

150 Watt - LD150W Series

CONSTANT VOLTAGE OR CONSTANT CURRENT LED DRIVER WITH DIMMING



150W
LD150W Series
DIMMING

Model: LD150W Series

- Drive Mode: Constant Current or Constant Voltage
- Technology: PFC Corrected 2-Stage Switch Mode
- Output Power: 150W Max.
- Input Voltage: 120 to 277VAC, 47 - 63Hz
- Number of Outputs: One
- Output Voltages: 8VDC - 428VDC
- Output Currents: 350mA - 6250mA
- Optional 0-10V or PWM Positive Dimming 5% to 100%

Environmental

1. Operating temperature: Tc 90C Maximum. Reference -40 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@ Tc = 80°C: 335,000 hours @ Full Load per MIL-HDBK-217F Notice 2

Safety and Compliance

1. Class P: UL8750, CSA 22.2 listed, UL Type HL
2. FCC, 47CFR Part 15 & EN55015 compliant.
3. Water resistant and Dust Proof Design: IP67, NEMA4, for Dry & Damp Locations.
4. Low AC Inrush Design.
5. Safety Isolation between Primary, Secondary & 0-10V Dimming
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: 4kV/6kV 8/20 µsec surge protection.

Electrical Specifications at 25°C

- Input voltage range: 120 to 277Vac (Full Range 100 to 305VAC)
- Frequency: 47- 63HZ
- Power Factor: ≥ 0.90 at $\geq 60\%$ Load, 120Vac/230Vac/277Vac
- THD%: $\leq 20\%$ at $\geq 60\%$ Load, 120Vac/230Vac, $\geq 70\%$ Load, 277Vac
- Inrush current: $<70A$ at 25C, 277Vac, cold start, Full Load
- Input current: 1.60A Maximum @ 120Vac
- Efficiency: Up to 92% typical at 230Vac Full Load
- Line regulation accuracy: $\pm 3\%$
- Load regulation accuracy: $\pm 4\%$
- Leakage current: 277Vac, 750uA maximum

Mechanical Dimensions: Inches [mm]

Material: Black Aluminum Housing
Fully Encapsulated
Weight: 690 grams (24.4 oz) Typical

Labeling Example: UL Class P Listed, Type HL

0-10V CCR Dimmable LED Optimized Driver
EPtronics, Inc.
www.EPtronics.com
800.643.0688/510.538.0700

