

96 Watt — LT96W Series VER A0

CONSTANT CURRENT WITH TRIAC/ELV DIMMABLE LED DRIVER

High-Performance TRIAC dimmable LED driver

US & CN, LED Driver Class 2

LT series driver is a high-performance TRIAC dimmable LED driver that provides smooth, continuous <10% dimming for virtually any LED fixture. It is the most versatile LED driver offered today due to its compatibility with a wide variety of LED arrays, for almost all of trailing edge & leading edge AC dimmer.

Key Features

- Drive Mode: LT96W120 series
- Technology: Active PFC 1-Stage Switch Mode.
- Input Voltage: 100 to 277 VAC, 50/60Hz, no dimmer
120 VAC, With 120V AC Dimmer
- Output Power: 96 Watt Max.
- AC Dimmer: Trailing Edge & Leading Edge AC Dimmer
- Dimming Range: Smooth & Continuous Dimming from 10% to 100%.
- Efficiency: Up to 88%.
- Warranty: 5 years.

Special Features

- Continuous dimming from 10% to 100%.
- Triac or phase cut dimming.
- Safety isolation between primary and secondary.
- A rated lifetime of 50,000 hours @ Tc = 75°C.
- Safety: UL8750, UL1310 Class 2, CSA22.2.
- EMC: FCC Part 15 Class B.
- Inrush Current Limiting Circuitry: AC Power Line: line to line 2 kV, eliminates circuit breaker tripping, switch arcing and relay failure.
- Plastic shell, Used with silicone potting.
- Meet the RoHs directive.
- IP65, NEMA4 compliant for Dry. Damp location.
- 100% performance tested with CHROMA 8000 system at YG factory.
- 100% burned in with program-control test system at YG factory, at 50 degrees ambient temperature.



Enclosure



| Size | Unit | Inch | Millimeter |
|-------------|------|------|------------|
| Case Length | | 6.28 | 159.60 |
| Case Width | | 2.38 | 60.50 |
| Case Height | | 1.50 | 38.00 |

96W Triac Dimming Part List

| No. | Part Number | Input Voltage (with dimmer) | US Class 2 | CN Class 2 | Output Voltage Range | Output Constant Current Range | Current Accuracy | Power Factor | Output Power | Max. Eff. |
|-----|--------------------|--------------------------------|---------------|---------------|-------------------------|----------------------------------|---------------------|-----------------|-----------------|--------------|
| 1 | LT96W120-274-C0350 | 108-132V | No | No | 180~274Vdc | 35-350mA | ±5% | 0.90 | 96W | 88% |
| 2 | LT96W120-213-C0450 | 108-132V | No | No | 140~213Vdc | 45-450mA | ±5% | 0.90 | 96W | 88% |
| 3 | LT96W120-137-C0700 | 108-132V | No | No | 90~137Vdc | 70-700mA | ±5% | 0.90 | 96W | 88% |
| 4 | LT96W120-80-C1200 | 108-132V | No | No | 53~80Vdc | 120-1200mA | ±5% | 0.90 | 96W | 88% |
| 5 | LT96W120-72-C1330 | 108-132V | No | No | 48~72Vdc | 130-1330mA | ±5% | 0.90 | 96W | 87% |
| 6 | LT96W120-54-C1750 | 108-132V | Yes | Yes | 36~54Vdc | 170-1750mA | ±5% | 0.90 | 96W | 87% |
| 7 | LT96W120-48-C2000 | 108-132V | Yes | Yes | 32~48Vdc | 200-2000mA | ±5% | 0.90 | 96W | 87% |
| 8 | LT96W120-43-C2230 | 108-132V | Yes | Yes | 28~43Vdc | 220-2230mA | ±5% | 0.90 | 96W | 86% |
| 9 | LT96W120-39-C2450 | 108-132V | Yes | Yes | 26~39Vdc | 240-2450mA | ±5% | 0.90 | 96W | 86% |
| 10 | LT96W120-36-C2660 | 108-132V | Yes | Yes | 24~36Vdc | 260-2660mA | ±5% | 0.90 | 96W | 86% |
| 11 | LT96W120-30-C3150 | 108-132V | Yes | Yes | 20~30Vdc | 310-3150mA | ±5% | 0.90 | 96W | 85% |
| 12 | LT96W120-24-C4000 | 108-132V | Yes | Yes | 16~24Vdc | 400-4000mA | ±5% | 0.90 | 96W | 85% |

