

50 Watt - LN50W Series

CONSTANT CURRENT LED DRIVER WITH 0-10V Dimming



DIMMING
LN50W Series
50W

Model: LN50W Series

- Drive Mode: Constant Current or Constant Voltage
- Technology: PFC Off-Line Switch Mode
- Output Power: 50W Max.
- Input Voltage: 90 to 305VAC, 47- 63Hz
- Output Voltages: 9VDC - 142VDC
- Output Currents: 350mA - 2800mA
- 0-10V Dimming 5% - 100%
- UL Type HL Rated for Hazardous Locations

Environmental

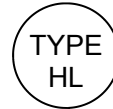
1. Operating temperature: Tc 90C Maximum. Reference -30 to +60°C ambient
2. Storage temperature range: -40 to +85°C
3. Humidity (non-condensing): 5% - 95%RH
4. Cooling: Convection
5. Vibration Frequency: 5-55Hz/2g, 30 minutes
6. Impact resistance: 1g/s
7. MTBF@ 25°C: 478,000 hours @ Full Load per MIL-217F Notice 2.

Safety and Compliance

1. UL8750, EN61347, CSA 22.2 safety recognized, UL Type HL
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: 90 to 305VAC
- Frequency: 47- 63HZ
- Power Factor: ≥ 0.90 at $\geq 60\%$ Load, 120Vac/230Vac, $\geq 88\%$ Load 277Vac
- THD%: $\leq 20\%$ at $\geq 60\%$ Load, 120Vac/230Vac, $\geq 80\%$ Load 277Vac
- Inrush current: $<50A$ at 25C, 277Vac, cold start, Full Load
- Input current: 0.50A typical at 120Vac, 60Hz, Full Load
- Efficiency: 88% typical at 230Vac Full Load
- Line regulation accuracy: $\pm 3\%$
- Load regulation accuracy: $\pm 3\%$
- Leakage current: 500uA typical; Hold up time: half cycle



IP66



Standard Part Numbers

Part Number ⁽²⁾	US Class 2	CN Class 2	UL Types	Output Voltage Range	Output Constant Current	Current Accuracy	Output Power Maximum	Typical Efficiency ⁽¹⁾
LN50W-142-C0350-RD	NO	NO	HL	71 - 142 VDC	350 mA	$\pm 5\%$	50W	89%
LN50W-111-C0450-RD	NO	NO	HL	56 - 111 VDC	450 mA	$\pm 5\%$	50W	88%
LN50W-100-C0500-RD	NO	NO	HL	50 - 100 VDC	500 mA	$\pm 5\%$	50W	88%
LN50W-72-C0700-RD	NO	NO	HL	36 - 72 VDC	700 mA	$\pm 5\%$	50W	88%
LN50W-60-C0830-RD	NO	NO	HL	30 - 60 VDC	830 mA	$\pm 5\%$	50W	87%
LN50W-48-C1050-RD	YES	YES	HL	24 - 48 VDC	1050 mA	$\pm 5\%$	50W	87%
LN50W-42-C1190-RD	YES	YES	HL	21 - 42 VDC	1190 mA	$\pm 5\%$	50W	87%
LN50W-40-C1250-RD	YES	YES	HL	20 - 40 VDC	1250 mA	$\pm 5\%$	50W	87%
LN50W-36-C1400-RD	YES	YES	HL	18 - 36 VDC	1400 mA	$\pm 5\%$	50W	87%
LN50W-29-C1750-RD	YES	YES	HL	15 - 29 VDC	1750 mA	$\pm 5\%$	50W	87%
LN50W-24-C2100-RD	YES	YES	HL	12 - 24 VDC	2100 mA	$\pm 5\%$	50W	87%
LN50W-18-C2800-RD	YES	YES	HL	9 - 18 VDC	2800 mA	$\pm 5\%$	50W	87%

Notes

1. Typical efficiency measured at 230VAC input, full load
2. 0-10V Dimming is compatible with most quality 0-10V wall dimmers and direct 0-10V sink analog signal. See page 3 for details.