Part Number: LD150W-48-C3150-PRD

Input Voltage: 120-277VAC 50/60Hz

Input Current: 1.60 Amp Max @ 120Vac

Output Voltage: 16-48 VDC, 150W Maximum

Output Current: 3150 mA Constant Current

UL & cUL Class 2 0-10V CCR Dimming

Isolated Class 2 Dimming suitable for Class 1 or 2 circuit

Suitable for use in Dry & Damp Locations, UL Type HL

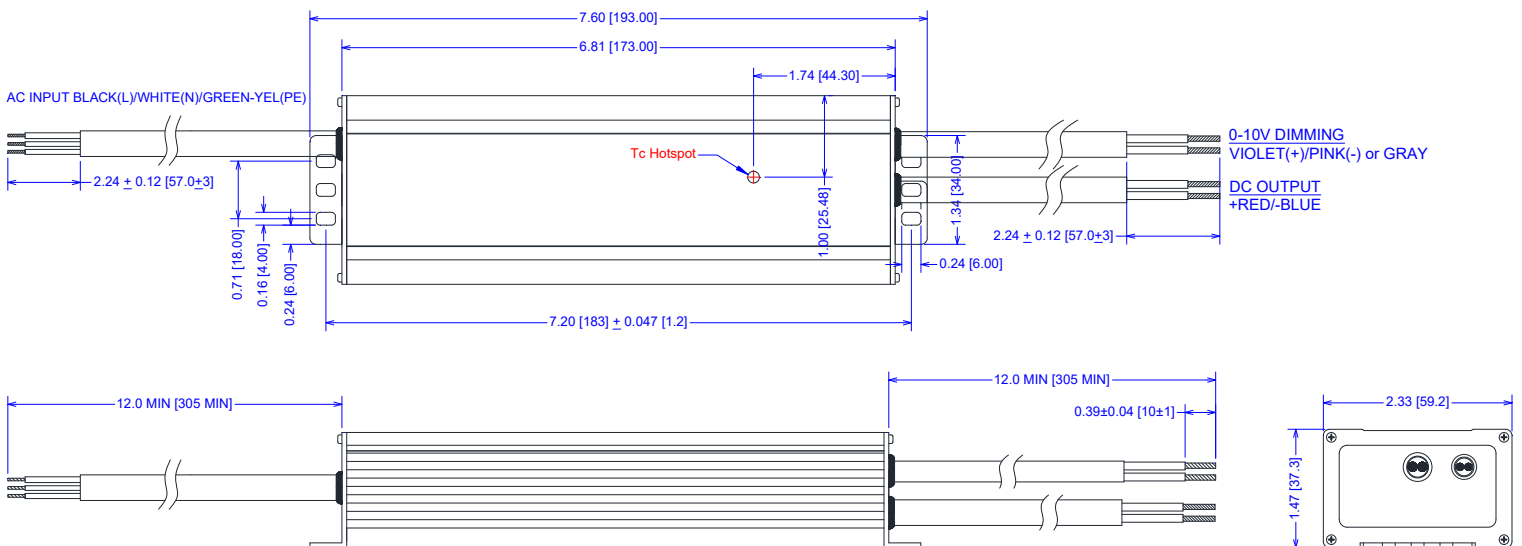
UL Class P, For Connections use wire rated $\geq 90C$ (194F)

IP67

0-10V DIMMING
DIM+ = VIOLET
DIM- = PINK

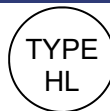
DC OUTPUT
+ = RED
- = BLUE

YG



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UL Class P Constant Current Versions

Part Number ⁽²⁾	UL Types	Output Voltage Range	Output Constant Current	Current Accuracy	Output Power Maximum	Typical Efficiency ⁽¹⁾
LD150W-428-C0350-PRD	HL	142 - 428 VDC	350 mA	± 5%	150W	92%
LD150W-333-C0450-PRD	HL	111 - 333 VDC	450 mA	± 5%	150W	92%
LD150W-283-C0530-PRD	HL	95 - 283 VDC	530 mA	± 5%	150W	91%
LD150W-214-C0700-PRD	HL	72 - 214 VDC	700 mA	± 5%	150W	91%
LD150W-142-C1050-PRD	HL	48 - 142 VDC	1050 mA	± 5%	150W	91%
LD150W-107-C1400-PRD	HL	36 - 107 VDC	1400 mA	± 5%	150W	91%
LD150W-85-C1750-PRD	HL	29 - 85 VDC	1750 mA	± 5%	150W	90%
LD150W-71-C2100-PRD	HL	24 - 71 VDC	2100 mA	± 5%	150W	90%
LD150W-61-C2450-PRD	HL	21 - 61 VDC	2450 mA	± 5%	150W	90%
LD150W-53-C2800-PRD	HL	18 - 53 VDC	2800 mA	± 5%	150W	90%
LD150W-48-C3150-PRD	HL	16 - 48 VDC	3150 mA	± 5%	150W	89%
LD150W-42-C3500-PRD	HL	14 - 42 VDC	3500 mA	± 5%	150W	89%
LD150W-35-C4200-PRD	HL	12 - 35 VDC	4200 mA	± 5%	150W	89%
LD150W-30-C4900-PRD	HL	10 - 30 VDC	4900 mA	± 5%	150W	88%
LD150W-24-C6250-PRD	HL	8 - 24 VDC	6250 mA	± 5%	150W	88%

