

12 Watt - LD12W-NN Series

CONSTANT VOLTAGE LED DRIVER



CONSTANT VOLTAGE
LD12W-NN Series
12W

Model: LD12W-NN Series

- Drive Mode: Constant Voltage
- For use with Constant Voltage LED Lighting
- Technology: PFC Off-Line Switch Mode
- Output Power: 12W Max.
- Input Voltage: 120 to 277VAC, 47- 63Hz
- Number of Outputs: One
- Output Voltages: 12VDC - 48VDC
- Output Currents: 63mA - 1000mA

Environmental

1. Operating temperature: Tc 80C Maximum. Reference -30 to +50°C ambient
2. Storage temperature range: -40 to +85°C
3. Humidity (non-condensing): 5% - 95%RH
4. Cooling: Convection
5. Vibration Frequency: 5-55Hz/2g, 30 minutes
6. Impact resistance: 1g/s
7. MTBF@ 40°C: 550,000 hours @ Full Load per MIL-217F Notice 2.

Safety and Compliance

1. UL8750, EN61347, CSA 22.2 safety compliant
2. FCC, 47CFR Part 15 Class B & EN55015 compliant.
3. Water resistant and Dust Proof Design: IP66, NEMA4, for Dry, Damp, Wet Locations.
4. Compact, 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 L-N, 8/20 µsec surge protection.

Electrical Specifications at 25°C

- Input voltage range: 120 - 277Vac (Full Range 100 to 305VAC)
- Frequency: 47- 63HZ
- Power Factor: ≥ 0.90 at $\geq 50\%$ Load 120Vac, $\geq 95\%$ Load 230/277Vac
- THD: $\leq 20\%$ at $\geq 50\%$ Load 120Vac, $\geq 60\%$ 230/277Vac
- Inrush current: $<10A$ at 25C, 230V, cold start, Max. Load
- Input current: 0.13A Maximum at 120Vac, 60Hz, Maximum Load
- Efficiency: 80% typical at 120Vac 60Hz, 230Vac 50Hz
- Maximum output power: Per table below
- Line regulation accuracy: $\pm 3\%$
- Load regulation accuracy: $\pm 4\%$



IP66



Constant Voltage Versions

Part Number	US Class 2	CN Class 2	Output Voltage	Output Current Range	Voltage Accuracy	Output Power Maximum	Typical Efficiency ⁽¹⁾
LD12W-48	YES	YES	48 VDC	63 - 250 mA	$\pm 5\%$	12W	80%
LD12W-36	YES	YES	36 VDC	88 - 350 mA	$\pm 5\%$	12.6W	80%
LD12W-24 ⁽²⁾	YES	YES	24 VDC	125 - 500 mA	$\pm 5\%$	12W	78%
LD12W-16	YES	YES	16 VDC	200 - 800 mA	$\pm 5\%$	12.8W	78%
LD12W-12 ⁽²⁾	YES	YES	12 VDC	250 - 1000 mA	$\pm 5\%$	12W	77%

Notes

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

Custom designs available. Please consult the factory.