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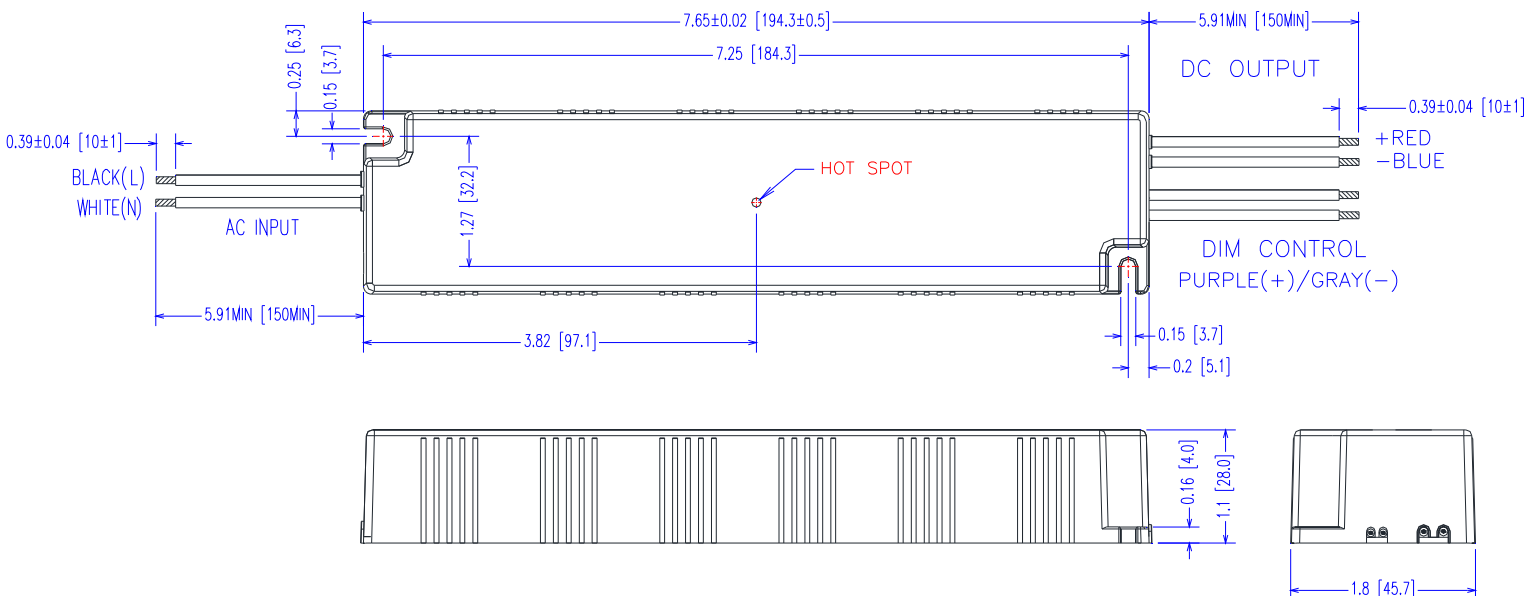
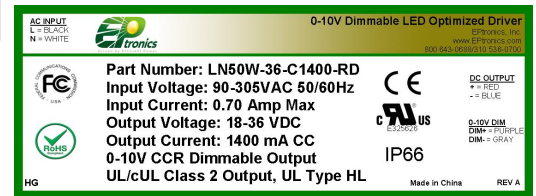
CONSTANT CURRENT LED DRIVER WITH 0-10V DIMMING

