



LED Optimized Drivers



25W
LNP25W Series
UL Class P

25 Watt - LNP25W Series

CONSTANT CURRENT LED DRIVER WITH 0-10V DIMMING

Model: LNP25W Series

- Drive Mode: Constant Current or Constant Voltage
- Technology: PFC Off-Line Switch Mode
- Output Power: 25W Max.
- Input Voltage: 90 to 305VAC, 47- 63Hz
- Output Voltages: 6VDC - 72VDC
- Output Currents: 350mA - 2080mA
- 0-10V Dimming 5% - 100%
- UL Class P & UL Type HL Rated for Hazardous Locations

Environmental

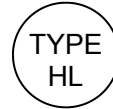
1. Operating temperature: Tc 90C Maximum. Reference -30 to +60°C ambient
2. Storage temperature range: -40 to +85°C
3. Humidity (non-condensing): 5% - 95%RH
4. Cooling: Convection
5. Vibration Frequency: 5-55Hz/2g, 30 minutes
6. Impact resistance: 1g/s
7. MTBF@ 25°C: 492,000 hours @ Full Load per MIL-217F Notice 2.

Safety and Compliance

1. UL8750, EN61347, CSA 22.2 safety listed, UL Class P
2. FCC, 47CFR Part 15 Class B & EN55015 certified.
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 $\geq 70\%$ Load, 120Vac/230Vac, $\geq 88\%$ Load 277Vac
- THD%: $\leq 20\%$ at $\geq 60\%$ Load, 120Vac/230Vac/277Vac
- Inrush current: <50A at 25C, 277Vac, cold start, Full Load
- Input current: 0.25A typical at 120Vac, 60Hz, Full Load
- Efficiency: 86% 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⁾ |
|----------------------------|------------|------------|----------|----------------------|-------------------------|------------------|----------------------|-----------------------------------|
| LNP25W-72-C0350-RD | NO | NO | HL | 36 - 72 VDC | 350 mA | $\pm 5\%$ | 25W | 88% |
| LNP25W-62-C0400-RD | NO | NO | HL | 31 - 62 VDC | 400 mA | $\pm 5\%$ | 25W | 88% |
| LNP25W-56-C0450-RD | YES | YES | HL | 28 - 56 VDC | 450 mA | $\pm 5\%$ | 25W | 88% |
| LNP25W-45-C0560-RD | YES | YES | HL | 23 - 45 VDC | 560 mA | $\pm 5\%$ | 25W | 87% |
| LNP25W-40-C0620-RD | YES | YES | HL | 20 - 40 VDC | 620 mA | $\pm 5\%$ | 25W | 87% |
| LNP25W-36-C0700-RD | YES | YES | HL | 18 - 36 VDC | 700 mA | $\pm 5\%$ | 25W | 86% |
| LNP25W-28-C0850-RD | YES | YES | HL | 14 - 28 VDC | 850 mA | $\pm 5\%$ | 25W | 86% |
| LNP25W-24-C1040-RD | YES | YES | HL | 12 - 24 VDC | 1040 mA | $\pm 5\%$ | 25W | 85% |
| LNP25W-20-C1250-RD | YES | YES | HL | 10 - 20 VDC | 1250 mA | $\pm 5\%$ | 25W | 85% |
| LNP25W-18-C1400-RD | YES | YES | HL | 9 - 18 VDC | 1400 mA | $\pm 5\%$ | 25W | 84% |
| LNP25W-16-C1560-RD | YES | YES | HL | 8 - 16 VDC | 1560 mA | $\pm 5\%$ | 25W | 84% |
| LNP25W-14-C1750-RD | YES | YES | HL | 7 - 14 VDC | 1750 mA | $\pm 5\%$ | 25W | 82% |
| LNP25W-12-C2080-RD | YES | YES | HL | 6 - 12 VDC | 2080 mA | $\pm 5\%$ | 25W | 80% |