UL Class P Constant Voltage Versions

Part Number	UL Types	Output Constant Voltage	Output Current Range	Voltage Accuracy	Output Power Maximum	Typical Efficiency ⁽¹⁾
LD150W-428-P	HL	428 VDC	88 - 350 mA	± 5%	150W	92%
LD150W-333-P	HL	333 VDC	113 - 450 mA	± 5%	150W	92%
LD150W-283-P	HL	283 VDC	133 - 530 mA	± 5%	150W	91%
LD150W-214-P	HL	214 VDC	175 - 700 mA	± 5%	150W	91%
LD150W-142-P	HL	142 VDC	263 - 1050 mA	± 5%	150W	91%
LD150W-107-P	HL	107 VDC	350 - 1400 mA	± 5%	150W	91%
LD150W-85-P	HL	85 VDC	438 - 1750 mA	± 5%	150W	90%
LD150W-71-P	HL	71 VDC	525 - 2100 mA	± 5%	150W	90%
LD150W-61-P	HL	61 VDC	613 - 2450 mA	± 5%	150W	90%
LD150W-53-P	HL	53 VDC	700 - 2800 mA	± 5%	150W	90%
LD150W-48-P	HL	48 VDC	788 - 3150 mA	± 5%	150W	89%
LD150W-42-P	HL	42 VDC	875 - 3500 mA	± 5%	150W	89%
LD150W-35-P	HL	35 VDC	1050 - 4200 mA	± 5%	150W	89%
LD150W-30-P	HL	30 VDC	1225 - 4900 mA	± 5%	150W	88%
LD150W-24-P	HL	24 VDC	1563 - 6250 mA	± 5%	150W	88%

Notes

1. Typical efficiency measured at 230VAC input, full load
2. -PRD 0-10V standard dimmable part numbers shown. For other versions change designator at the end of the part number. For Example: LD150W-24-C6250-P is non-dimmable version, LD150W-24-C6250-PPD is PWM dimmable version.
-PRD 0-10V & Resistance dimmable version comes with an extra two wires +VIOLET/-PINK on the output side. (Legacy DIM- = GRAY)
-PPD PWM Dimmable version comes with an extra two wires +VIOLET/-PINK on the output side. (Legacy DIM- = GRAY)
3. -PRD 0-10V Dimming is compatible with most quality 0-10V wall dimmers and direct 0-10V analog signal. See page 3 for details.
4. -PPD PWM version is PWM Dimmable via a positive 0% to 100% Duty Cycle, 500Hz to 1.5kHz, 0-10V Pulse. See page 4 for details.

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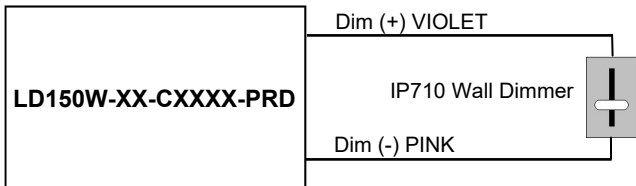
-RD 2-Wire 0-10V CCR Dimming Scheme

Parameters	Minimum	Typical	Maximum
Source Current out of 0-10V VIOLET Wire	0uA	—	250uA
Absolute Voltage Range on 0-10V (+) VIOLET Wire	-2.0V	—	+15V

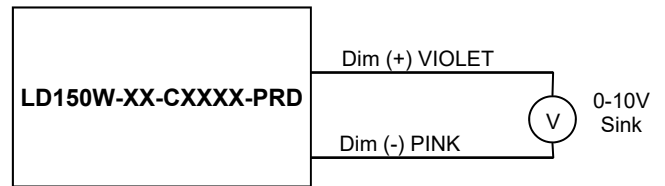
Notes

- RD 0-10V dimmable version comes with an extra two wires +VIOLET/-PINK on the output side.
- RD version is compatible with most 0-10V Wall Slide dimmers and direct 0-10V analog signal.
Recommended wall slide dimmer is Leviton IP710 or equivalent
- RD 0-10V dimmable version will be $\leq 5\%$ @ $\leq 1.0V$ or with VIOLET/PINK Shorted.
- RD 0-10V dimmable version output will be 100% with VIOLET/PINK open and minimum with VIOLET/PINK Shorted.