96W Constant Current Part List

| No. | Part Number | Input Voltage (no dimmer) | US Class 2 | CN Class 2 | Output Voltage Range | Output Constant Current | Current Accuracy | Power Factor | Output Power | Max. Eff. |
|-----|--------------------|---------------------------|------------|------------|----------------------|-------------------------|------------------|--------------|--------------|-----------|
| 1 | LT96W120-274-C0350 | 100-277V | No | No | 180~274Vdc | 350mA | ±5% | 0.90 | 96W | 88% |
| 2 | LT96W120-213-C0450 | 100-277V | No | No | 140~213Vdc | 450mA | ±5% | 0.90 | 96W | 88% |
| 3 | LT96W120-137-C0700 | 100-277V | No | No | 90~137Vdc | 700mA | ±5% | 0.90 | 96W | 88% |
| 4 | LT96W120-80-C1200 | 100-277V | No | No | 53~80Vdc | 1200mA | ±5% | 0.90 | 96W | 88% |
| 5 | LT96W120-72-C1330 | 100-277V | No | No | 48~72Vdc | 1330mA | ±5% | 0.90 | 96W | 87% |
| 6 | LT96W120-54-C1750 | 100-277V | Yes | Yes | 36~54Vdc | 1750mA | ±5% | 0.90 | 96W | 87% |
| 7 | LT96W120-48-C2000 | 100-277V | Yes | Yes | 32~48Vdc | 2000mA | ±5% | 0.90 | 96W | 87% |
| 8 | LT96W120-43-C2230 | 100-277V | Yes | Yes | 28~43Vdc | 2230mA | ±5% | 0.90 | 96W | 86% |
| 9 | LT96W120-39-C2450 | 100-277V | Yes | Yes | 26~39Vdc | 2450mA | ±5% | 0.90 | 96W | 86% |
| 10 | LT96W120-36-C2660 | 100-277V | Yes | Yes | 24~36Vdc | 2660mA | ±5% | 0.90 | 96W | 86% |
| 11 | LT96W120-30-C3150 | 100-277V | Yes | Yes | 20~30Vdc | 3150mA | ±5% | 0.90 | 96W | 85% |
| 12 | LT96W120-24-C4000 | 100-277V | Yes | Yes | 16~24Vdc | 4000mA | ±5% | 0.90 | 96W | 85% |

Input Specifications

| Parameter | Min. | Typ. | Max. | Notes / Conditions |
|-------------------------|---------|----------|-------------|--|
| Input Voltage | 100 Vac | --- | 277 Vac | 120, 230, 277 Vac Nominal Values. |
| Input Frequency | 47 Hz | 50/60 Hz | 63 Hz | 50/60 Hz Nominal. |
| Input AC Current | --- | --- | 1.10 A | Measured at 120 Vac / 60Hz Input, Output Full Load. |
| | --- | --- | 0.60 A | Measured at 230 Vac / 50Hz Input, Output Full Load. |
| | --- | --- | 0.50A | Measured at 277 Vac / 60Hz Input, Output Full Load. |
| Inrush Current (Peak) | --- | 40A | 60 A | Measured at 277 Vac / 60Hz Input, Output Full Load. |
| Leakage Current | --- | --- | 300 μ A | Measured at 120 Vac / 60Hz Input, Output Full Load. |
| | --- | --- | 700 μ A | Measured at 277 Vac / 60Hz Input, Output Full Load. |
| THD | --- | --- | 20% | Measured at 120, 230 Vac Input, \geq 60% Load. 277 Vac Input, \geq 70% Load. |
| Power Factor (PF) | 0.90 | --- | --- | |