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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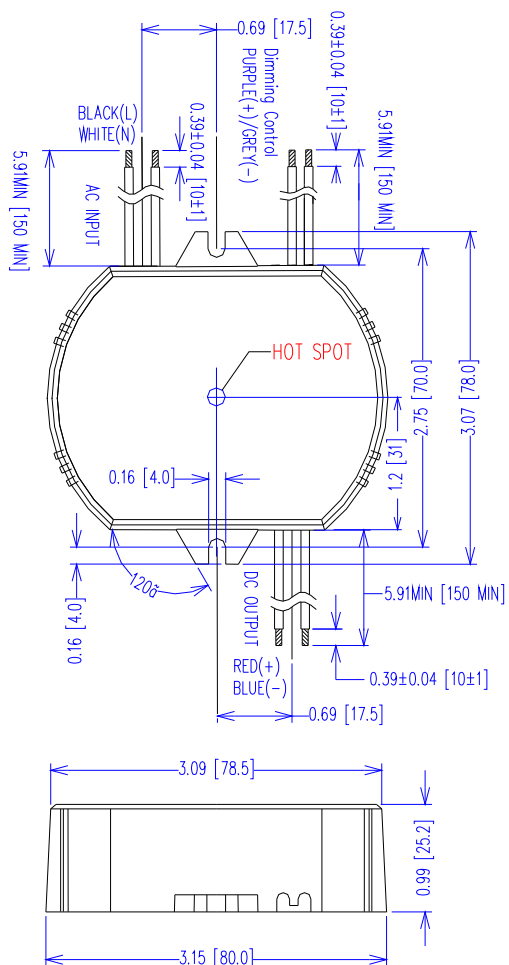
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CONSTANT CURRENT LED DRIVER WITH 0-10V DIMMING

Constant Voltage Versions

| Part Number | US Class 2 | CN Class 2 | Output Constant Voltage | Output Current Range | Voltage Accuracy | Output Power Maximum | Typical Efficiency ⁽¹⁾ |
|-------------|------------|------------|-------------------------|----------------------|------------------|----------------------|-----------------------------------|
| LNP25W-72 | NO | NO | 72 VDC | 88 - 350 mA | ± 5% | 25W | 88% |
| LNP25W-62 | NO | NO | 62 VDC | 100 - 400 mA | ± 5% | 25W | 88% |
| LNP25W-56 | YES | YES | 56 VDC | 113 - 450 mA | ± 5% | 25W | 88% |
| LNP25W-45 | YES | YES | 45 VDC | 140 - 560 mA | ± 5% | 25W | 87% |
| LNP25W-40 | YES | YES | 40 VDC | 155 - 620 mA | ± 5% | 25W | 87% |
| LNP25W-36 | YES | YES | 36 VDC | 175 - 700 mA | ± 5% | 25W | 86% |
| LNP25W-28 | YES | YES | 28 VDC | 213 - 850 mA | ± 5% | 25W | 86% |
| LNP25W-24 | YES | YES | 24 VDC | 260 - 1040 mA | ± 5% | 25W | 85% |
| LNP25W-20 | YES | YES | 20 VDC | 313 - 1250 mA | ± 5% | 25W | 85% |
| LNP25W-18 | YES | YES | 18 VDC | 350 - 1400 mA | ± 5% | 25W | 84% |
| LNP25W-16 | YES | YES | 16 VDC | 390 - 1560 mA | ± 5% | 25W | 84% |
| LNP25W-14 | YES | YES | 14 VDC | 438 - 1750 mA | ± 5% | 25W | 82% |
| LNP25W-12 | YES | YES | 12 VDC | 520 - 2080 mA | ± 5% | 25W | 80% |

Mechanical Dimensions: Inches



Material: Black 5VA Plastic Case
Fully Encapsulated
Weight: 198 grams (7.0 oz) Typical

Labeling Example

AC INPUT
L = BLACK
N = WHITE

LED Optimized Driver
EPtronics, Inc.
www.EPtronics.com
800 643-0688 / 01 535-0700

Part Number: LNP25W-36-C0700-RD
Input Voltage: 90-305 VAC 50/60 Hz
Input Current: 0.35 Amp Max
Output Voltage: 18-36 VDC, UL/cUL Class 2
Output Current: 700 mA Constant Current
0-10V CCR Dimmable Output
UL Class P, For Connections use wire rated ≥ 90C (194F)

UL LISTED E325626
IP66
CE
REHS
0-10V DIM
DIM+ = PURPLE
DIM- = GRAY
DC OUTPUT
+ = RED
- = BLUE
HG REV A Made in China

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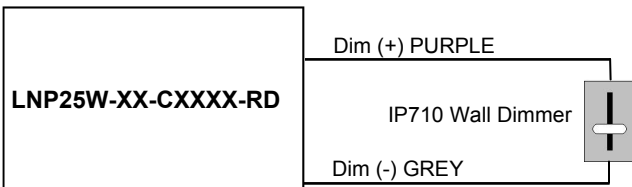
-RD, 0-10V Dimming Scheme

| 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 |

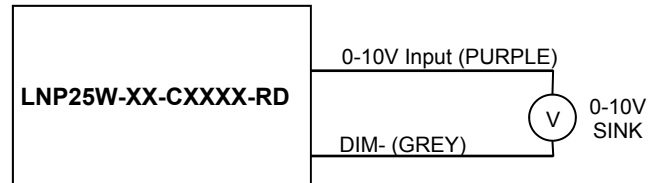
Notes

- 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.