Specifications subject to change without notice

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LED Optimized Drivers

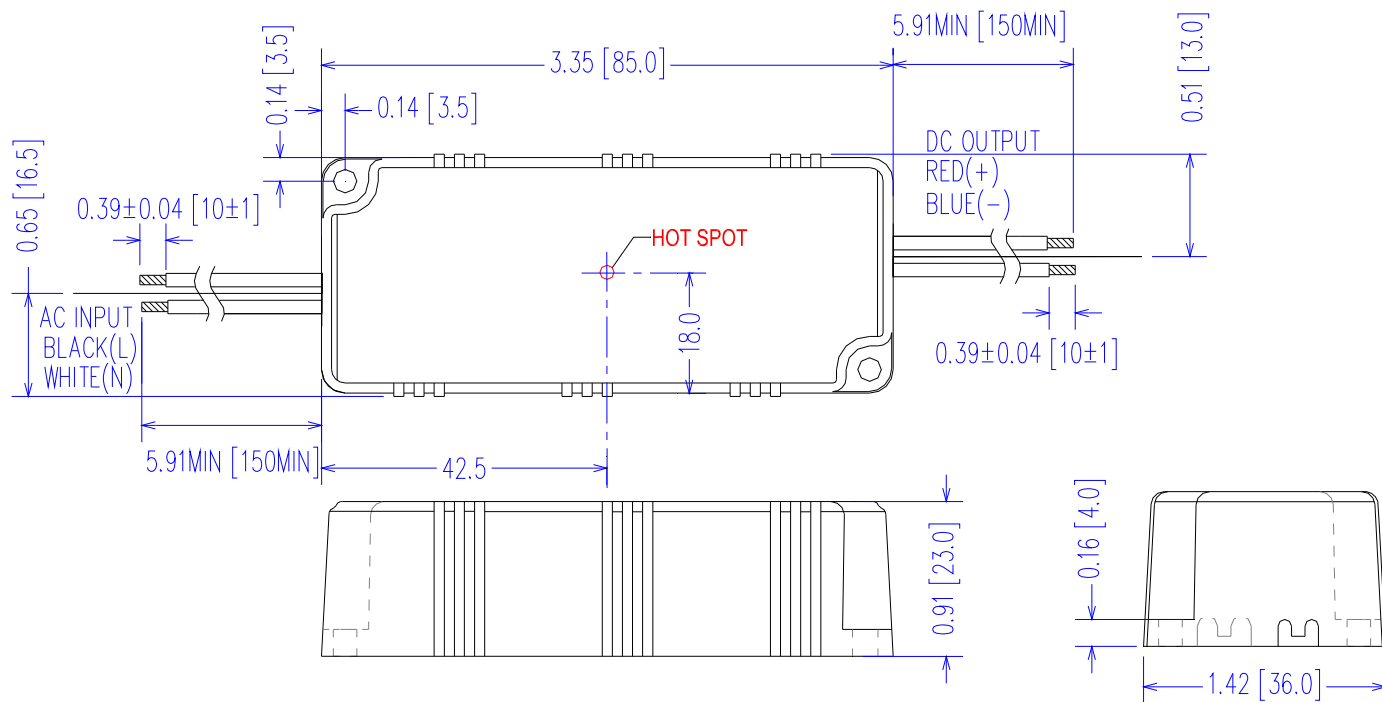
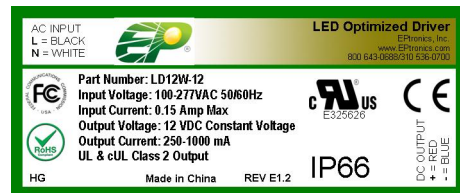
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Mechanical Dimensions: Inches [mm]

Material: Black PC ABS Plastic Case
Fully Encapsulated
Weight: 128 grams (4.5 oz) Typical

Labeling Example



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Input Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
Input Voltage	100 Vac	—	305 Vac	120, 230, 240, 277 Vac Nominal Values
Input Frequency	47 Hz	—	63 Hz	50/60Hz Nominal
Input AC Current	—	—	0.13A	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.07A	Measured at 230Vac/50Hz Input, Output Full load.
	—	—	0.06A	Measured at 277Vac/60Hz Input, Output Full load.
Inrush Current (Peak)	—	—	10A	Measured at 277Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start 50% Ipeak duration ~750 µsec (1/2*I _p ² *t)
Inrush Current (I ² t)	—	—	0.04 A ² s	
Leakage Current	—	0.36mA	0.50mA	Measured at 120Vac/60Hz Input, Output Full load.
	—	0.61mA	0.75mA	Measured at 277Vac/60Hz Input, Output Full load.
THD	—	—	20%	THD: ≤ 20% at ≥ 50% Load 120Vac, ≥ 60% 230/277Vac
Power Factor (PF)	0.90	—	—	PF: ≥ 0.90 at ≥ 50% Load 120Vac, ≥ 95% Load 230/277Vac

Output Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
DC Output Voltage	Per Table	—	Per Table	Per Table on Page 1
DC Output Current Range	25%	Per Table	+5%	Per Table on Page 1
Output Power	—	—	Per Table	Per Table on Page 1
Ripple & Noise (Vpk-pk)	—	—	20% Vo	20 MHz BW, Full load output in parallel with 0.1 µF ceramic & 10 µF Electrolytic.
Ripple (Ipk-pk)	—	—	50% Io	20 MHz BW, Full load output in parallel with 0.1 µF ceramic & 10 µF Electrolytic. 120 Hz component
Start-up Time	—	700 mS	1000 mS	Measured at 120Vac/60Hz Input, Output Full load.
Hold-up Time	—	30 mS	—	Typical @ 277Vac Input, Output Full load.

Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
Case Temperature (Tc)	-30 °C	—	+80 °C	Measured at location specified on case.
Operating Temperature (Ta)	-30 °C	—	+50 °C	This is a reference range. Tc controls temperature range.
Storage Temperature (Ts)	-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	482,000 Hours	—	—	MIL-HDBK-217F Notice 2, Ta = 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% Io	Constant Current Limiting circuit.
Output Over Voltage (OVP)	—	—	120% Vo	No Damage, Auto recovery after fault is removed.

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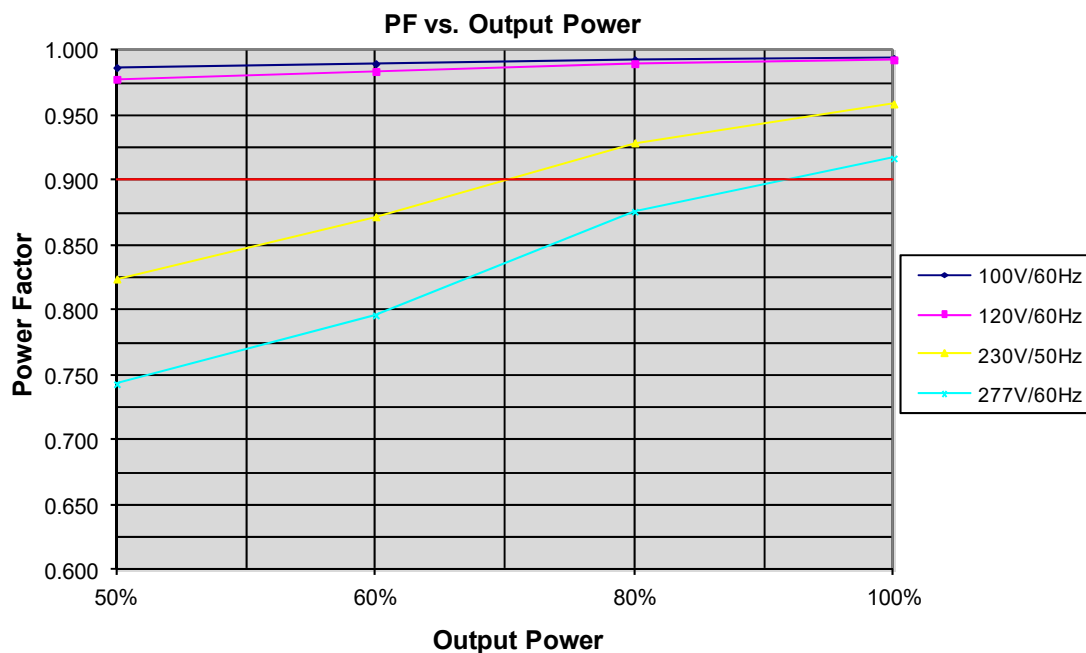
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Safety Compliance

Safety	Notes/Standards
UL/CUL	UL8750, UL1310 for UL Class 2 & CAN/CSA C22.2 No. 250.13
CE	EN61347-1, EN61347-2-13
Withstand Voltage	Input to Output: 3750 Vac
Isolation Resistance	Input to Output: >100 MΩ, 500VDC @ 25 °C, 70 % RH