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 ⁽¹⁾
LN50W-142	NO	NO	HL	142 VDC	88 - 350 mA	± 5%	50W	89%
LN50W-111	NO	NO	HL	111 VDC	113 - 450 mA	± 5%	50W	88%
LN50W-100	NO	NO	HL	100 VDC	125 - 500 mA	± 5%	50W	88%
LN50W-72	NO	NO	HL	72 VDC	175 - 700 mA	± 5%	50W	88%
LN50W-60	NO	NO	HL	60 VDC	208 - 830 mA	± 5%	50W	87%
LN50W-48	YES	YES	HL	48 VDC	263 - 1050 mA	± 5%	50W	87%
LN50W-42	YES	YES	HL	42 VDC	298 - 1190 mA	± 5%	50W	87%
LN50W-40	YES	YES	HL	40 VDC	313 - 1250 mA	± 5%	50W	87%
LN50W-36	YES	YES	HL	36 VDC	350 - 1400 mA	± 5%	50W	87%
LN50W-29	YES	YES	HL	29 VDC	438 - 1750 mA	± 5%	50W	87%
LN50W-24	YES	YES	HL	24 VDC	525 - 2100 mA	± 5%	50W	87%
LN50W-18	YES	YES	HL	18 VDC	700 - 2800 mA	± 5%	50W	87%

Mechanical Dimensions: Inches [mm]

Material: Black PC ABS Plastic Case
Fully Encapsulated
Weight: 325 grams (11.5 oz) Typical

Labeling Example

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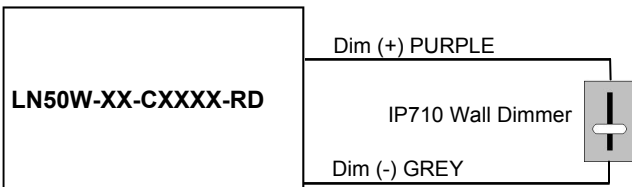
-RD, 0-10V Dimming Scheme

Parameters	Minimum	Typical	Maximum
Absolute Voltage Range on 0-10V Input (Purple Wire)	-2.0V	—	+15V
Source Current out of 0-10V Input (Purple Wire)	0mA	—	2mA

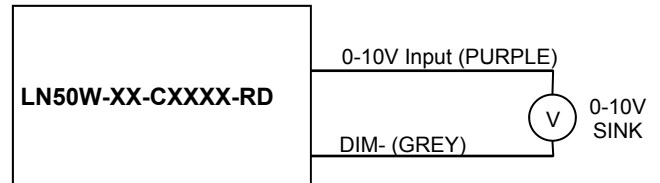
Notes

- RD version is compatible with most 0-10V Wall Slide dimmers and direct 0-10V analog signal. Recommended dimmer is Leviton IP710 or equivalent connected between Purple and Gray wires. Yellow is not used for dimming.
- RD 0-10V dimmable version is not intended to dim below about 5% @ 0V or 10% @ 1.0V
- RD 0-10V dimmable version output will be 100% with Purple/Gray open and minimum with Purple/Gray Shorted.

