

## 60 Watt - LP60W-XX-CV Series

CONSTANT VOLTAGE



Constant Voltage  
LP60W-XX-CV  
**60W**

### Model: LP60W Series

- Drive Mode: Constant Voltage
- Technology: PFC Corrected 2-Stage Switch Mode
- Output Power: 60W Max.
- Input Voltage: 90 to 305VAC, 47- 63Hz
- Number of Outputs: One
- Output Voltages: 12VDC, 24VDC, 48VDC
- Minimum Output Current 100mA

### Environmental

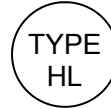
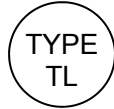
1. Operating temperature: Tc 90C Maximum. Reference -30 to +65°C ambient
2. For UL Type TL (Tref Max/Meas. Tref): 86/63°C
3. Storage temperature range: -40 to +85°C
4. Humidity (non-condensing): 5% - 95%RH
5. Cooling: Convection
6. Vibration Frequency: 5-55Hz/2g, 30 minutes
7. Impact resistance: 1g/s
8. MTBF@ 40°C: 474,000 hours @ Full Load per MIL-217F Notice 2.

### Safety and Compliance

1. Class P: UL8750, EN61347, CSA 22.2 safety listed, UL Class P or- Type TL: UL8750, EN61347, CSA 22.2, UL TL recognized
2. FCC, 47CFR Part 15 Class B certified
3. Water resistant and Dust Proof Design: IP66, NEMA6, for Dry, Damp, Wet Locations.
4. Compact Miniature, Lightweight Design.
5. Safety Isolation between Primary and Secondary
6. Meets EN61000-3-2 & EN61000-3-3 Class C
7. Protection: output over-voltage, output over-current, output short circuit, auto-recovery.
8. EN61000-4-5: 2kV/4kV 8/20 μsec surge protection.

### Electrical Specifications at 25°C

- Input voltage range: 90 to 305VAC
- Frequency: 47- 63HZ
- Power Factor: ≥ 0.90 at ≥ 75% Load, 120Vac/230Vac/277Vac 50/60Hz
- THD%: ≤ 20% at ≥ 75% Load, 120Vac/230Vac/277Vac 50/60Hz
- Inrush current: <50A at 25C, 277V, cold start, Max. Load
- Input current: 0.80A Maximum
- Efficiency: 86% typical at 230Vac Full Load
- Line regulation accuracy: ± 3%
- Load regulation accuracy: ± 4%
- Leakage current: 277Vac, 700uA typical; Hold up time: half cycle



IP66



### UL Recognized Constant Voltage Versions

Part Number	US Class 2	CN Class 2	UL Types	Output Constant Voltage	Output Current Range	Voltage Accuracy	Output Power Maximum	Typical Efficiency <sup>(1)</sup>
LP60W-48-CV	YES	YES	TL & HL	48 VDC	100 - 1250 mA	± 5%	60W	87%
LP60W-24-CV <sup>(5)</sup>	YES	YES	TL & HL	24 VDC	100 - 2500 mA	± 5%	60W	84%
LP60W-12-CV <sup>(5)</sup>	YES	YES	TL & HL	12 VDC	100 - 5000 mA	± 5%	60W	83%



IP66



### UL Class P Listed Constant Voltage Versions

Part Number	US Class 2	CN Class 2	UL Types	Output Constant Voltage	Output Current Range	Voltage Accuracy	Output Power Maximum	Typical Efficiency <sup>(1)</sup>
LP60W-48-PCV	YES	YES	HL	48 VDC	100 - 1250 mA	± 5%	60W	87%
LP60W-24-PCV	YES	YES	HL	24 VDC	100 - 2500 mA	± 5%	60W	84%
LP60W-12-PCV	YES	YES	HL	12 VDC	100 - 5000 mA	± 5%	60W	83%

### Notes

1. Typical efficiency measured at 230VAC input, full load
2. SAM Recognized.

Custom designs available. Please consult with the factory.

