

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: LT96W230 series
- Technology: Active PFC 1-Stage Switch Mode.
- Input Voltage: 220 to 277 VAC, 50/60Hz, no dimmer
230 VAC, With 230V 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	60.05
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	LT96W230-274-C0350	220-230V	No	No	180~274Vdc	35-350mA	±5%	0.90	96W	88%
2	LT96W230-213-C0450	220-230V	No	No	140~213Vdc	45-450mA	±5%	0.90	96W	88%
3	LT96W230-137-C0700	220-230V	No	No	90~137Vdc	70-700mA	±5%	0.90	96W	88%
4	LT96W230-80-C1200	220-230V	No	No	53~80Vdc	120-1200mA	±5%	0.90	96W	88%
5	LT96W230-72-C1330	220-230V	No	No	48~72Vdc	130-1330mA	±5%	0.90	96W	87%
6	LT96W230-54-C1750	220-230V	Yes	Yes	36~54Vdc	170-1750mA	±5%	0.90	96W	87%
7	LT96W230-48-C2000	220-230V	Yes	Yes	32~48Vdc	200-2000mA	±5%	0.90	96W	87%
8	LT96W230-43-C2230	220-230V	Yes	Yes	28~43Vdc	220-2230mA	±5%	0.90	96W	86%
9	LT96W230-39-C2450	220-230V	Yes	Yes	26~39Vdc	240-2450mA	±5%	0.90	96W	86%



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10	LT96W230-36-C2660	220-230V	Yes	Yes	24~36Vdc	260-2660mA	±5%	0.90	96W	86%
11	LT96W230-30-C3150	220-230V	Yes	Yes	20~30Vdc	310-3150mA	±5%	0.90	96W	85%
12	LT96W230-24-C4000	220-230V	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	LT96W230-274-C0350	220-277V	No	No	180~274Vdc	350mA	±5%	0.90	96W	88%
2	LT96W230-213-C0450	220-277V	No	No	140~213Vdc	450mA	±5%	0.90	96W	88%
3	LT96W230-137-C0700	220-277V	No	No	90~137Vdc	700mA	±5%	0.90	96W	88%
4	LT96W230-80-C1200	220-277V	No	No	53~80Vdc	1200mA	±5%	0.90	96W	88%
5	LT96W230-72-C1330	220-277V	No	No	48~72Vdc	1330mA	±5%	0.90	96W	87%
6	LT96W230-54-C1750	220-277V	Yes	Yes	36~54Vdc	1750mA	±5%	0.90	96W	87%
7	LT96W230-48-C2000	220-277V	Yes	Yes	32~48Vdc	2000mA	±5%	0.90	96W	87%
8	LT96W230-43-C2230	220-277V	Yes	Yes	28~43Vdc	2230mA	±5%	0.90	96W	86%
9	LT96W230-39-C2450	220-277V	Yes	Yes	26~39Vdc	2450mA	±5%	0.90	96W	86%
10	LT96W230-36-C2660	220-277V	Yes	Yes	24~36Vdc	2660mA	±5%	0.90	96W	86%
11	LT96W230-30-C3150	220-277V	Yes	Yes	20~30Vdc	3150mA	±5%	0.90	96W	85%
12	LT96W230-24-C4000	220-277V	Yes	Yes	16~24Vdc	4000mA	±5%	0.90	96W	85%

Input Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
Input Voltage	220 Vac	---	277 Vac	220, 230, 277 Vac Nominal Values.
Input Frequency	47 Hz	50/60 Hz	63 Hz	50/60 Hz Nominal.
Input AC Current	---	---	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	---	---	700 μ A	Measured at 277 Vac / 60Hz Input, Output Full Load.
THD	---	---	20%	Measured at 220, 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 220, 230, 277 Vac Input. The voltage is DC+ to DC-.
Output Power	---	---	96W	Measured at 220, 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 220, 230, 277 Vac Input, When power on or off.

