LED Optimized Drivers

40 Watt - LN40W Series

CONSTANT CURRENT LED DRIVER WITH 0-10V DIMMING

40W LN40W Series DIMMING

Model: LN40W Series

- Drive Mode: Constant Current or Constant Voltage
- Technology: PFC Off-Line Switch Mode
- Output Power: 40W Max.
- Input Voltage: 90 to 305VAC, 47- 63Hz
- Output Voltages: 9VDC - 130VDC
- Output Currents: 300mA - 2220mA
- 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: 492,000 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 ≥ 60% Load, 120Vac/230Vac, ≥ 80% Load 277Vac
- THD%: ≤ 20% at ≥ 60% Load, 120Vac/230Vac, ≥ 80% Load 277Vac
- Inrush current: <60A at 25C, 277Vac, cold start, Full Load
- Input current: 0.40A typical at 120Vac, 60Hz, Full Load
- Efficiency: 88% typical at 230Vac Full Load
- Line regulation accuracy: ± 3%
- Load regulation accuracy: ± 3%
- Leakage current: 500uA typical; Hold up time: half cycle

c UL us E325626 | TYPE HL | CE | FC | IP66 | RoHS Compliant

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)
LN40W-130-C0300-RD	NO	NO	HL	65 - 130 VDC	300 mA	± 5%	40W	89%
LN40W-114-C0350-RD	NO	NO	HL	57 - 114 VDC	350 mA	± 5%	40W	88%
LN40W-100-C0400-RD	NO	NO	HL	50 - 100 VDC	400 mA	± 5%	40W	88%
LN40W-89-C0450-RD	NO	NO	HL	45 - 89 VDC	450 mA	± 5%	40W	88%
LN40W-72-C0550-RD	NO	NO	HL	36 - 72 VDC	550 mA	± 5%	40W	87%
LN40W-56-C0700-RD	YES	YES	HL	28 - 56 VDC	700 mA	± 5%	40W	87%
LN40W-48-C0830-RD	YES	YES	HL	24 - 48 VDC	830 mA	± 5%	40W	87%
LN40W-45-C0900-RD	YES	YES	HL	23 - 45 VDC	900 mA	± 5%	40W	87%
LN40W-40-C1000-RD	YES	YES	HL	20 - 40 VDC	1000 mA	± 5%	40W	87%
LN40W-36-C1100-RD	YES	YES	HL	18 - 36 VDC	1100 mA	± 5%	40W	87%
LN40W-30-C1400-RD	YES	YES	HL	15 - 30 VDC	1400 mA	± 5%	42W	87%
LN40W-24-C1670-RD	YES	YES	HL	12 - 24 VDC	1670 mA	± 5%	40W	87%
LN40W-22-C1820-RD	YES	YES	HL	11 - 22 VDC	1820 mA	± 5%	40W	85%
LN40W-18-C2220-RD	YES	YES	HL	9 - 18 VDC	2220 mA	± 5%	40W	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.

Custom designs available. Please consult the factory.

Specifications subject to change without notice

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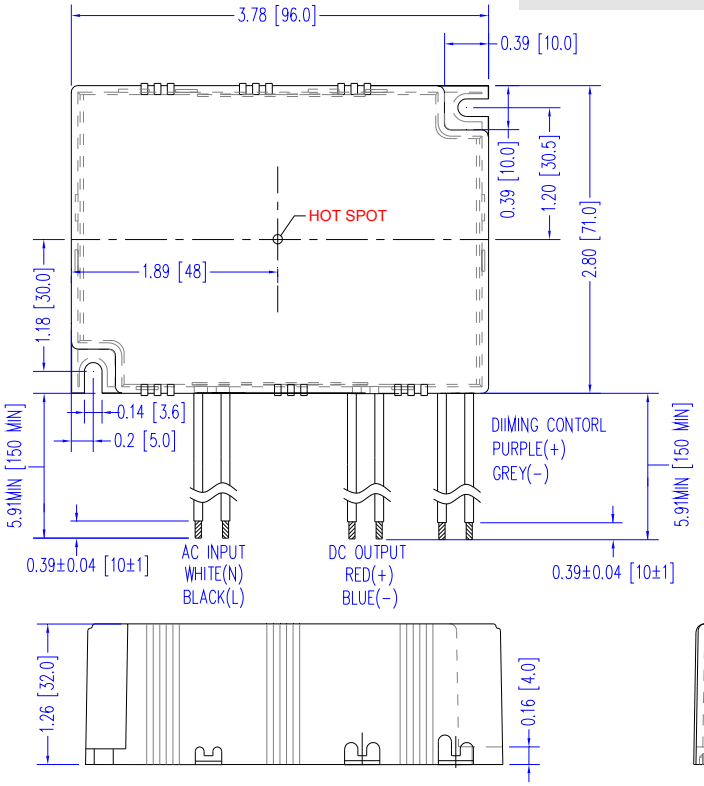
Constant Voltage Versions