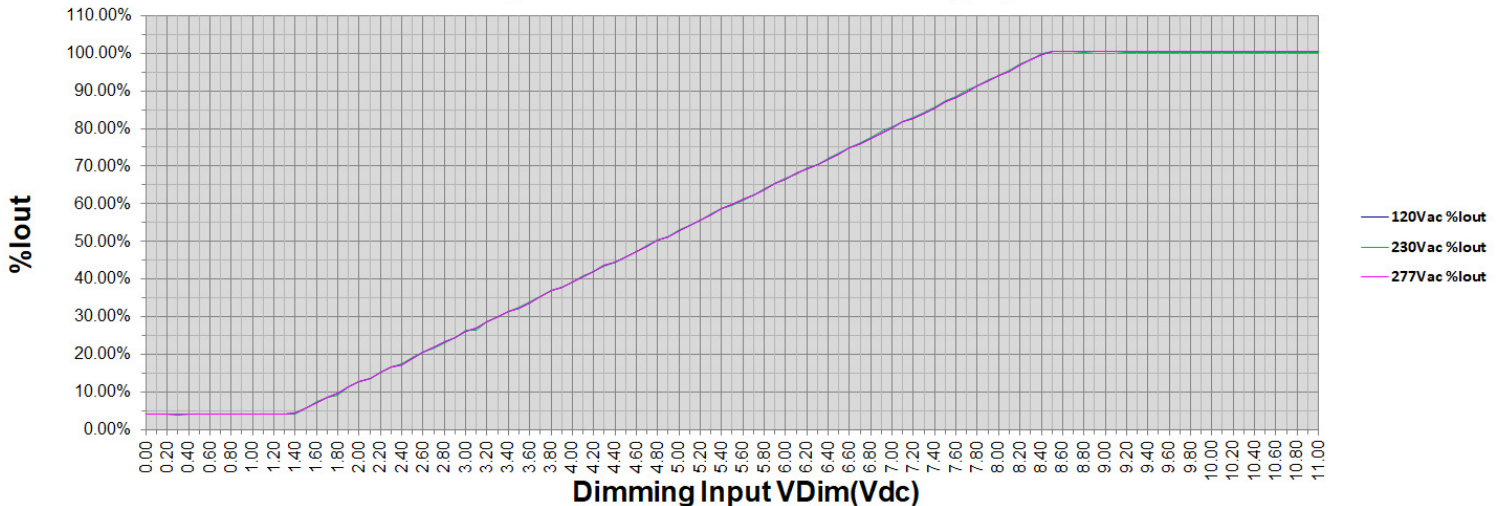
-RD 2-Wire Resistance Dimming Scheme



-RD 2-Wire 0-10V Analog Dimming Scheme



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



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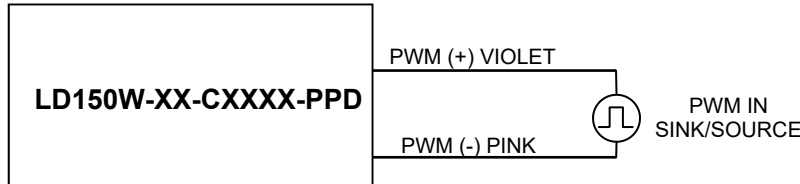
-PD 2-Wire CCR PWM Positive Dimming Scheme

Parameters	Minimum	Typical	Maximum
Absolute Maximum Voltage Range on PWM Input (VIOLET Wire)	-2.0V	10V	+15V
Input LOW Level Voltage Range (VIOLET Wire)	-2.0V	0V	+5.5V
Input HIGH Level Voltage Range (VIOLET Wire)	+9.0V	10V	+15V
Source Current out of PWM Input (VIOLET Wire)	0uA	—	250uA
Sink Current into PWM Input (VIOLET Wire)	0uA	—	25uA
PWM Input Signal Frequency	500Hz	—	1500Hz
PWM Input Signal Positive Duty Cycle	0%	10-90%	100%