Protection Specifications

Parameter	Min.	Typ.	Max.	Notes / Conditions
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Product Release Date: 2017.03
 Product Updates Date: 2018.06.04



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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 230 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

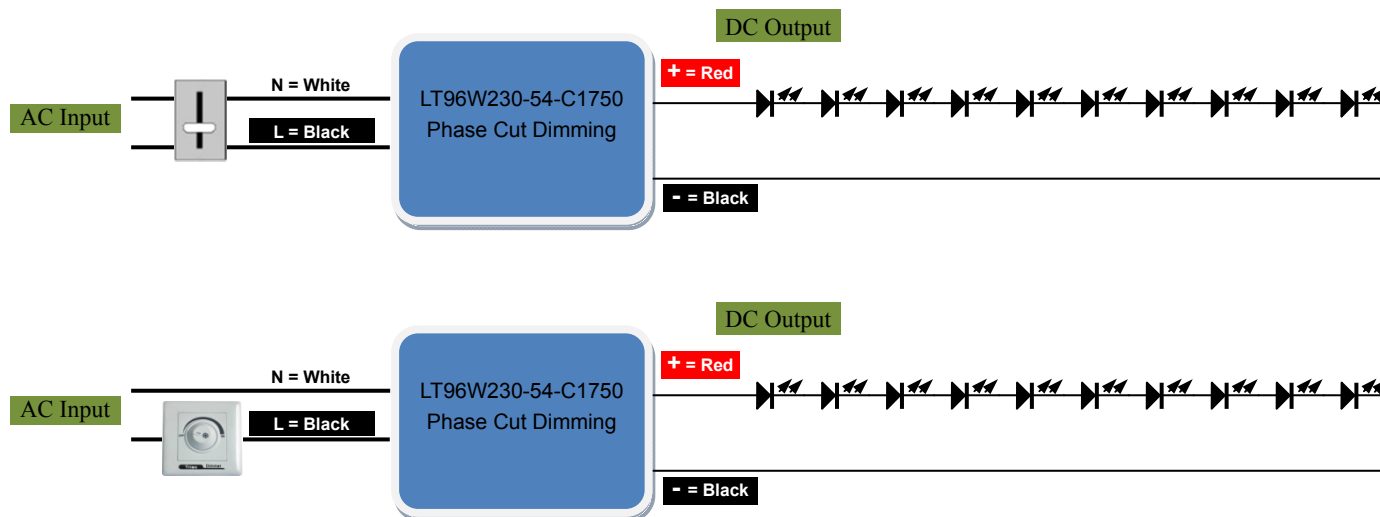
EMI Category	Standards
FCC	FCC 47CFR Part 15 Class B, ANSI C63.4: 2009.
EMS Category	Notes
IEEE Std C62.41.2™-2002	Surge Immunity Test: ANSI C62.41 0.5 μs 100 kHz Ring, 2kV/0.2kA, L-N, L-G, LN-G (10 strikes) 1.2/50μs 8/20μs Combination, 2kV/0.5kA, L-N, L-G, LN-G (10 strikes)

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

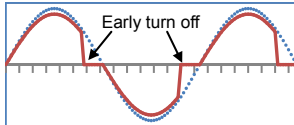
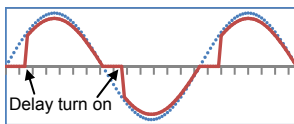
Typical Applications