Output Specifications

| Parameter | Min. | Typ. | Max. | Notes / Conditions |
|-----------------------------|------|-------|--------|--|
| DC Output Voltage | 16V | --- | 274V | Measured at 120, 230, 277 Vac Input. The voltage is DC+ to DC-. |
| Output Power | --- | --- | 96W | Measured at 120, 230, 277 Vac Input. |
| Flickering Index (Ipk-pk) | --- | --- | 30% | 20MHz BW, Full load output in parallel with 0.1 μ F & 10 μ F CAP. Flickering Index is defined as $[(I_{max}-I_{min})/(I_{max}+I_{min})] * 100\%$. |
| Line Regulation | -5% | --- | +5% | Maximum over entire range of input voltage / output loads (any combination), and temperature range. |
| Load Regulation | -5% | --- | +5% | |
| Turn-on Time | --- | 500ms | 1000ms | From VAC turn-on until output current reaches 10% of nominal value. Output Full Load. |
| Turn-off Delay | --- | --- | 1000ms | LED's not lit, No die glow. |
| Output Overshoot | -5% | --- | +10% | Measured at 120, 230, 277 Vac Input, When power on or off. |

Protection Specifications

| Parameter | Min. | Typ. | Max. | Notes / Conditions |
|------------------------------|------|------|------|---|
| Output Over Voltage (OVP) | --- | --- | 328V | No Damage. Auto recovery when the leads are open. |
| Output Short Circuit (SCP) | --- | --- | --- | No Damage. Auto recovery after short is removed. |

Dimming Specifications

| Items | Parameter | Min. | Typ. | Max. | Notes / Conditions |
|-------------------|----------------------|------|----------------|---------|--|
| Phase cut Dimming | Turn-on Time | --- | 1000 ms | 3000 ms | At 10% dim level. This time is AC input to the DC 10% output current. Less than 1000ms, for most dimmer. |
| | Flickering Index | --- | --- | 30% | Flickering Index is defined as $[(I_{max}-I_{min})/(I_{max}+I_{min})] * 100\%$. |
| | Output Current Range | 10% | --- | 100% | CCR output. |
| | Shimmer | --- | --- | 7% | Long Term Current Stability (Average can't vary by more than X% over 10s period). |
| | Dimming Curve Type | | Similar to Log | | Dim curve between max/min. |
| | Acoustic Noise | --- | --- | 22 dB | Not to exceed at 1 ft at any dim level. |

General Specifications

| Parameter | Min. | Typ. | Max. | Notes / Conditions |
|-----------|---------------|------|------|--|
| Cooling | Convection | | | |
| MTBF | 410,000 hours | | | Measured at 120 Vac input, 100% Load and Tc=75° C (MIL-HDBK-217F). |
| Life Time | 50,000 hours | | | |

Environmental Specifications

| Parameter | Min. | Typ. | Max. | Notes / Conditions |
|--|--------|------|--------|---|
| Case Temperature (T _c) | -30 °C | --- | +90 °C | Measured at location specified on case. |
| Operating Temperature (T _a) | -30 °C | --- | +50 °C | This is a reference range. T _c controls temperature range. |
| Storage Temperature (T _s) | -40 °C | | +90 °C | Non operating temperature range. |
| Operating Humidity | --- | --- | 95% RH | Relative Humidity. Non-condensing. |
| Vibration | 5 Hz | --- | 55 Hz | 1G, 10 minutes / 1 cycle, period 30 minutes, each along X, Y, Z axis. |

Safety Compliance

| Safety Category | Standards / Notes |
|----------------------|--|
| UL / cUL | UL8750, UL1310 Class 2, CSA22.2. |
| Withstand Voltage | Input to Output: 2000 Vac. |
| Isolation Resistance | Input to Output: >10MΩ, 500Vdc @ 25°C, 70% RH. |