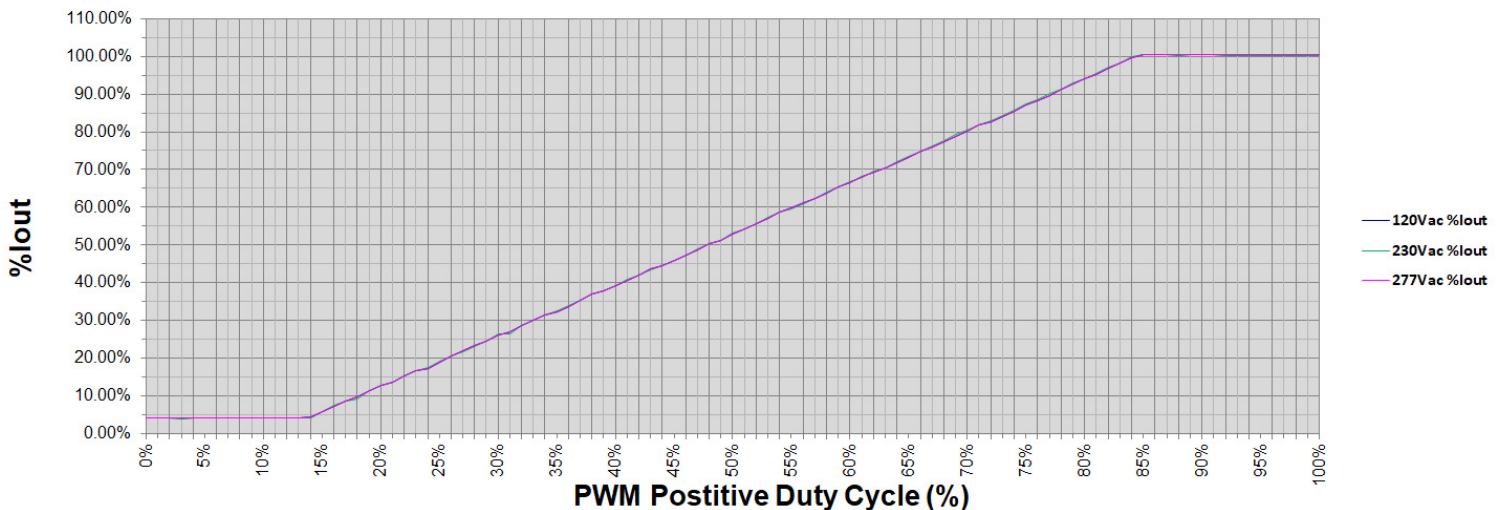
Notes

1. -PD PWM Dimmable version comes with an extra 2 wires +VIOLET/-PINK on the output side.
2. -PD PWM dimmable version will be $\leq 5\%$ @ $\leq 10\%$ Duty Cycle or with VIOLET/PINK Shorted
3. -PD PWM dimmable version output will be 100% with VIOLET/PINK open and minimum with VIOLET/PINK Shorted.

-PD 2-Wire PWM Positive Dimming Scheme



% Output Current Vs. 1.0KHz Positive Duty Cycle Dimming Input



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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	—	—	1.60 A	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.74 A	Measured at 277Vac/60Hz Input, Output Full load.
Inrush Current (Peak) Ipk 10%Pw @ 120V ≤ 620µsec Ipk 10%Pw @ 277V ≤ 880µsec	—	—	50 A	Measured at 120Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start
	—	—	70 A	Measured at 277Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start
Leakage Current	—	—	0.50mA	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.75mA	Measured at 277Vac/60Hz Input, Output Full load.
THD	—	—	20%	Measured at 120/230Vac ≥ 60% Load, 277Vac ≥ 70% Load
Power Factor (PF)	0.90	—	—	Measured at 120, 230, 277Vac Input, Output ≥ 60% Load

Output Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
DC Output Voltage	Per Table	—	Per Table	Per Tables on Page 2
DC Output Constant Current	-5%	Per Table	+5%	Per Tables on Page 2
Output Power	—	—	Per Table	Per Tables on Page 2
Ripple & Noise (Vpk-pk)	—	—	5% Vo	20 MHz BW, Full load output in parallel with 0.1 µF ceramic & 10 µF Electrolytic.
Ripple (Ipk-pk)	—	—	5% Io	20 MHz BW, Full load output in parallel with 0.1 µF ceramic & 10 µF Electrolytic. 120 Hz component
Start-up Time	—	—	500 mS	Measured at 120Vac/60Hz Input, Output Full load, VDim = 10.0V
Output Overshoot	-2%	—	+10%	Measured at 120Vac/60Hz Input, Output Full load @ AC Power ON