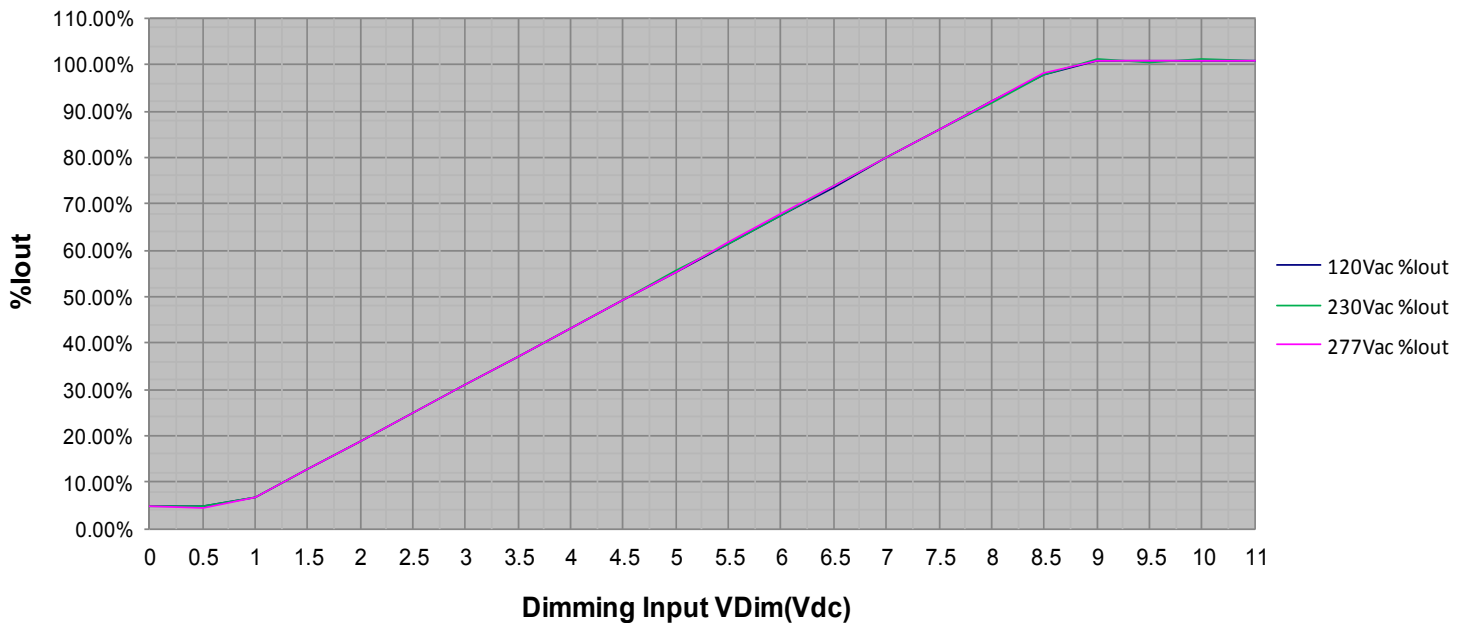
-RD, 0-10V Slide Dimming Scheme



-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 | — | — | 0.25 A | Measured at 120Vac/60Hz Input, Output Full load. |
| | — | — | 0.13 A | Measured at 230Vac/50Hz Input, Output Full load. |
| | — | — | 0.11 A | Measured at 277Vac/60Hz Input, Output Full load. |
| Inrush Current (Peak) | — | — | 50A | Measured at 277Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start 50% I _{peak} duration \approx 750 μ sec (1/2*I _p ² *t) |
| Inrush Current (I ² t) | — | — | 0.94 A ² s | |
| 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 \geq 60% Load, 120Vac/230Vac/277Vac |
| Power Factor (PF) | 0.90 | — | — | Measured at \geq 70% Load, 120Vac/230Vac, \geq 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 (+ [12V@200mA, 2.4W Auxiliary]) |
| Ripple & Noise (V _{pk-pk}) | — | — | 20% V _o | 20 MHz BW, Full load output in parallel with 0.1 μ F ceramic & 10 μ F Electrolytic. |
| Ripple (I _{pk-pk}) | — | — | 50% I _o | 20 MHz BW, Full load output in parallel with 0.1 μ F ceramic & 10 μ F 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 (T _c) | -30 °C | — | +90 °C | Measured at location specified on case. |
| Operating Temperature (T _a) | -30 °C | — | +60 °C | This is a reference range. T _c controls temperature range. |
| Storage Temperature (T _s) | -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 | 492,000 Hours | — | — | MIL-HDBK-217F Notice 2, T _a = 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 _o | Constant Current Limiting circuit. |
| Output Over Voltage (OVP) | — | — | 120% V _o | No Damage, Auto recovery after fault is removed. |