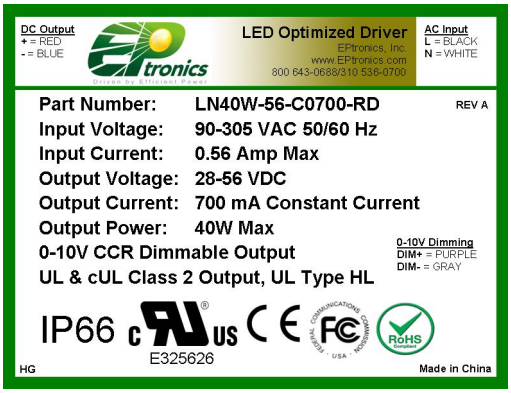
Part Number	US Class 2	CN Class 2	UL Types	Output Constant Voltage	Output Current Range	Voltage Accuracy	Output Power Maximum	Typical Efficiency (1)
LN40W-130	NO	NO	HL	130 VDC	75 - 300 mA	± 5%	40W	89%
LN40W-114	NO	NO	HL	114 VDC	75 - 350 mA	± 5%	40W	88%
LN40W-100	NO	NO	HL	100 VDC	100 - 400 mA	± 5%	40W	88%
LN40W-89	NO	NO	HL	89 VDC	113 - 450 mA	± 5%	40W	88%
LN40W-72	NO	NO	HL	72 VDC	138 - 550 mA	± 5%	40W	87%
LN40W-56	YES	YES	HL	56 VDC	175 - 700 mA	± 5%	40W	87%
LN40W-48	YES	YES	HL	48 VDC	208 - 830 mA	± 5%	40W	87%
LN40W-45	YES	YES	HL	45 VDC	225 - 900 mA	± 5%	40W	87%
LN40W-40	YES	YES	HL	40 VDC	250 - 1000 mA	± 5%	40W	87%
LN40W-36	YES	YES	HL	36 VDC	275 - 1100 mA	± 5%	40W	87%
LN40W-30	YES	YES	HL	30 VDC	350 - 1400 mA	± 5%	42W	87%
LN40W-24	YES	YES	HL	24 VDC	418 - 1670 mA	± 5%	40W	87%
LN40W-22	YES	YES	HL	22 VDC	455 - 1820 mA	± 5%	40W	85%
LN40W-18	YES	YES	HL	18 VDC	550 - 2220 mA	± 5%	40W	87%

Mechanical Dimensions: Inches

Material: Black PC ABS Plastic Case
Fully Encapsulated
Weight: 311 grams (11.0 oz) Typical



Labeling Example



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CONSTANT CURRENT LED DRIVER WITH 0-10V DIMMING

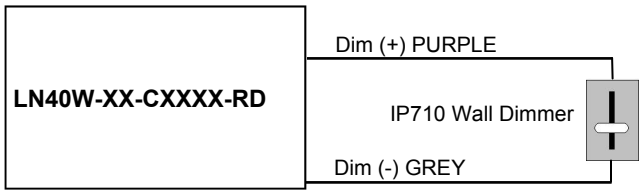
-RD, 0-10V Dimming Scheme

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

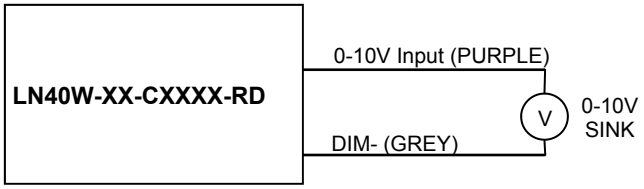
Notes

1. -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.
2. -RD 0-10V dimmable version is not intended to dim below about 5% @ 0V or 10% @ 1.0V
3. -RD 0-10V dimmable version output will be 100% with Purple/Gray Shorted.