Specifications subject to change without notice

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CV LED Optimized Drivers

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## UL Recognized Labeling Example

Constant Voltage LED Optimized Driver  
EPtronics, Inc.  
www.EPtronics.com  
800.643.0688 / 010.636.0700

Part Number: LP60W-12-CV  
Input Voltage: 90-305VAC 50/60Hz  
Input Current: 0.80 Amp Max  
Output Voltage: 12 VDC  
Output Current: 100-5000 mA  
Output Power: 60W Maximum  
UL & cUL Class 2 Output  
UL Type HL & TL 90/73°C

AC INPUT  
LINE = BLACK  
NEUT = WHITE  
PE(GND) = GREEN/YEL

DC OUTPUT  
+ = RED  
- = BLUE

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Made in China REV: A1.3

## UL Class P Listed Labeling Example

Constant Voltage LED Optimized Driver  
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Input Voltage: 90-305VAC 50/60Hz  
Input Current: 0.80 Amp Max  
Output Voltage: 12 VDC  
Output Current: 100-5000 mA  
UL/cUL Class 2 Output  
SAM Recognized, E325626  
UL Class P, For Connections use wire rated  $\geq 90C$  (194F)

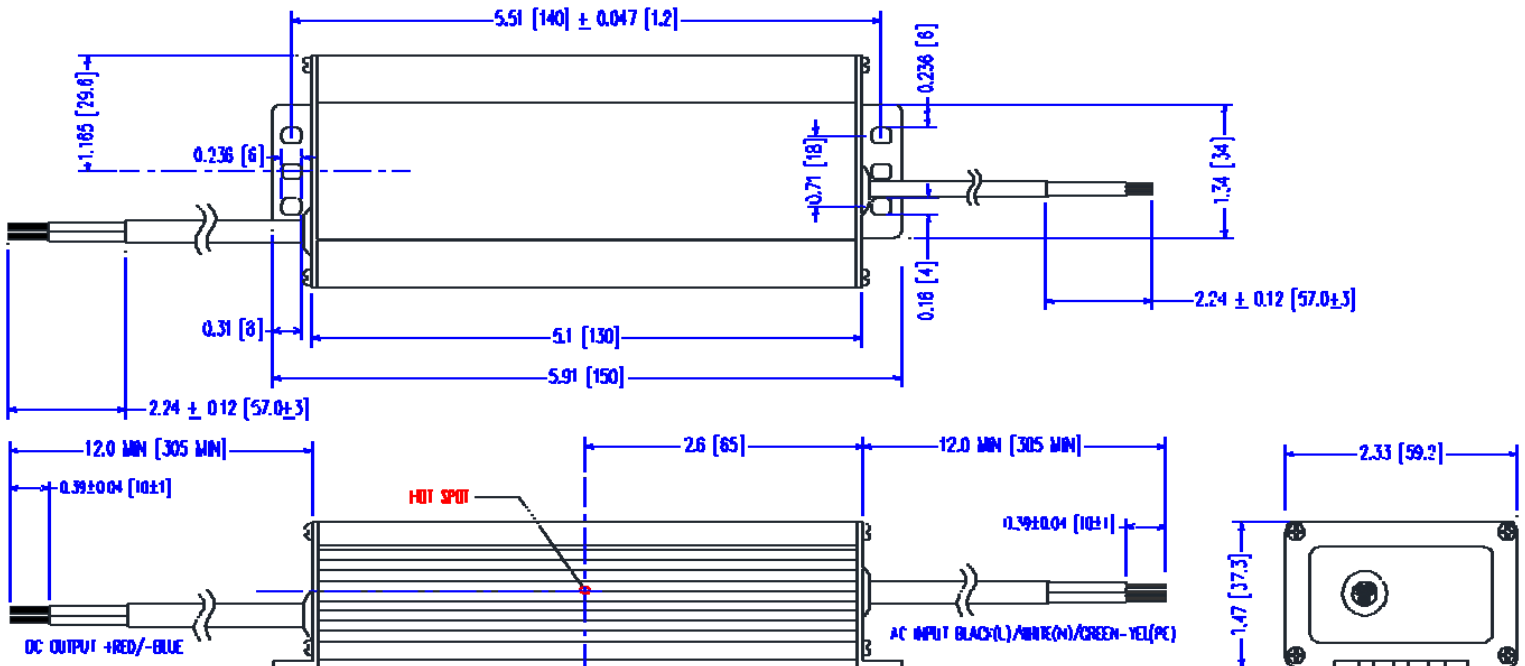
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## Mechanical Dimensions: Inches [mm]

Material: Black Aluminum Housing  
Fully Encapsulated  
Weight: 19 oz ( 538 grams) Typical



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### Input Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
Input Voltage	90 Vac	—	305 Vac	120, 230, 240, 277 Vac Nominal Values
Input Frequency	47 Hz	—	63 Hz	50/60Hz Nominal
Input AC Current	—	—	0.57 A	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.32 A	Measured at 230Vac/60Hz Input, Output Full load.
Inrush Current (Peak)	—	42A	50A	Measured at 277Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start 50% I <sub>peak</sub> duration $\approx$ 750 $\mu$ sec (1/2*I <sub>p</sub> <sup>2</sup> *t)
Inrush Current (I <sup>2</sup> t)	—	—	0.94 A <sup>2</sup> s	
THD	—	—	20%	Measured at 120, 230, 277Vac Input, Output $\geq$ 75% Load
Power Factor (PF)	0.90	—	—	Measured at 120, 230, 277Vac Input, Output $\geq$ 75% Load