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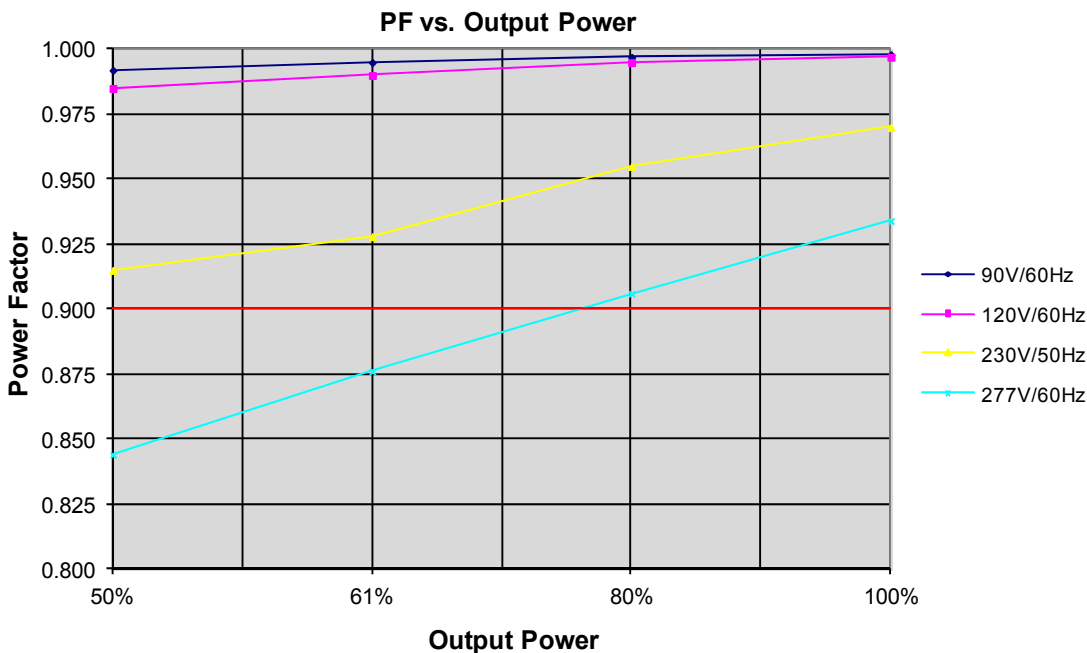
Safety Recognized

| Safety | Notes/Standards |
|-----------------------------|---|
| UL/CUL Listed UL Class P | UL8750 & CAN/CSA C22.2 No. 250.13, UL Class P, 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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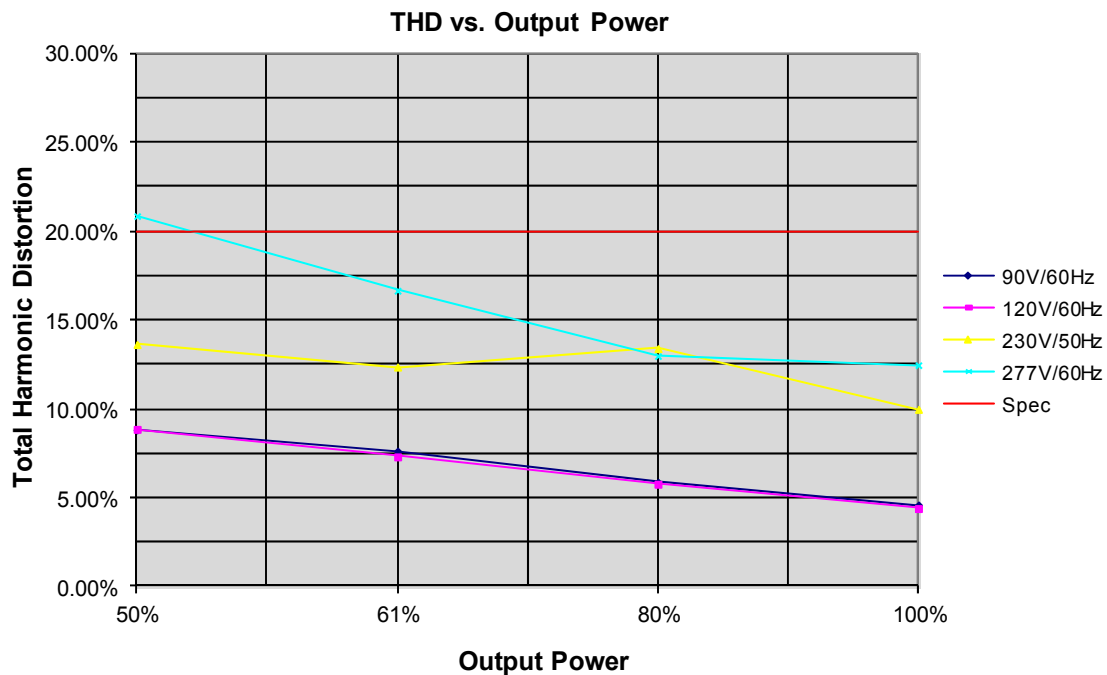