EMC Compliance

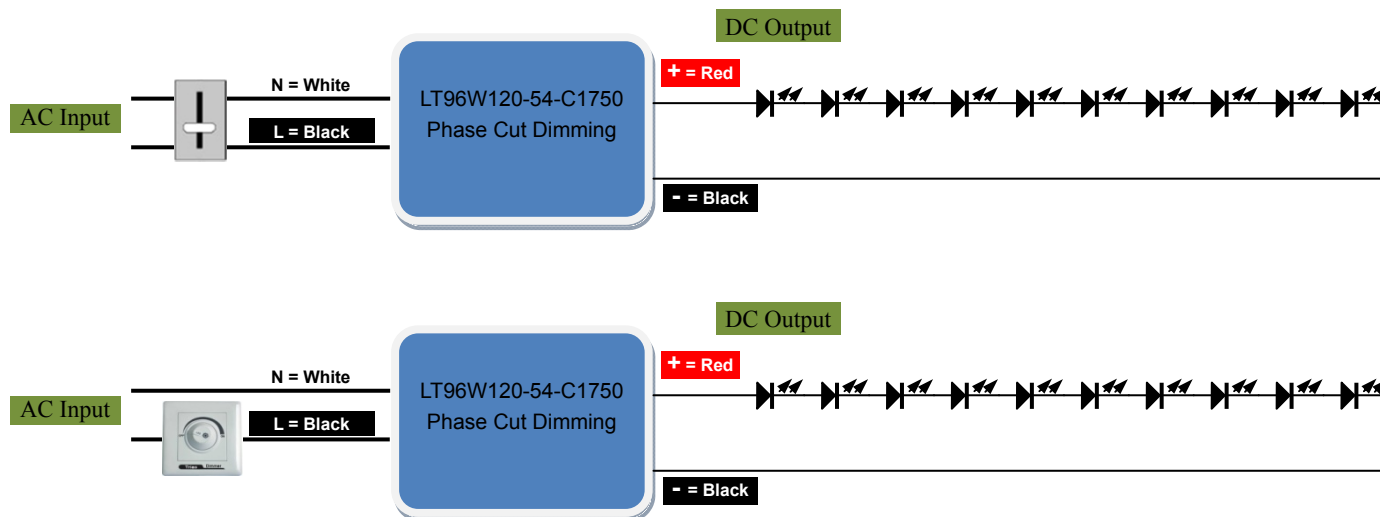
| EMI Category | Standards |
|-------------------------|--|
| FCC | FCC 47CFR Part 15 Class B, ANSI C63.4: 2009. |
| EMS Category | Notes |
| IEEE Std C62.41.2™-2002 | Surge Immunity Test: ANSI C62.41 0.5 μs 100 kHz Ring, 2kV/0.2kA, L-N, L-G, LN-G (10 strikes) 1.2/50μs 8/20μs Combination, 2kV/0.5kA, L-N, L-G, LN-G (10 strikes) |

Note: the above test data are in the condition of 25 C ambient temperature, except for the marked temperature.

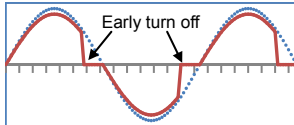
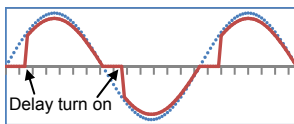
Typical Applications