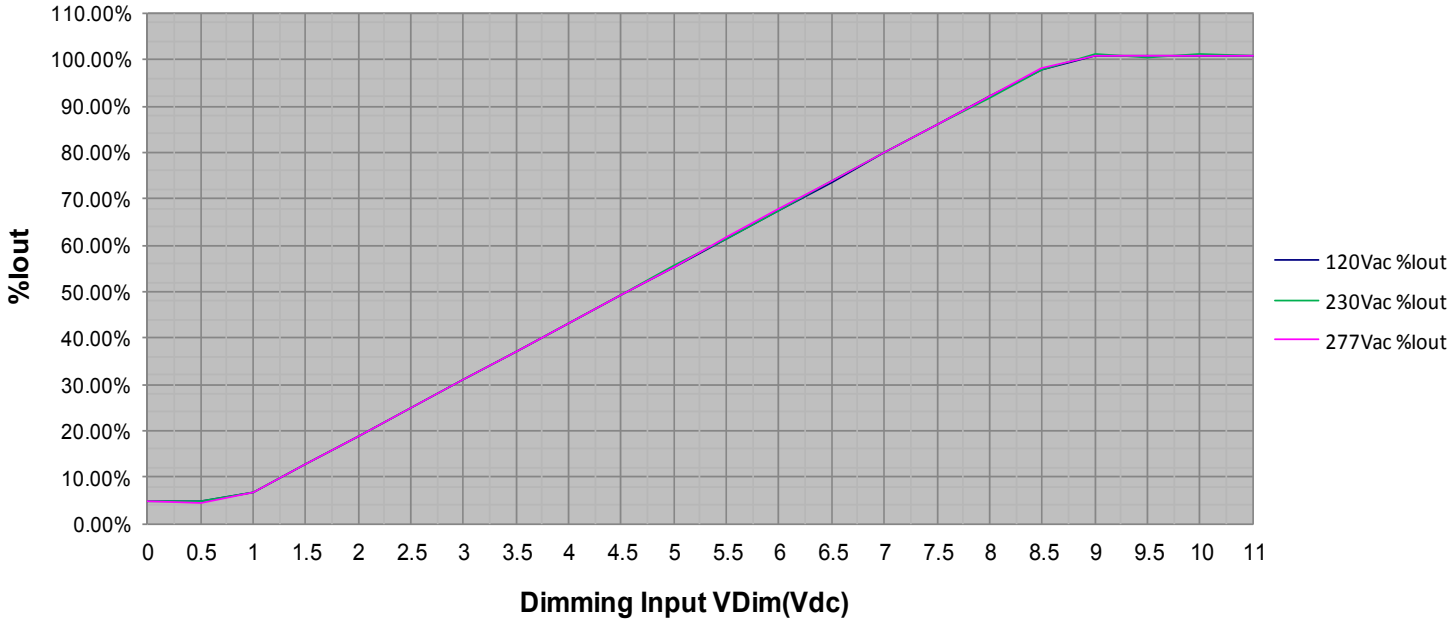
-RD, 0-10V Slide Dimming Scheme



-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	——	——	0.40 A	Measured at 120Vac/60Hz Input, Output Full load.
	——	——	0.21 A	Measured at 230Vac/50Hz Input, Output Full load.
	——	——	0.11 A	Measured at 277Vac/60Hz Input, Output Full load.
Inrush Current (Peak)	——	——	60A	Measured at 277Vac/60Hz Input, Output Full Load, Ta 25^{O}C, Cold Start 50% Ipeak duration ~140 µsec (1/2*Ip^2*t)
Inrush Current (I^{2}t)	——	——	0.25 A^{2}s	
Leakage Current	——	——	0.44mA	Measured at 150Vac/60Hz Input, Output Full load.
