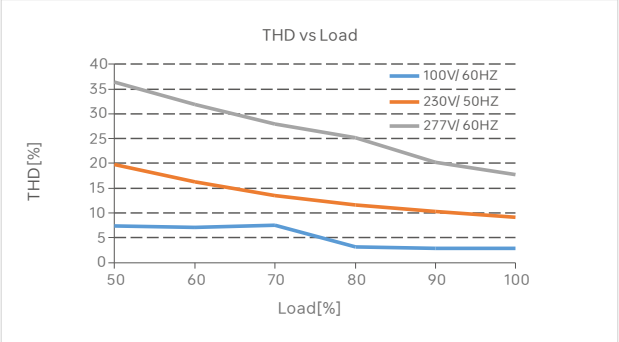


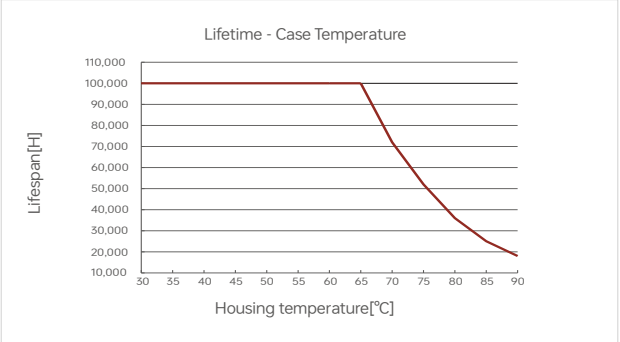


LA-96-24-U1L









LA-96-24-U1L

Surge Current & Corresponding Miniature Circuit Breaker (MCB) Load Capacity Table

MCB Model	B10	B13	B16	B20	B25	C10	C13	C16	C20	C25	D10	D13	D16	D20	D25
Maximum Load Capacity	20	26	32	40	50	23	30	37	47	58	27	34	42	53	66

Remarks:

1. Test Conditions: Cold start 27A(Test twidth=340us tested under 50% Ipeak)/230V~(LA-60-24-U1L), Cold start 29A(Test twidth=340us tested under 50% Ipeak)/230V~(LA-96-24-U1L),
2. The number of supported drivers may vary depending on the brand and model of the MCB.
3. It is recommended not to exceed the specified load capacity during on-site installation. The actual load should be determined based on field conditions.
4. If the ambient temperature exceeds 30°C or multiple MCBs are installed side by side, the number of installed drivers must be reduced and recalculated accordingly.
5. Electricians typically use Type B MCBs for residential lighting and Type C MCBs for commercial lighting applications.
6. Different testing equipment may yield variations in measured current peaks and pulse widths. Always use professional-grade instruments for accurate testing.

Flicker Test Table

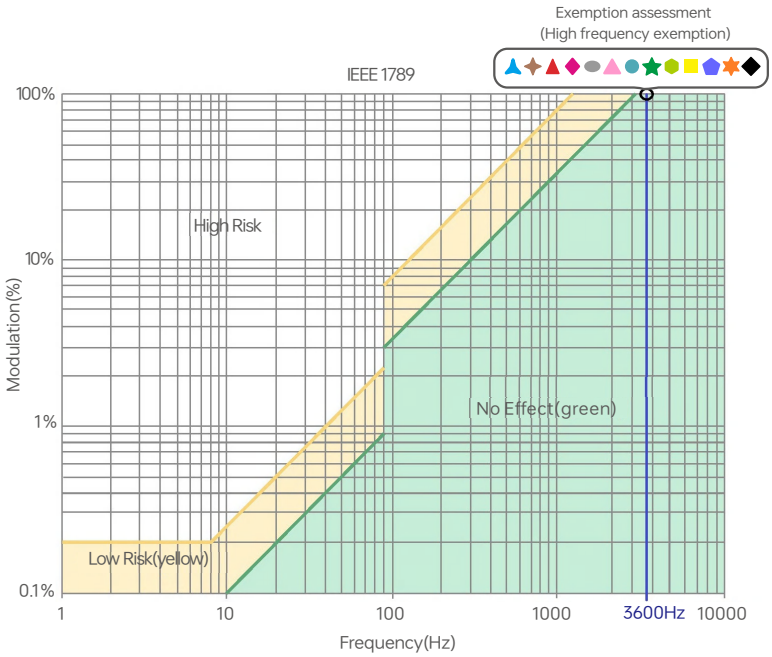
IEEE 1789

Limit Value of Modulation in Low Risk Areas	
Waveform frequency of Optical output (f)	Limit value (%)
f ≤ 8Hz	0.2
8Hz < f ≤ 90Hz	0.025 × f
90Hz < f ≤ 1250Hz	0.08 × f
f > 1250Hz	Exemption assessment
Limit Value of Modulation in No Effect Areas	
Waveform frequency of Optical output (f)	Limit value (%)
f ≤ 10Hz	0.1
10Hz < f ≤ 90Hz	0.01 × f
90Hz < f ≤ 3125Hz	(0.08/2.5) × f
f > 3125Hz	Exemption assessment (High frequency exemption)

Brightness

- 0.1%
- 1%
- 5%
- 10%
- 20%
- 30%
- 40%
- 50%
- 60%
- 70%
- 80%
- 90%
- 100%

Marks in the right chart are tested results of different current levels.
The output frequency is 0Hz in 100% brightness and its corresponding modulation is 0%, which could not be shown in the right chart.