LED Forward voltage: $V_F = 3.0V \sim 3.5V$

■. Driver Phase Cut Dimming

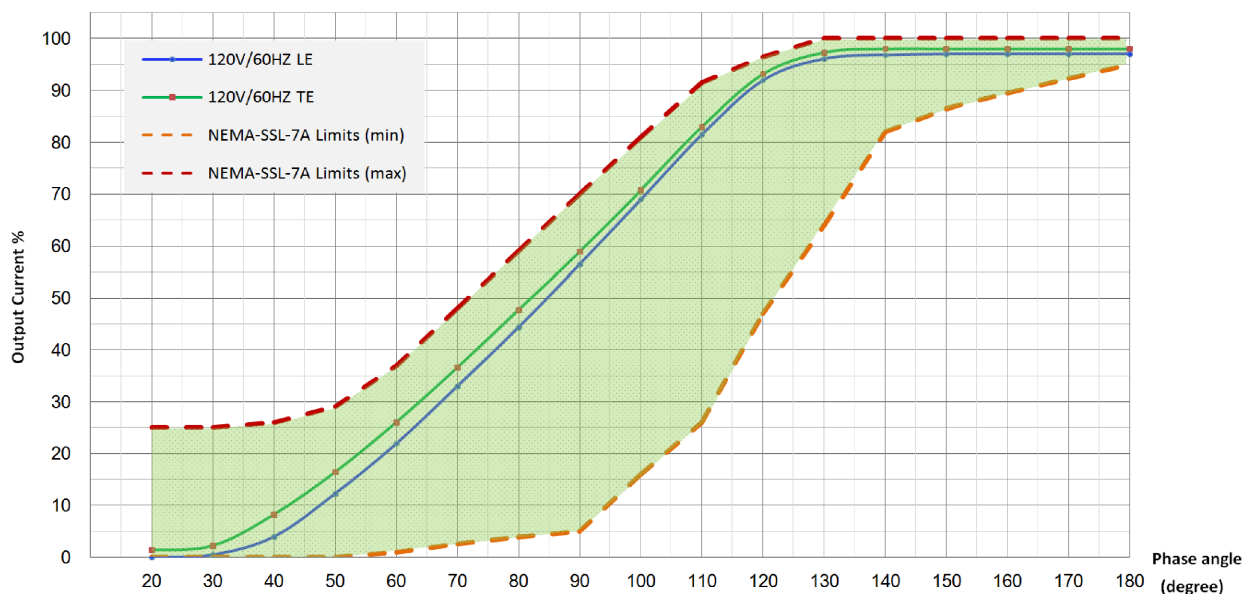


■. About Phase cut dimmer

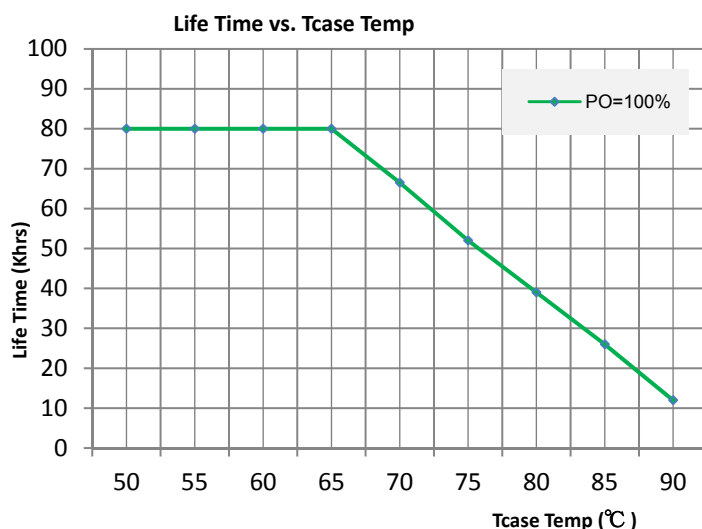
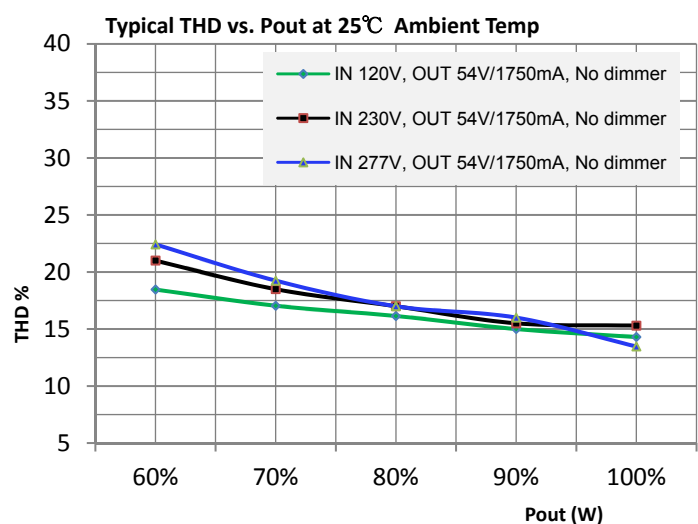
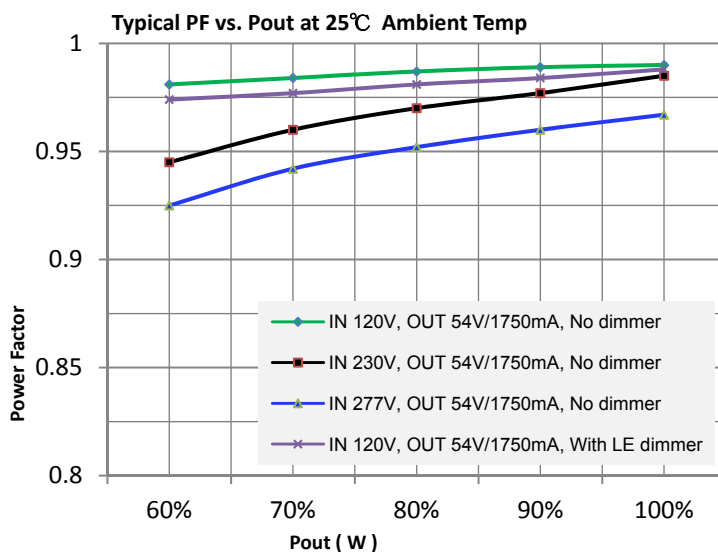
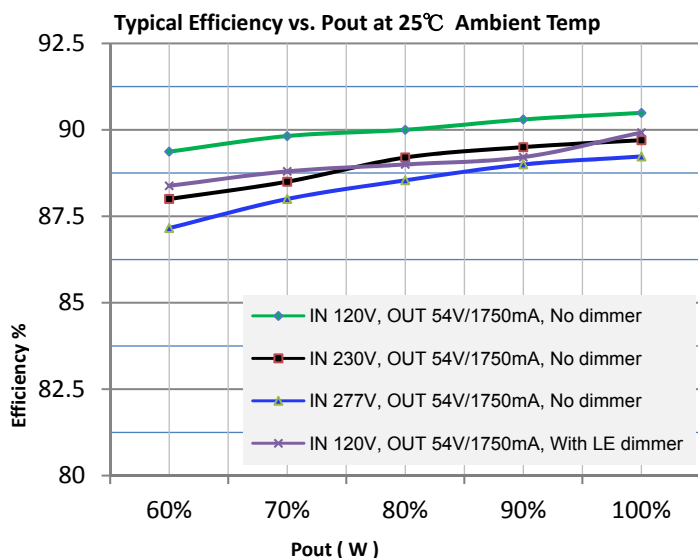
| | | | | |
|--------------|---|--|-------------------------|---|
| ELV dimmer | <ul style="list-style-type: none"> ▶ Electronic Low Voltage dimmer. ▶ Trailing Edge phase dimmer. ▶ Reverse phase control dimming. |  | Reverse phase be cut | <ul style="list-style-type: none"> ▶ high stability. ▶ low noise. ▶ highest cost. |
| TRIAC dimmer | <ul style="list-style-type: none"> ▶ Incandescent phase dimmer. ▶ Leading Edge phase dimmer. ▶ SCR phase dimmer. ▶ Forward phase control dimming. |  | Forward phase be cut | <ul style="list-style-type: none"> ▶ little worse stable. ▶ a little noise. ▶ lowest cost. |

Dimming Curve

Typical Dimming vs. Turn-on Phase angle of AC Input at 25°C Ambient Temp



Characteristic Curve



Installation

Plastic shell. This product has two $\Phi 4.0$ mm mounting holes.