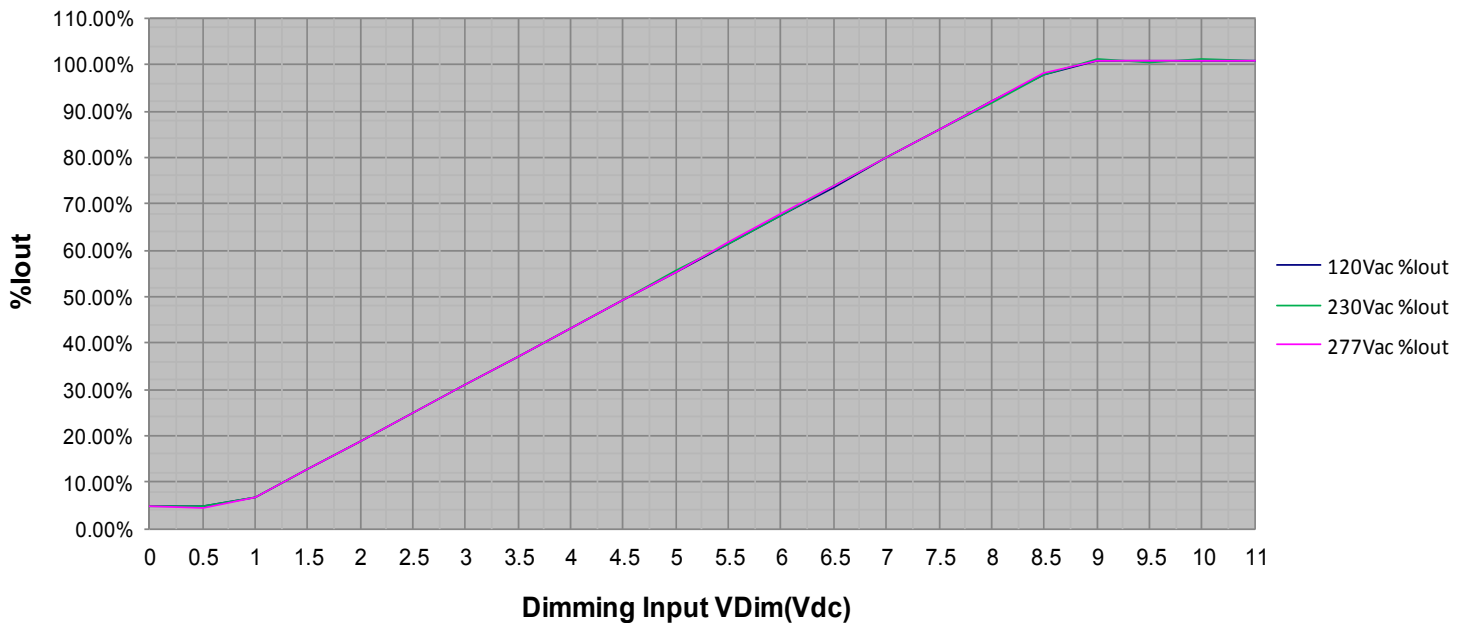
-RD, 0-10V Slide Dimming Scheme



-RD, 0-10V Analog Dimming Scheme



% Output Current Vs. 0-10V DC Dimming Input



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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	—	—	0.51 A	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.27 A	Measured at 230Vac/50Hz Input, Output Full load.
	—	—	0.23 A	Measured at 277Vac/60Hz Input, Output Full load.
Inrush Current (Peak) Note: Ipk Pw ~60usec max	—	—	14A	Measured at 120Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start
	—	—	30A	Measured at 277Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start
Leakage Current	—	—	0.28mA	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.75mA	Measured at 277Vac/60Hz Input, Output Full load.
THD	—	—	20%	Measured at ≥ 60% Load, 120Vac/230Vac, ≥ 80% Load 277Vac
Power Factor (PF)	0.90	—	—	Measured at ≥ 60% Load, 120Vac/230Vac, ≥ 88% Load 277Vac