### Output Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
DC Output Voltage	-5%	Per Table	+5%	Per Tables on Page 1
DC Output Current	Per Table	Per Table	Per Table	Per Tables on Page 1
Output Power	—	—	Per Table	Per Tables on Page 1
Ripple & Noise (V <sub>pk-pk</sub> )	—	—	5% V <sub>o</sub>	20 MHz BW, Full load output in parallel with 0.1 $\mu$ F ceramic & 10 $\mu$ F Electrolytic.
Ripple (I <sub>pk-pk</sub> )	—	—	5% I <sub>o</sub>	20 MHz BW, Full load output in parallel with 0.1 $\mu$ F ceramic & 10 $\mu$ F Electrolytic. 120 Hz component (Flicker Free)
Start-up Time	—	200 mS	1000 mS	Measured at 120Vac/60Hz Input, Output Full load.
Hold-up Time	—	40 mS	—	Typical @ 277Vac Input, Output Full load.

### Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
Case Temperature (T <sub>c</sub> )	-30 °C	—	+90 °C	Measured at location specified on case.
Operating Temperature (T <sub>a</sub> )	-30 °C	—	+60 °C	This is a reference range. T <sub>c</sub> controls temperature range.
Storage Temperature (T <sub>s</sub> )	-40 °C	—	+85 °C	Non operating temperature range.
Operating Humidity	—	—	95% RH	Relative Humidity, non-condensing.
Vibration	5 Hz	—	55 Hz	2G, 10 minutes/1 cycle, period 30 minutes, each along X, Y, Z axis.
MTBF	474,000 Hours	—	—	MIL-HDBK-217F Notice 2, T <sub>a</sub> = 25C, Output Full Load.

### Protection Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
Output Short Circuit (SCP)	—	—	—	No Damage, Auto recovery after short is removed.
Output Over Current (OCP)	—	—	+8% I <sub>o</sub>	Constant Current Limiting circuit.
Output Over Voltage (OVP)	—	—	120% V <sub>o</sub>	No Damage, Auto recovery after fault is removed.

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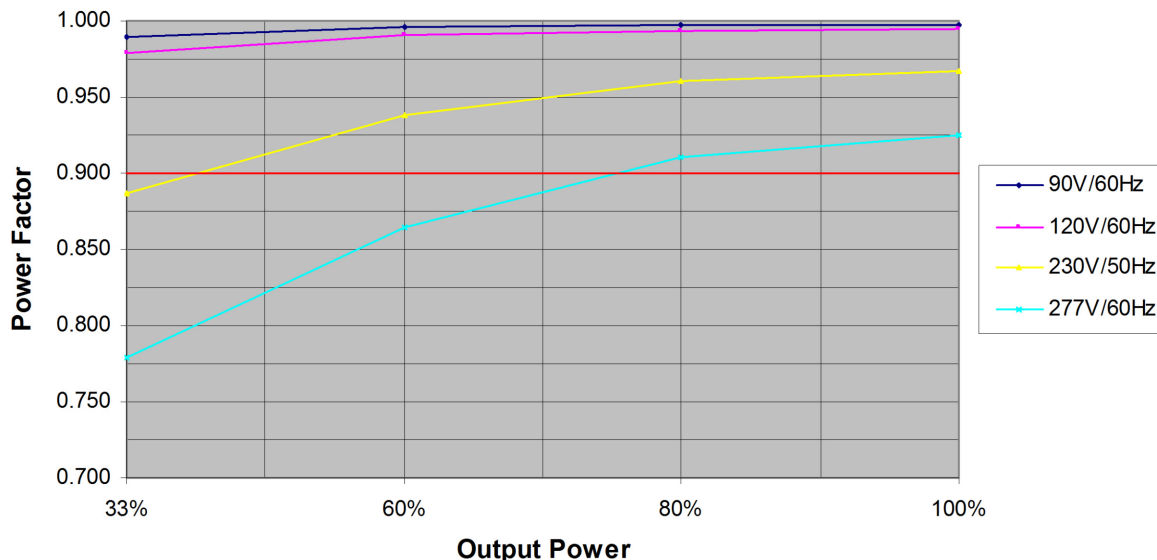
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**Safety Certification**