AC input for connection the two core ANSI/UL1015/AWG18 temperature 105 °C core copper wire connection.

Cable Length: 150mm, stripping on the tin: 10mm.

Where: L — Black wire, N — White wire.

DC output for connection the two core ANSI/UL1569/AWG18 temperature 105 °C core copper wire.

Cable Length: 150mm, stripping on the tin: 10mm.

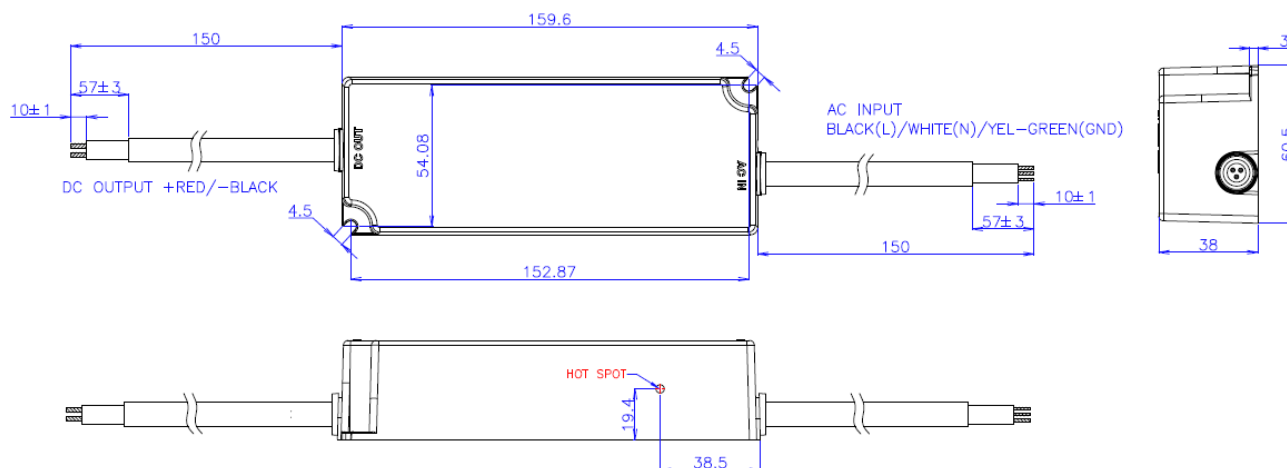
Where: DC+ — Red, DC- — Black.

Order ID

P/N : LT96W-54-C1750

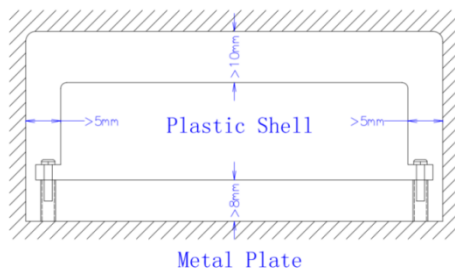
Description: 96W, 54Vdc voltage max, constant current 1750mA, phase cut dimming mode.

Product Size

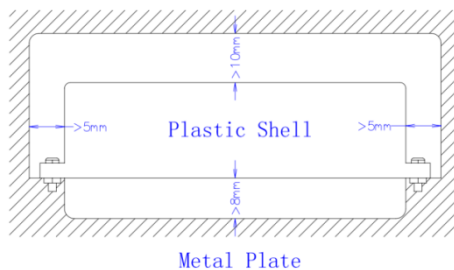


Application note

Picture 1



Picture 2



In Picture 1 and Picture 2, EMC has the best.

Note :

- The independent LED drive conforms to the EMC standard.
But it is not guaranteed to be qualified, when the drive is mounted in the LED lamp.
- Please forgive us for any discrepancy due to the update of the specifications or the upgrade of the product.
If you need the latest information, please contact our marketing department.