	——	——	0.75mA	Measured at 305Vac/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, ≥ 80% 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	700 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 ^{O}C	——	+90 ^{O}C	Measured at location specified on case.
Operating Temperature (Ta)	-30 ^{O}C	——	+60 ^{O}C	This is a reference range. Tc controls temperature range.
Storage Temperature (Ts)	-40 ^{O}C	——	+85 ^{O}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	——	492,000 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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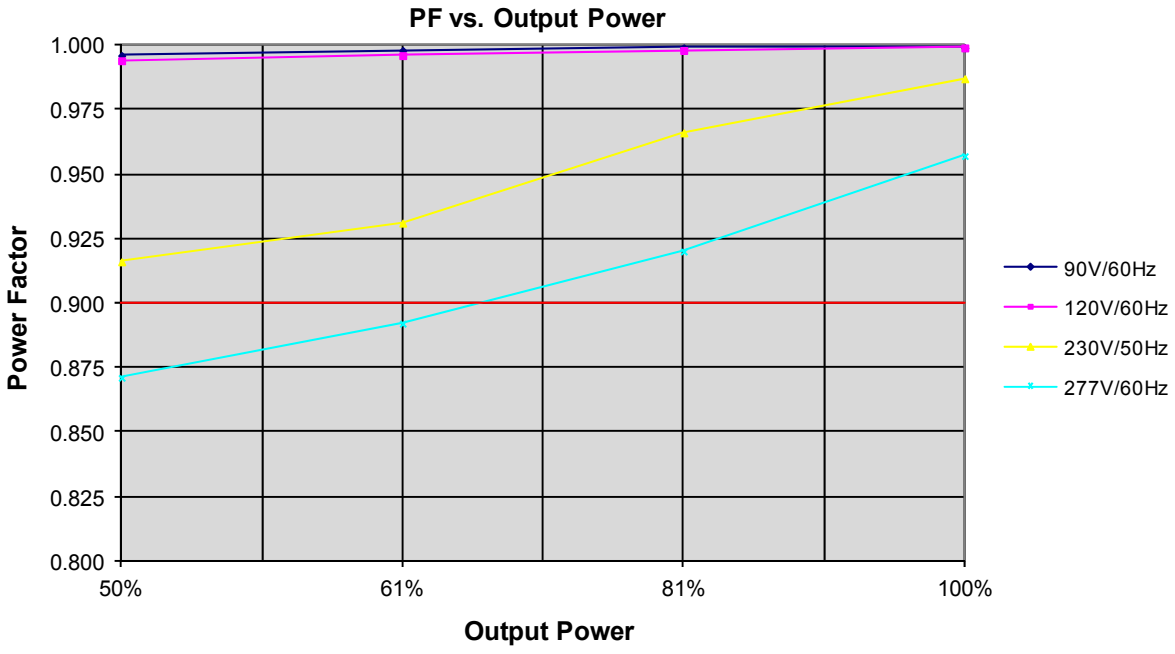
Safety Recognized