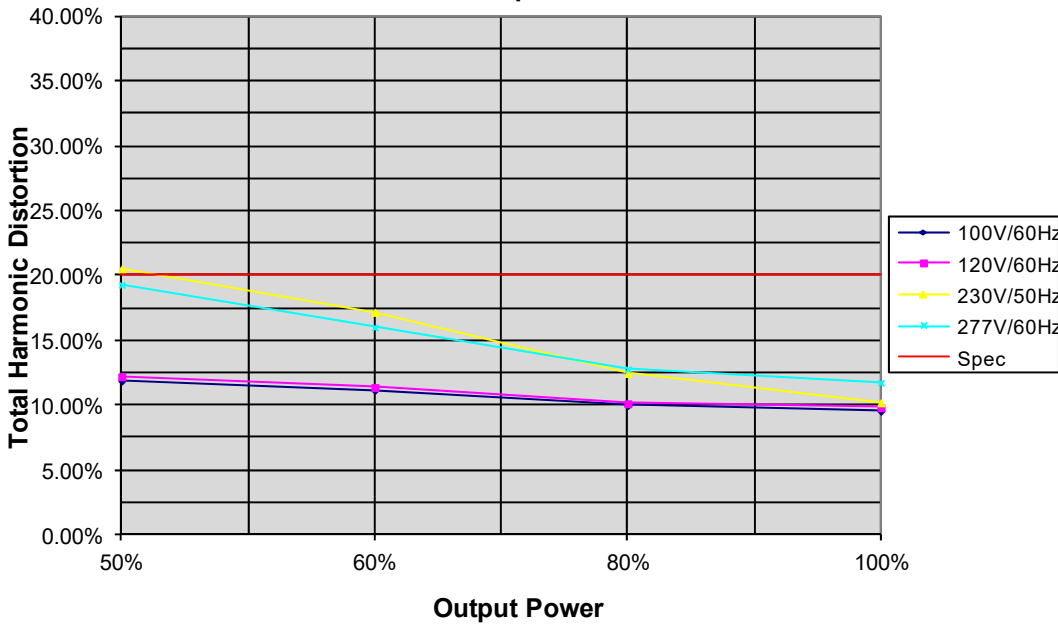
EMC Compliance

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, 2 kV L-N
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)

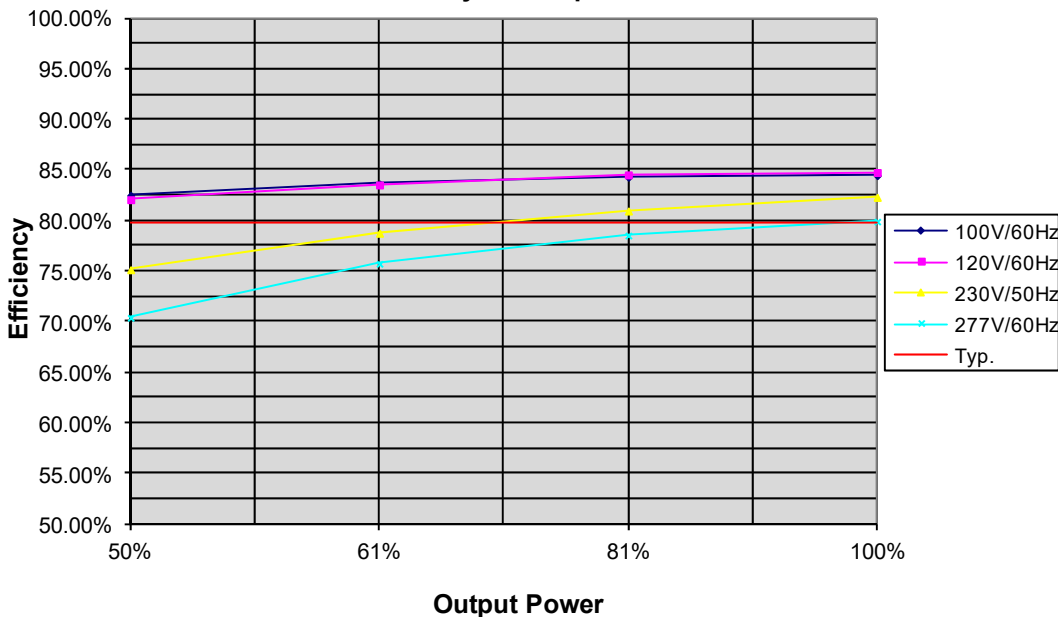
THD Curves (Typical)

THD vs. Output Power



Efficiency Curve (Typical)