Environmental Specifications

Parameter	Min.	Typ.	Max.	Notes/Conditions
Case Temperature (Tc)	-40 °C	—	+90 °C	Measured at location specified on case.
Operating Temperature (Ta)	-40 °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	335,000 Hours	—	—	MIL-HDBK-217F Notice 2, Tc = 80C, 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)	—	—	+10% Io	Constant Current Limiting circuit.
Output Over Voltage (OVP)	—	—	+20% Vo	No Damage, Auto recovery after fault is removed.

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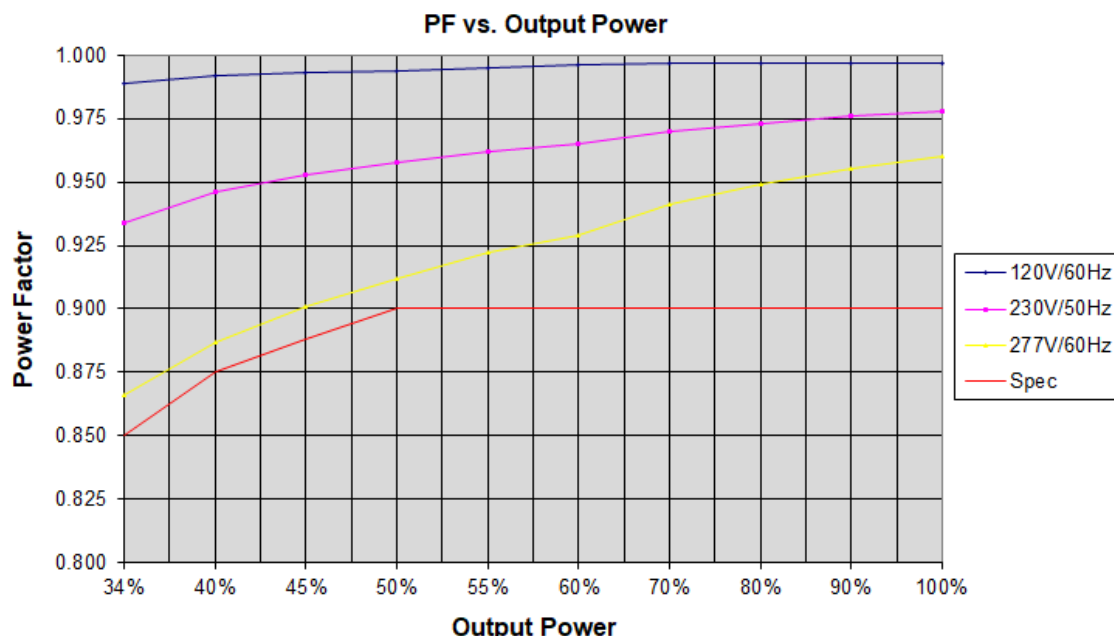
Safety Compliance

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, EN62493
Dielectric Withstand Voltage	Input to Output & Dimming: 3750 Vac (CE, ENEC covers UL 2000V requirement) Dimming to Output: 2500 Vac
Isolation Resistance	Input to Output: >100 MΩ, 500VDC @ 25 °C, 70 % RH
0-10V Class 2 Isolated Dimming Circuit	Dim+ VIOLET/Dim- PINK are Class 2 Isolated from all other inputs & outputs. 0-10VDC Dimming suitable for Class 1 or Class 2 circuit.
FG	The metal case of the driver must be connected to earth ground (FG) in the end-use application.
Sound Rating	<24dB Class A @ 1 Meter

EMC Compliance

Standard	Notes/Conditions
FCC, 47 CFR Part 15 ANSI C63.4	Class B @120Vac, Class A @ 277Vac
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, 4kV L-N, 6kV 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. 2.5kV L-N, 5.0kV L-G & N-G