Output Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
DC Output Voltage	Per Table	—	Per Table	Per Tables on Page 1
DC Output Constant Current	-5%	Per Table	+5%	Per Tables on Page 1
Output Power	—	—	Per Table	Per Tables 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 (Flicker Free)
Start-up Time	—	200 mS	800 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	—	+90 °C	Measured at location specified on case.
Operating Temperature (Ta)	-30 °C	—	+60 °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	478,000 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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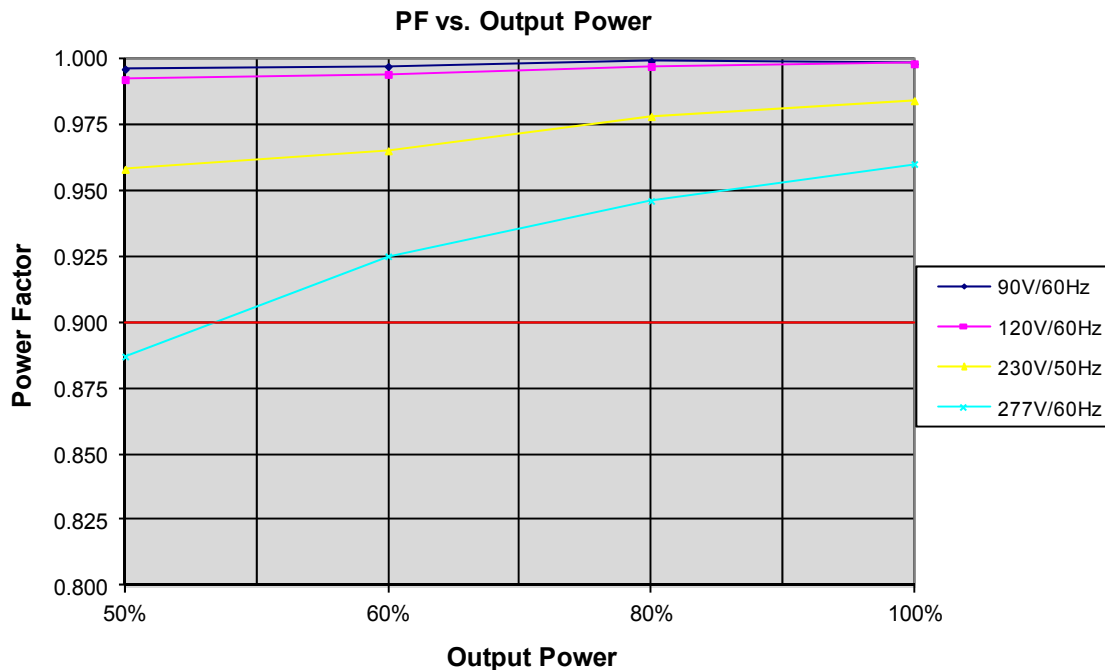
Safety Recognized

Safety	Notes/Standards
UL/CUL	UL8750 & CAN/CSA C22.2 No. 250.13, UL Type HL
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
Dimming & Aux Circuit	+12V Yellow/Dim+ Purple/Dim- Gray are considered part of the secondary circuit.

EMC Certified

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, 4 kV 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)



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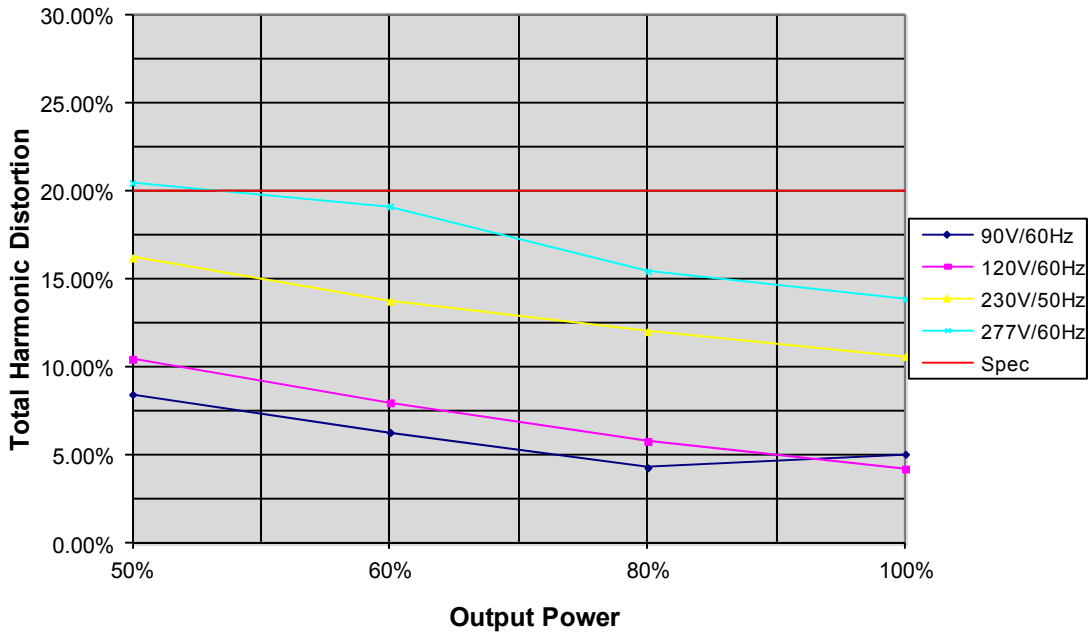
LED Optimized Drivers