Use the NFC Lighting APP

Scan the QR code below with your mobile phone and follow the prompts to complete the APP installation (According to performance requirements, you need to use a NFC-capable Android phone, or an iphone 8 and later that are compatible with iOS 13 or higher).

*** Before you begin setting the parameters of the driver, please make sure the driver is powered off .**

Read/Write the LED driver

Use your NFC-capable phone to read LED driver data, then edit the parameters and they can be directly written to the driver.

1.Read the LED driver

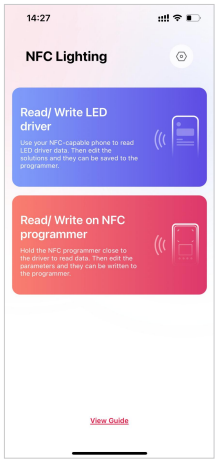
On the APP home page, click【Read/Write LED driver】, then keep the programmer's sensing area close to the NFC logo of the driver to read the driver parameters.

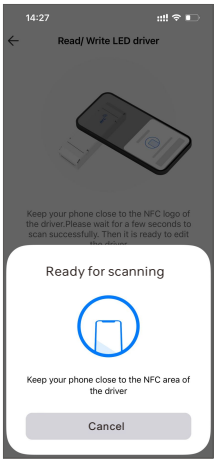
2.Edit the parameters

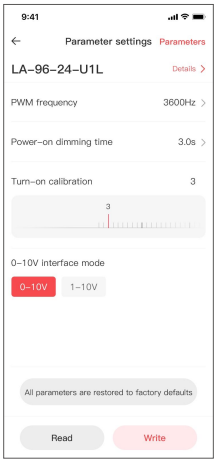
Click【Parameter settings】to edit more advanced parameters such as PWM frequency, power-on dimming time, turn-on calibration, and 0-10V interface mode.

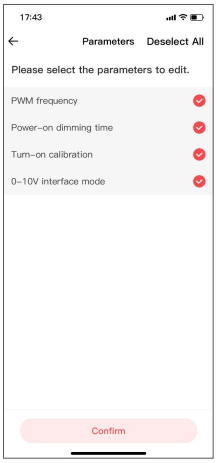
3.Write to the driver

After completing the parameter settings, click 【Write】in the upper right corner, and keep the programmer's sensing area close to the NFC sensing area of the driver, so the parameters can be written to the driver.





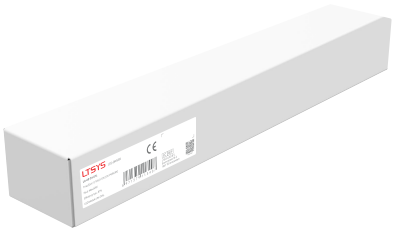




Packaging specification

Model	LA-60-24-U1L/LA-96-24-U1L
Package box size	273×60×35mm（L×W×H)
Packing carton size	290×200×145mm（L×W×H)
Quantity	5PCS per layer; 2 layers per box; 10PCS per box
Weight	0.65kg/PCS;7kg±5%/carton

Packaging style drawing



Inner packaging box

Full box packaging

Transportation and Storage

1. Transportation

Products can be shipped via vehicles, boats and planes.

During transportation, products should be protected from rain and sun. Please avoid severe shock and vibration during the loading and unloading process.

2. Storage

The storage conditions should comply with the Class I Environmental Standards. The products that have been stored for more than six months are recommended to be re-inspected and can be used only after they have been qualified.

Attentions

- Products shall be installed by qualified professionals.
- LTECH products are and not lightningproof non-waterproof (special models excepted). Please avoid the sun and rain. When installed outdoors, please ensure they are mounted in a water proof enclosure or in an area equipped with lightning protection devices.
- Good heat dissipation will prolong the working life of products. Please ensure good ventilation.
- Please check if the working voltage used complies with the parameter requirements of products.
- The diameter of wire used must be able to load the light fixtures you connect and ensure the firm wiring.
- Before you power on products, please make sure all the wiring is correct in case of incorrect connection that causes damage to light fixtures.
- If a fault occurs, please do not attempt to fix products by yourself. If you have any question, please contact your suppliers.

✻ This manual is subject to changes without further notice. Product functions depend on the goods. Please feel free to contact our official distributors if you have any question.

Warranty Agreement

- Warranty periods from the date of delivery: 5 years.
- Free repair or replacement services for quality problems are provided within warranty periods.

Warranty exclusions below:

- Beyond warranty periods.
- Any artificial damage caused by high voltage, overload, or improper operations.
- Products with severe physical damage.
- Damage caused by natural disasters and force majeure.
- Warranty labels and barcodes have been damaged.
- No any contract signed by LTECH.

1. Repair or replacement provided is the only remedy for customers. LTECH is not liable for any incidental or consequential damage unless it is within the law.

2. LTECH has the right to amend or adjust the terms of this warranty, and release in written form shall prevail.