Power Factor Curves (Typical)



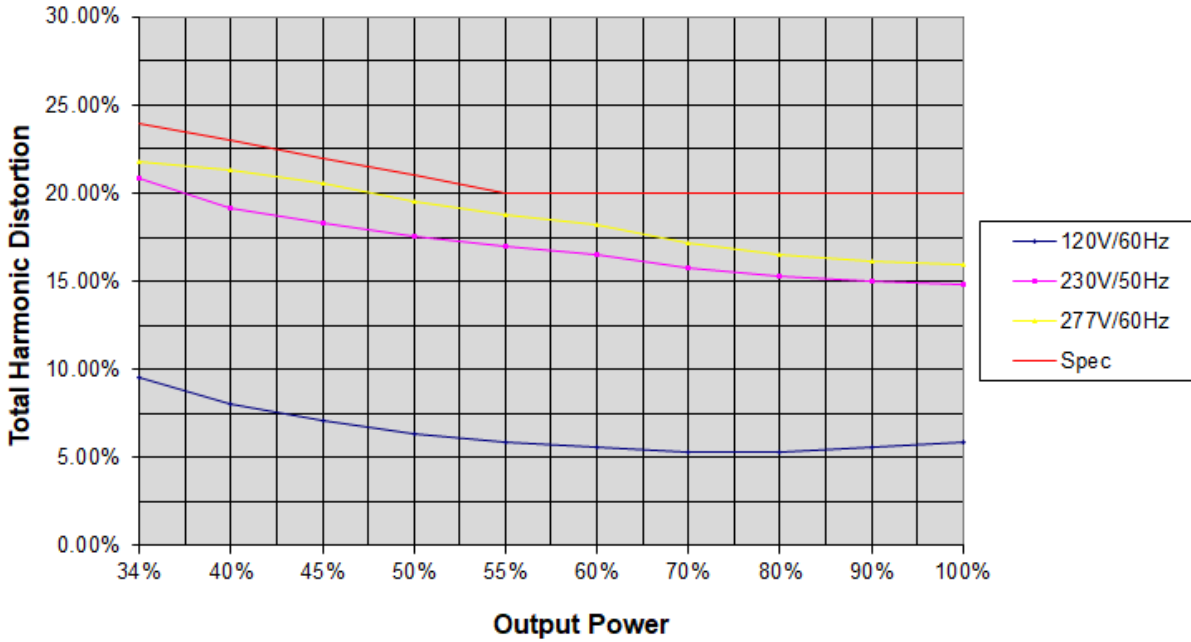
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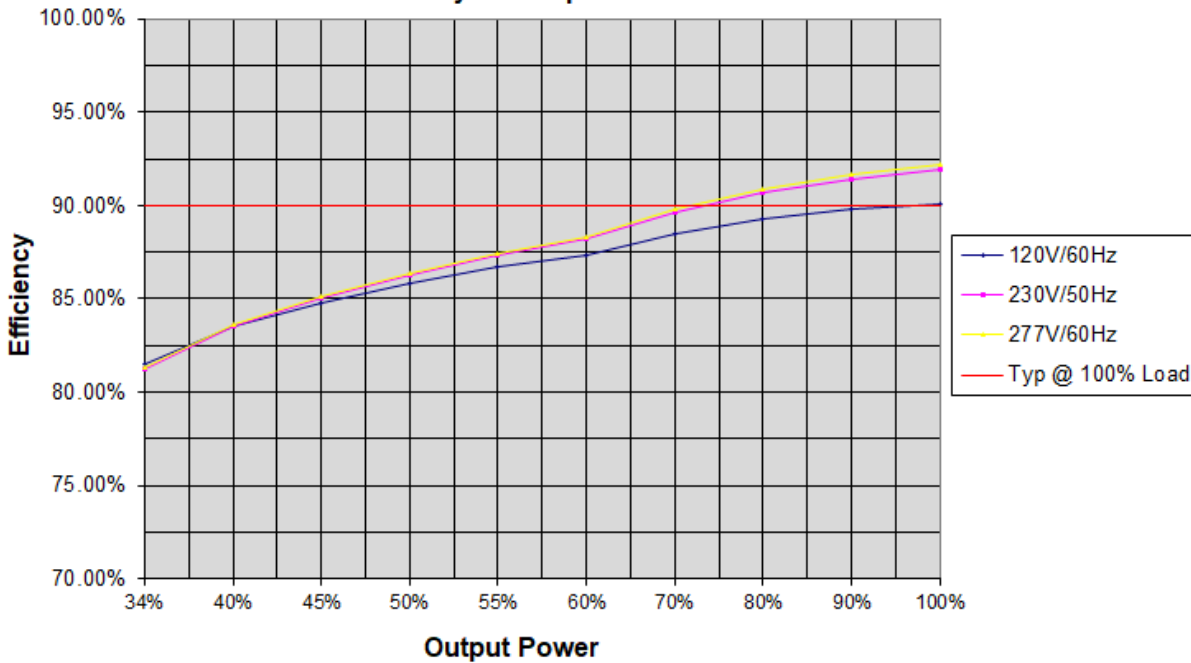
THD Curves (Typical)