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

■. Driver Phase Cut Dimming

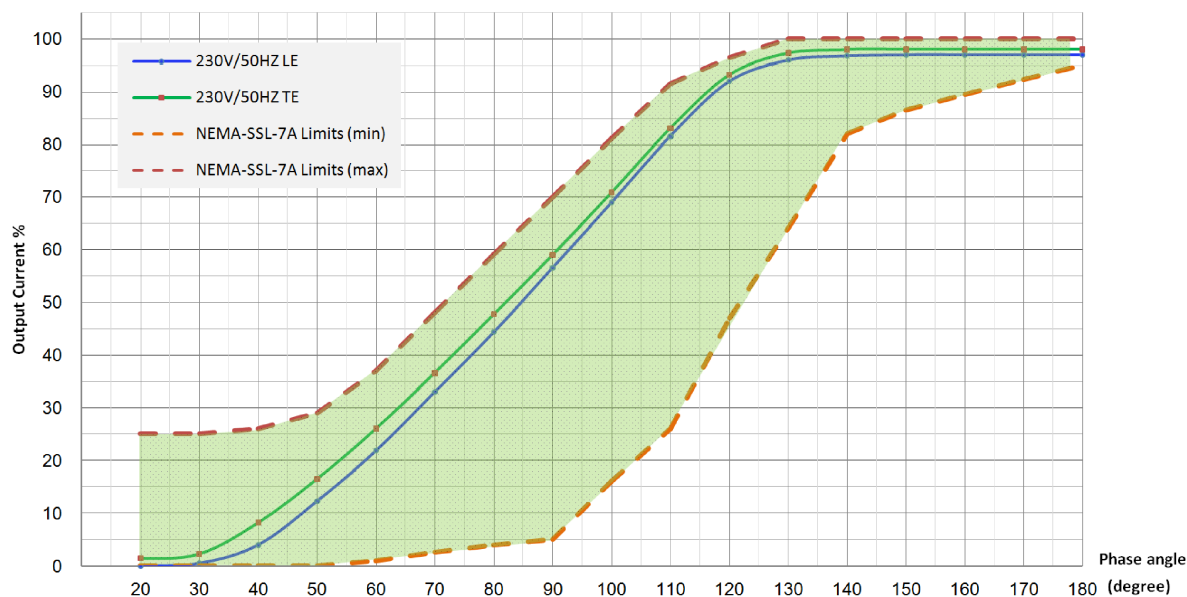


■. About Phase cut dimmer

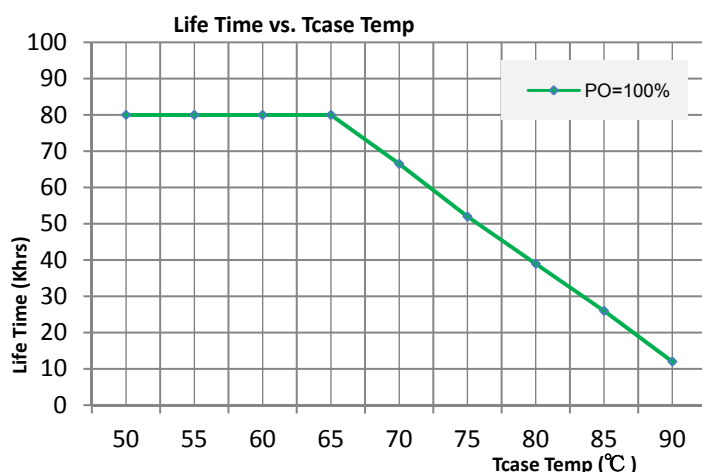
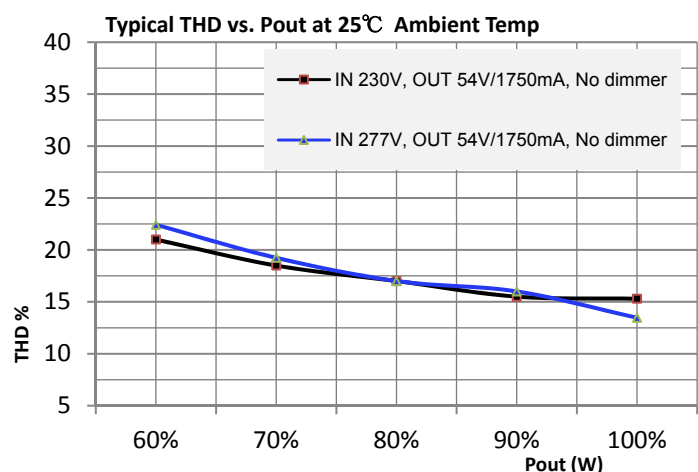
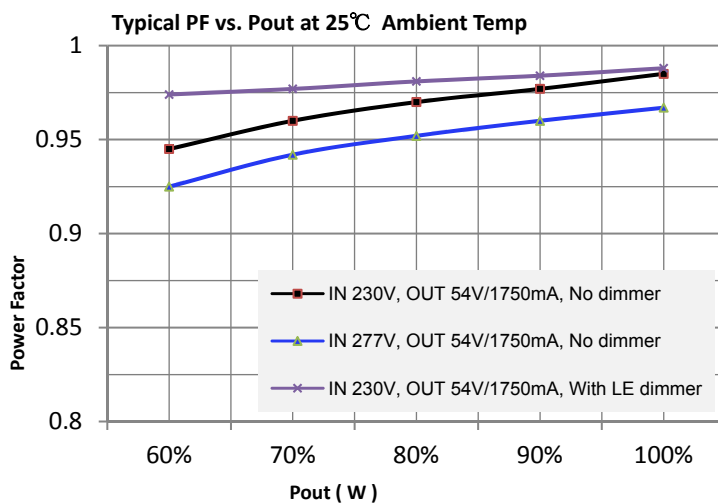
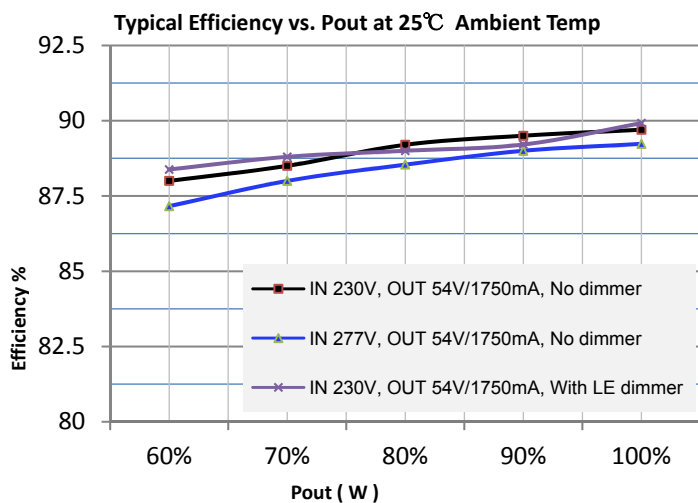
ELV dimmer	<ul style="list-style-type: none"> ▶ Electronic Low Voltage dimmer. ▶ Trailing Edge phase dimmer. ▶ Reverse phase control dimming. 	 <p>Reverse phase be cut</p>	<ul style="list-style-type: none"> ▶ high stability. ▶ low noise. ▶ highest cost.
TRIAC dimmer	<ul style="list-style-type: none">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