Safety	Notes/Standards
UL/CUL UL Type HL	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 ^{O}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
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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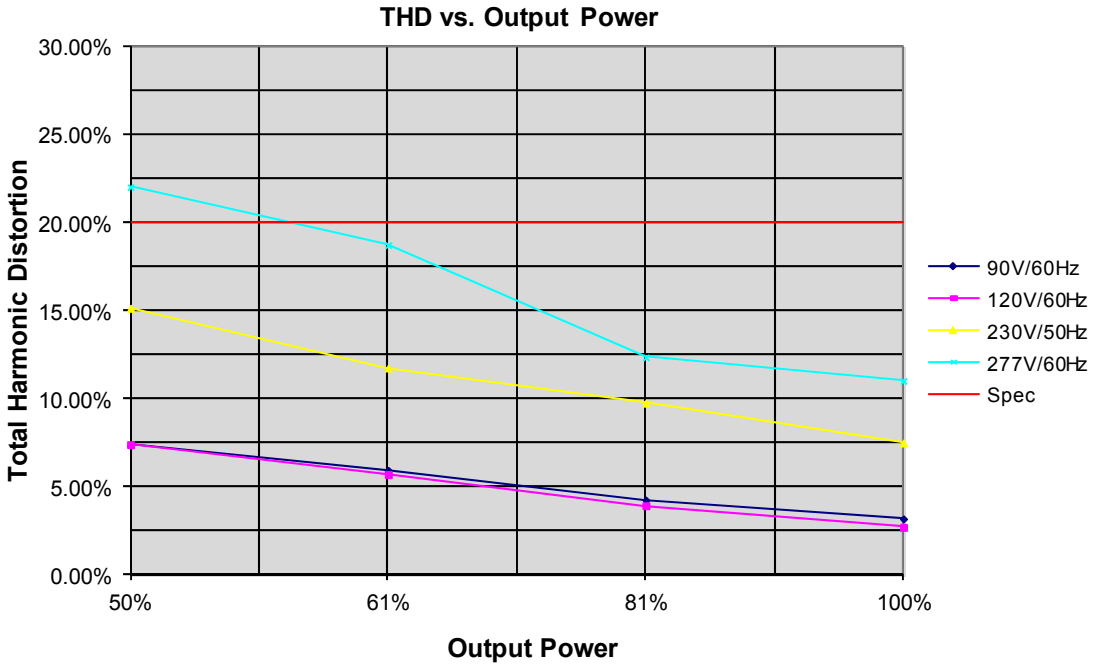
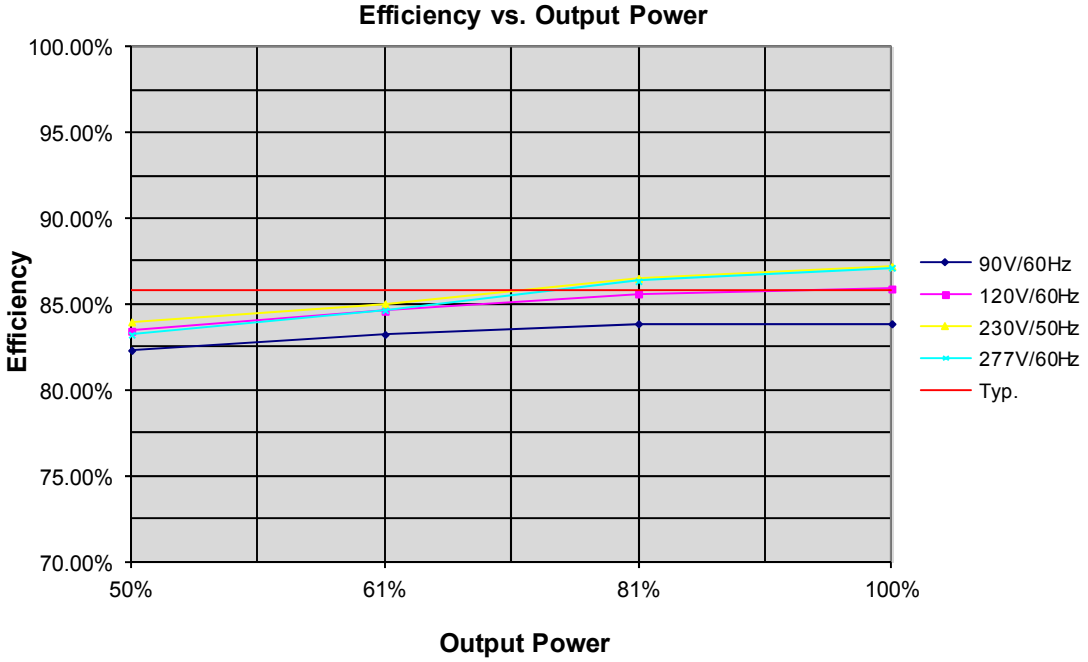
THD Curves (Typical)



Efficiency Curves (Typical)