Efficiency vs. Output Power



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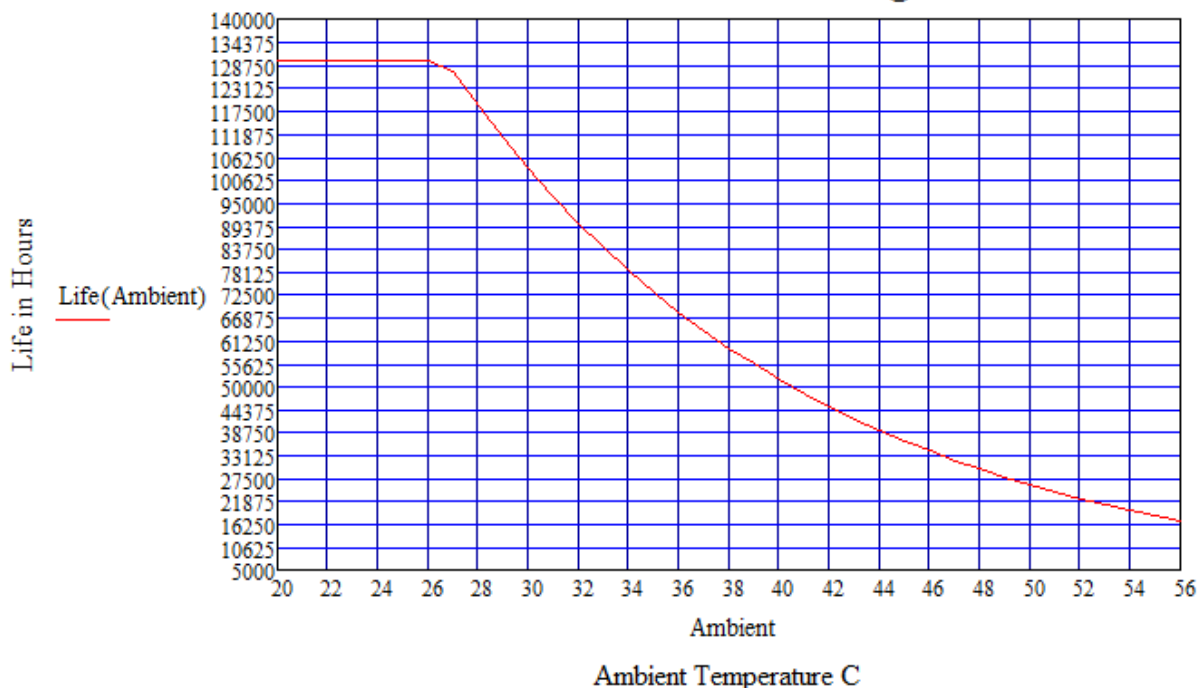
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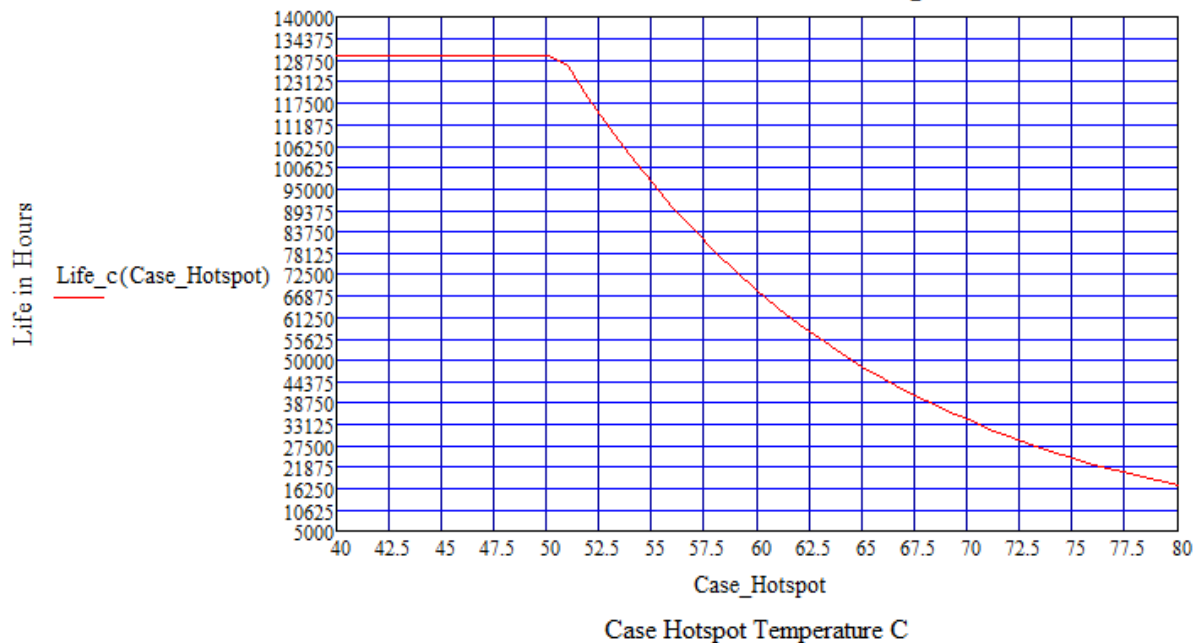
Life vs. Ambient Temperature

LD12W Estimated Life Full Load @ 120Vac



Life vs. Case (Tc) Temperature

LD12W Estimated Life Full Load @ 120Vac





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Revision History

REV - Change Date	Description of Changes		
	Items	Changed From	Changed To
REV E1.2 - 11/01/2020	Update to comply with UL8750	Original E1.2	Constant Voltage