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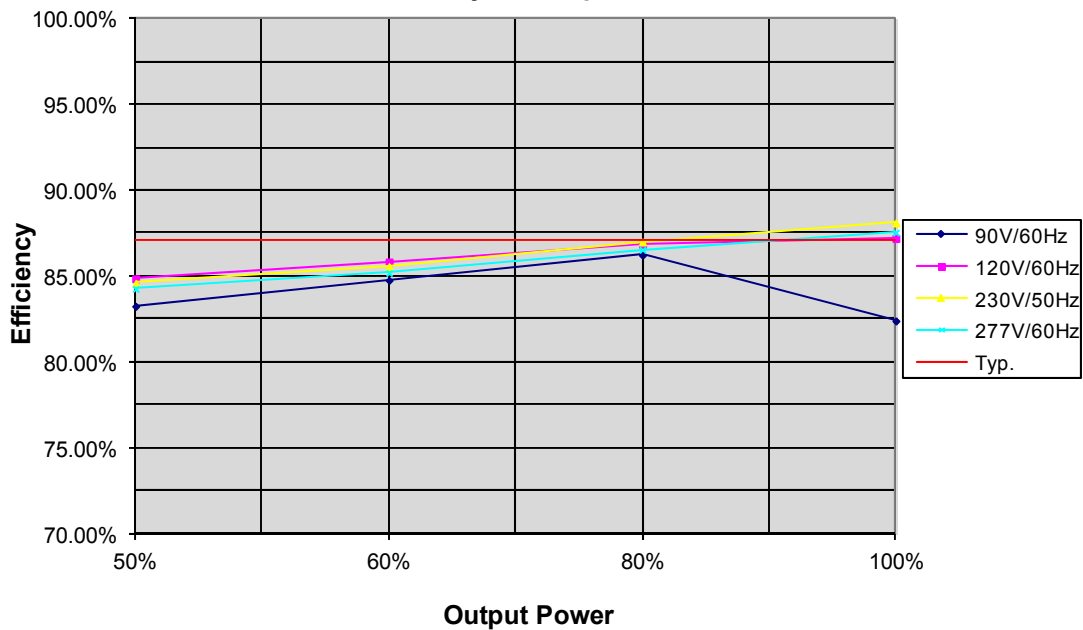
THD Curves (Typical)

THD vs. Output Power



Efficiency Curves (Typical)