Safety	Notes/Standards
UL Class P UL/CUL Listed	UL8750 & CAN/CSA C22.2 No. 250.13, UL Class P, UL Type HL
UL Type TL UL/CUL Recognized	UL8750, UL1310 for UL Class 2 & CAN/CSA C22.2 No. 250.13, UL Type HL & UL Type TL UL Class 2 86/63°C, UL Non-Class 2 90/81°C
CE	EN61347-1, EN61347-2-13
Withstand Voltage	Input to Output: 3750 Vac. Parts use a GDT. Hipot cannot be done with Case or GND connected.
Isolation Resistance	Input to Output: >100 MΩ, 500VDC @ 25 °C, 70 % RH

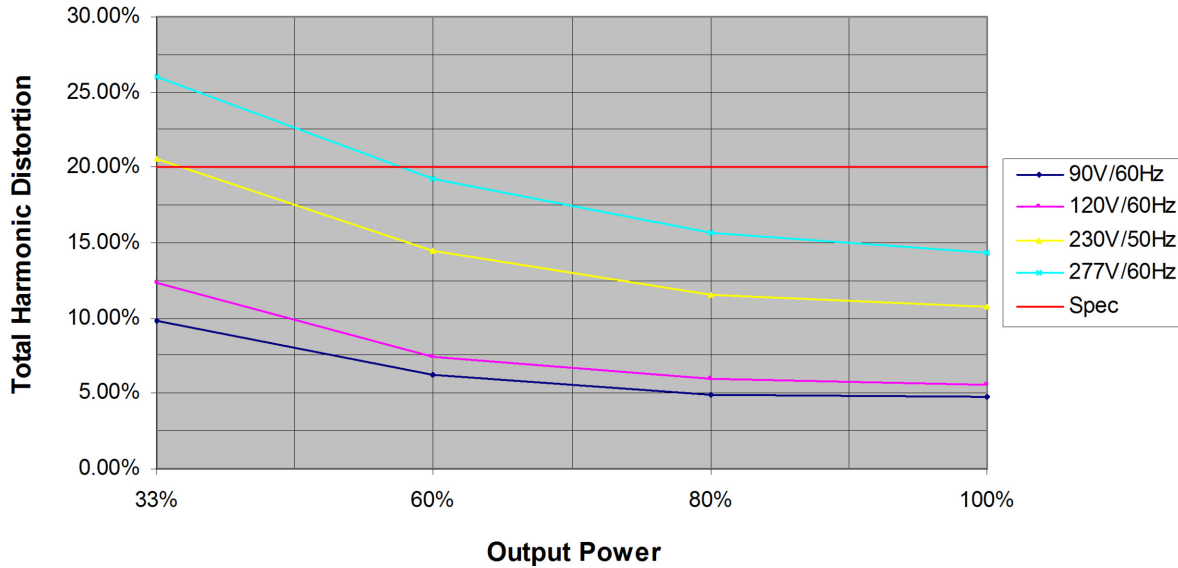
**EMC Certification**

Standard	Notes/Conditions
FCC, 47CFR Part 15	Class B
EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment.
EN 61000-3-2	Part 3-2: Limits for harmonic current emissions Class C, ≥80% Rated Power
EN 61000-3-3	Part 3-3: Limitation of voltage changes, voltage fluctuations and flicker.
EN 61000-4-5	Part 4-5: Surge Immunity test, 2kV L-N, 4kV L-FG & N-FG
Energy Star	Energy Star transient protection: Ballast or driver shall comply with ANSI/IEEE C62.41.1-2002 and ANSI/IEEE C62.41.2-2002, Category A operation. The line transient shall consist of seven strikes of a 100 kHz ring wave, 2.5 kV level, for both common mode and differential mode.