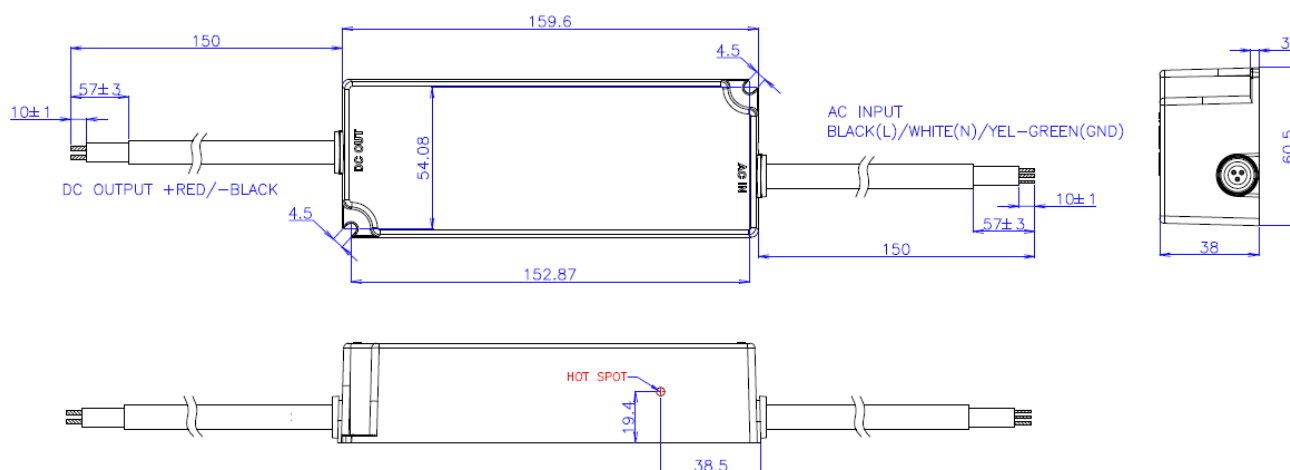
Where: DC+ — Red, DC- — Black.

Order ID

P/N : LT96W230-54-C1750

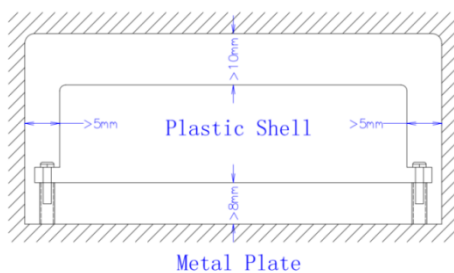
Description: 96W, 54Vdc voltage max, constant current 1750mA, phase cut dimming mode.

Product Size

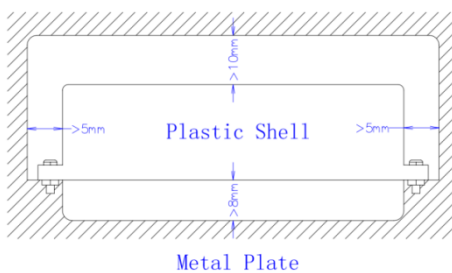


Application note

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.