Efficiency vs. Output Power

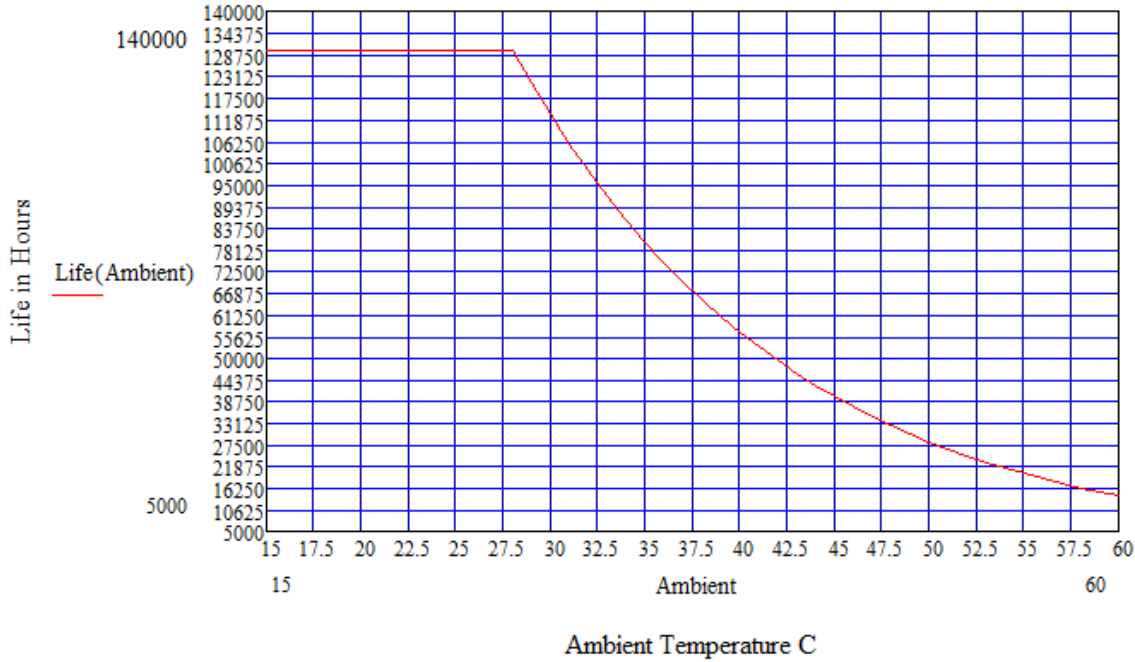


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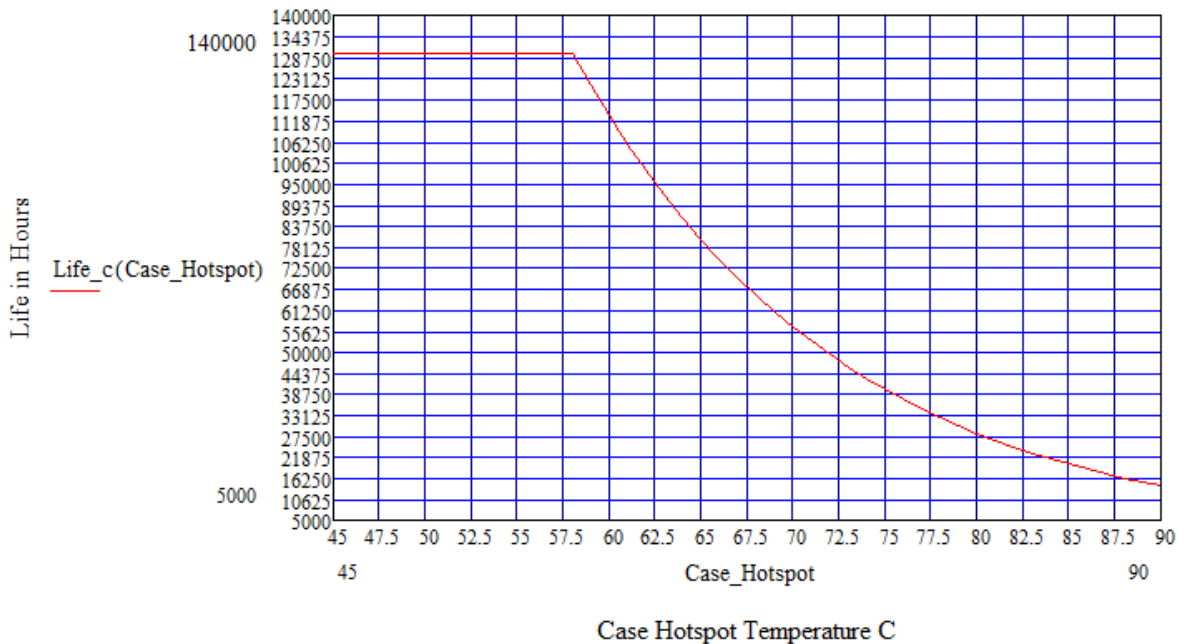
Life vs. Ambient Temperature

LN50W Estimated Life Full Load @ 120Vac



Life vs. Case (Tc) Temperature

LN50W Estimated Life Full Load @ 120Vac



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