**Power Factor Curves (Typical)****PF vs. Output Power**

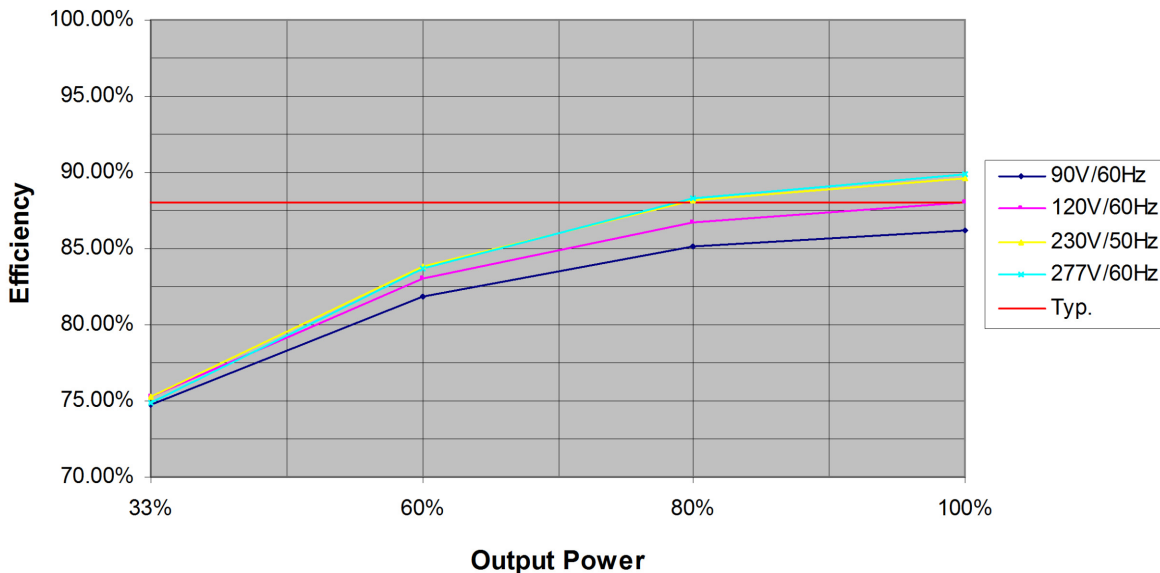
**THD Curves (Typical)**

**THD vs. Output Power**



**Efficiency Curve (Typical)**

**Efficiency vs. Output Power**



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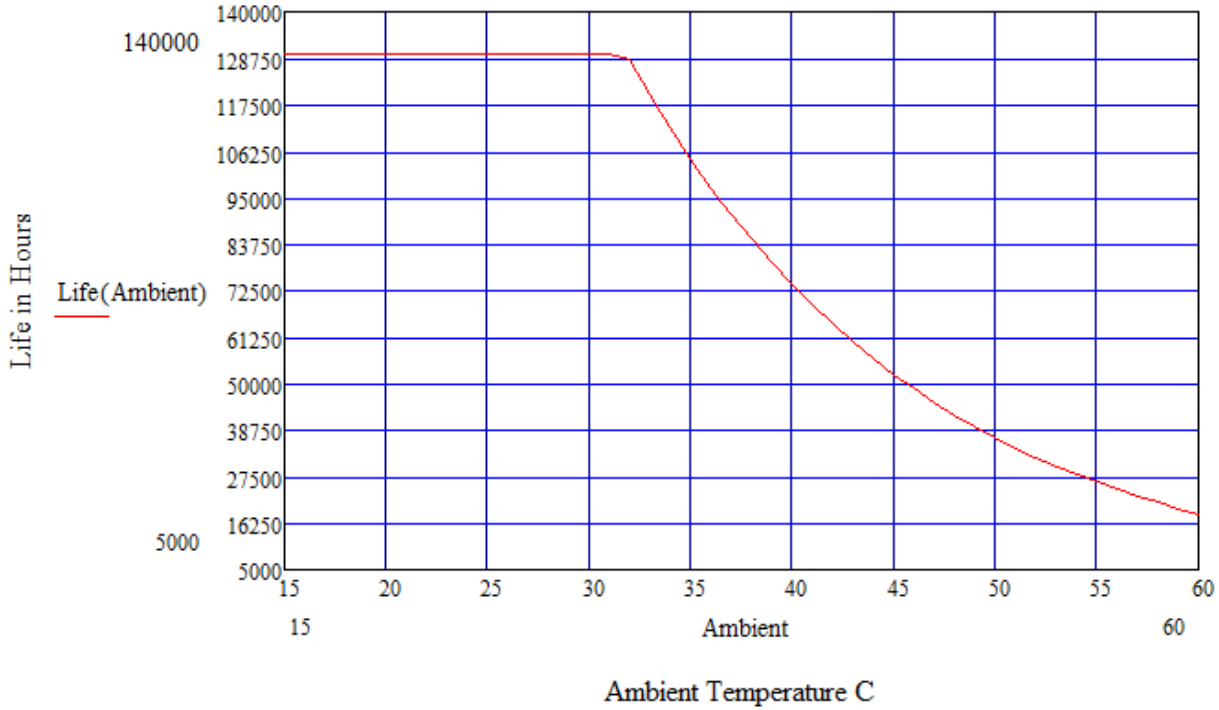
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## Life vs. Ambient Temperature

LP60W Estimated Life Full Load @ 120Vac



## Life vs. Case (Tc) Temperature

LP60W Estimated Life Full Load @ 120Vac