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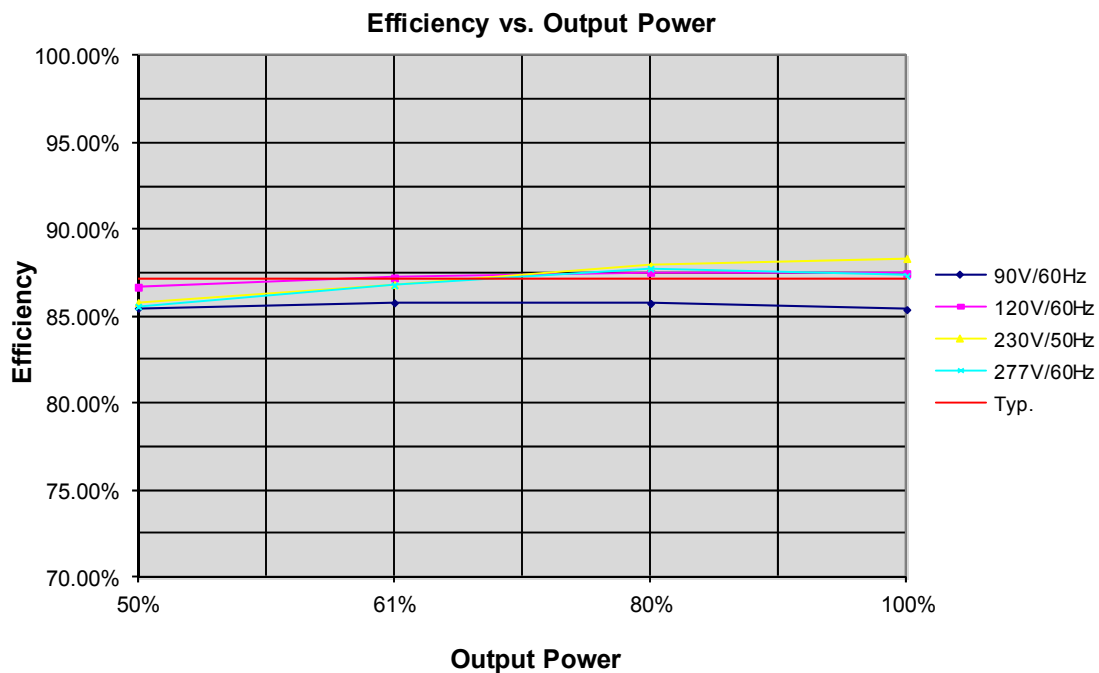
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THD Curves (Typical)



Efficiency Curve (Typical)