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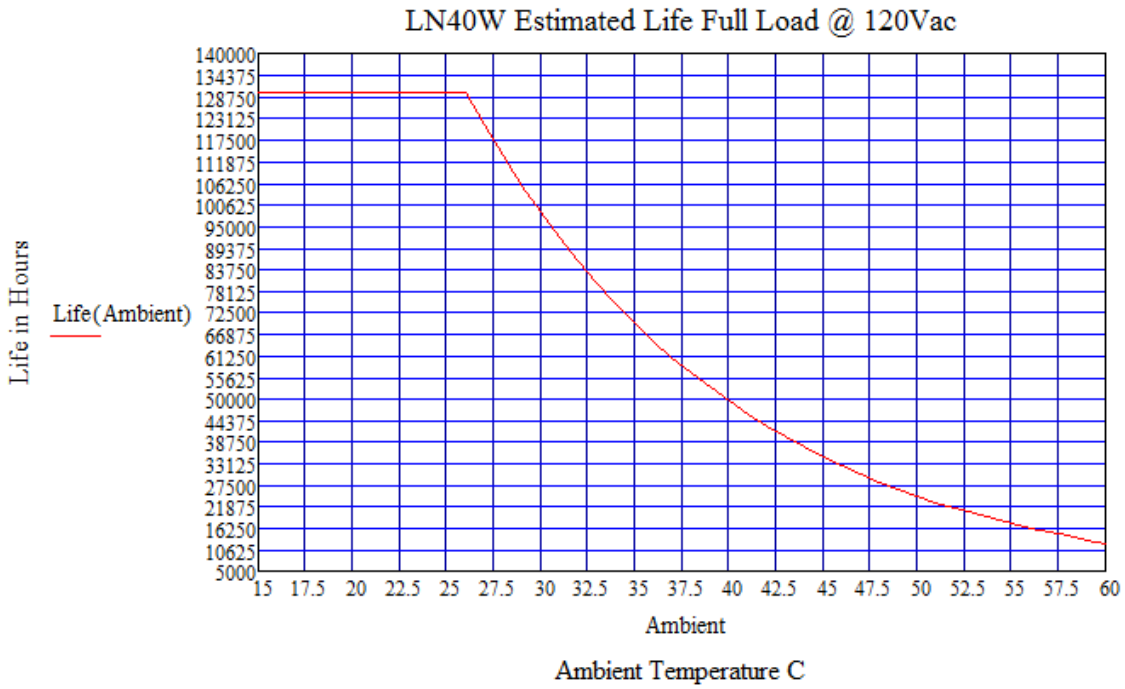
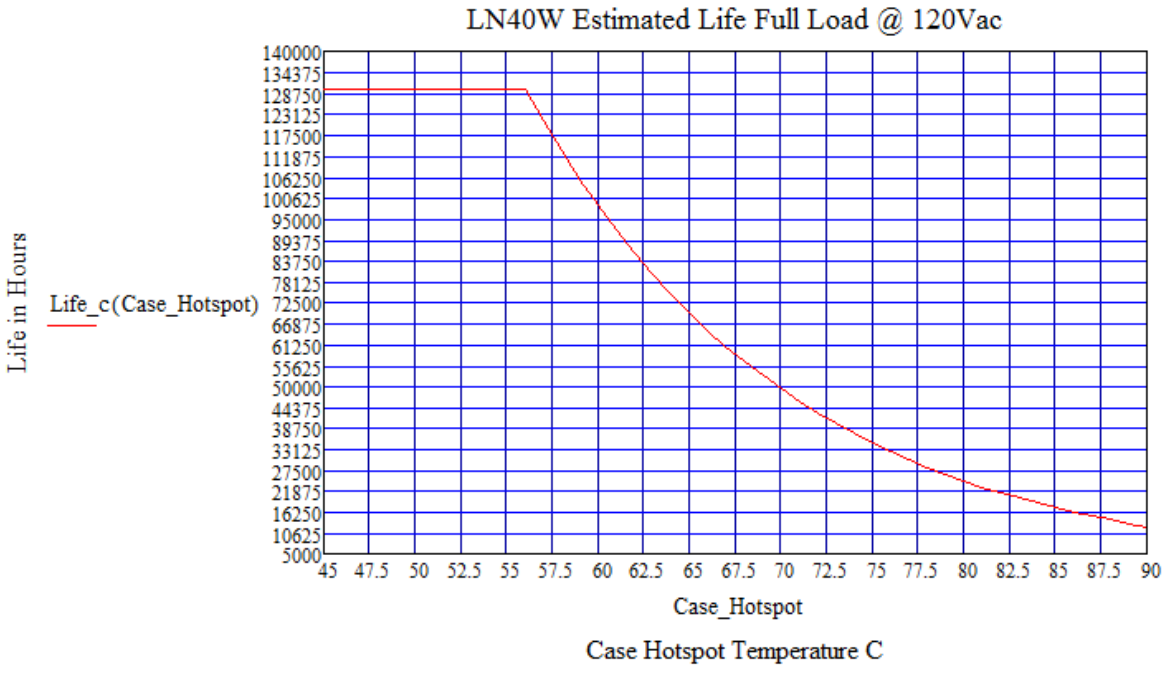
Life vs. Ambient Temperature



Life vs. Case (Tc) Temperature



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