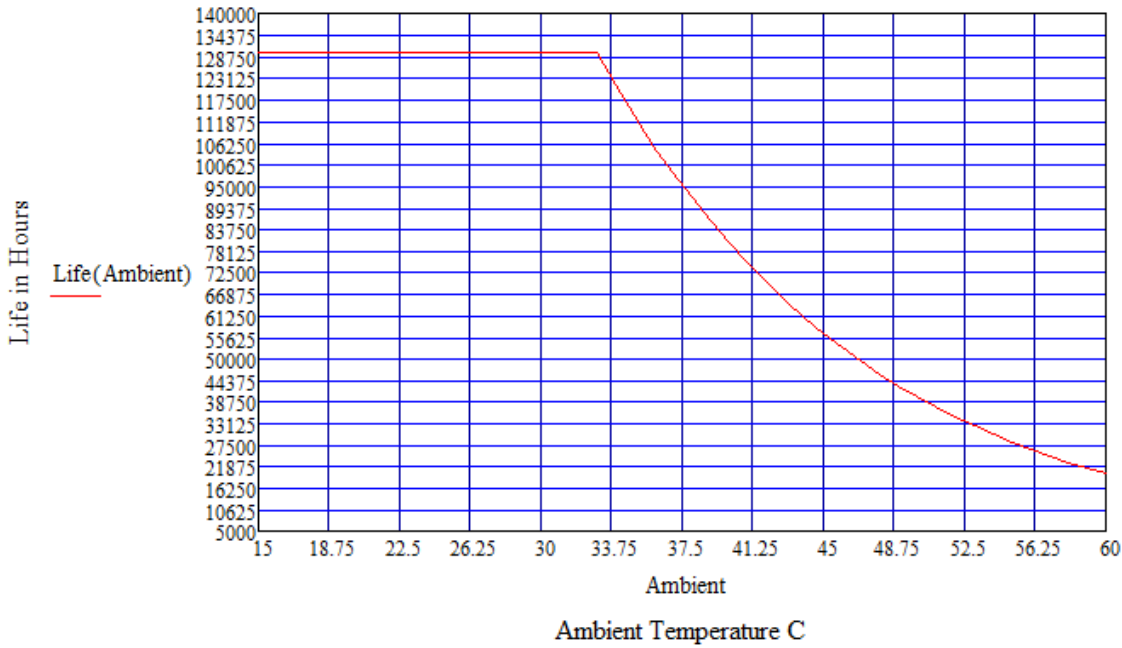
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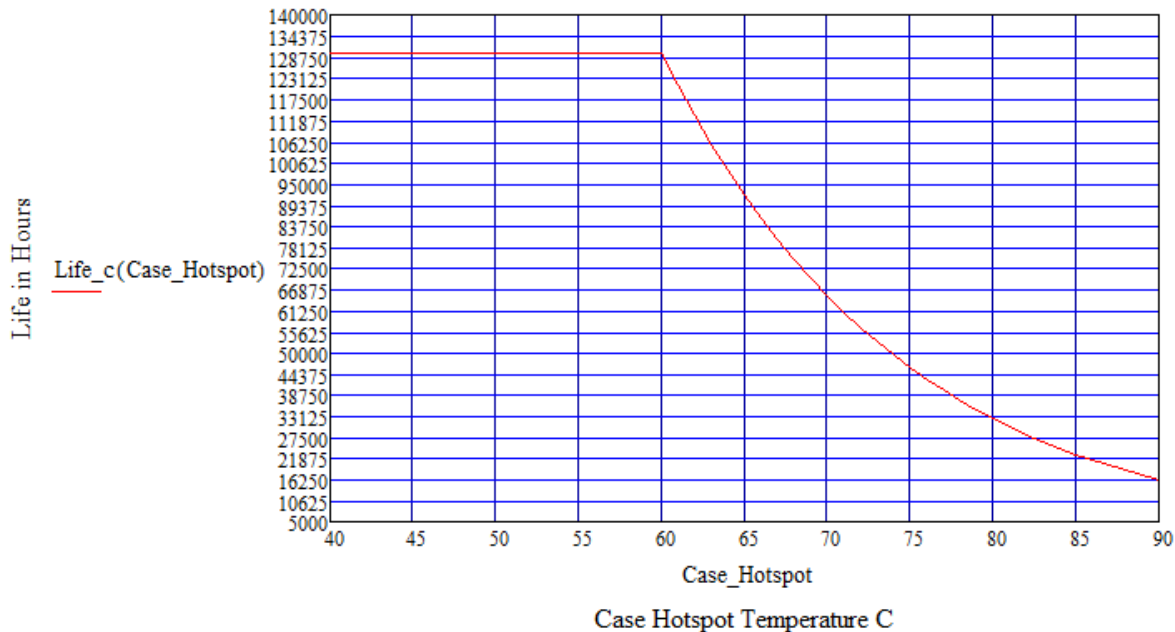
Life vs. Ambient Temperature

LNP25W Estimated Life Full Load @ 120Vac



Life vs. Case (Tc) Temperature

LNP25W Estimated Life Full Load @ 120Vac



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