THD vs. Output Power



Efficiency Curve (Typical)

Efficiency vs. Output Power



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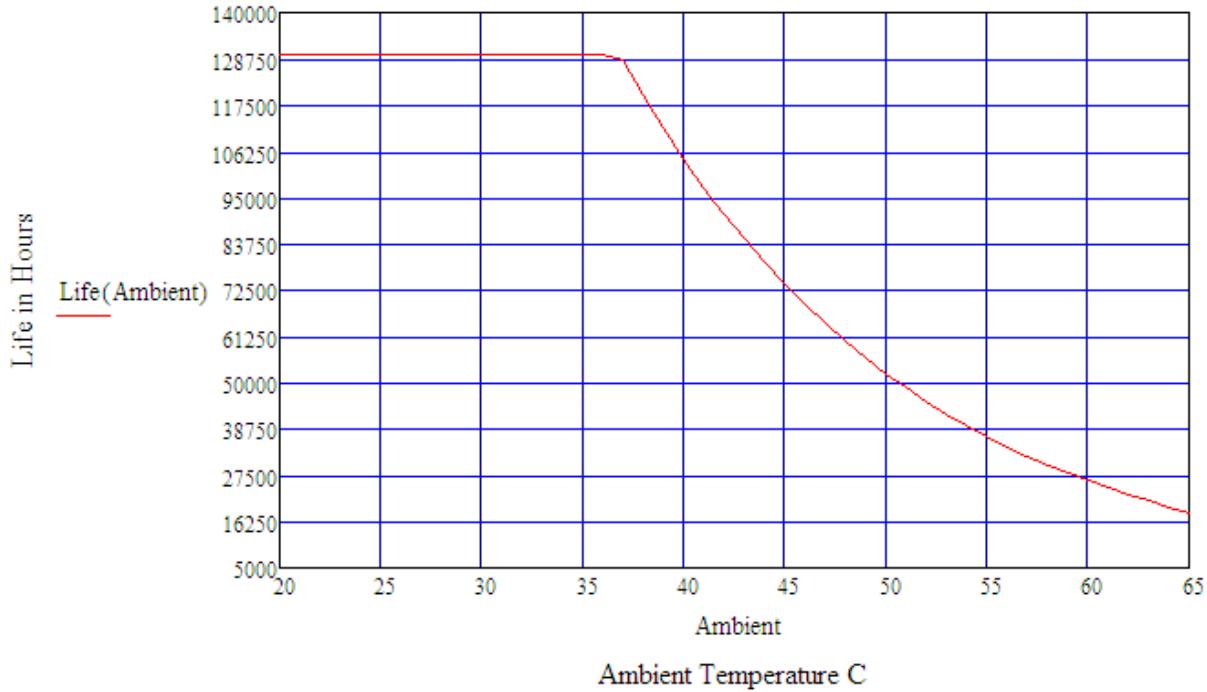
LED Optimized Drivers

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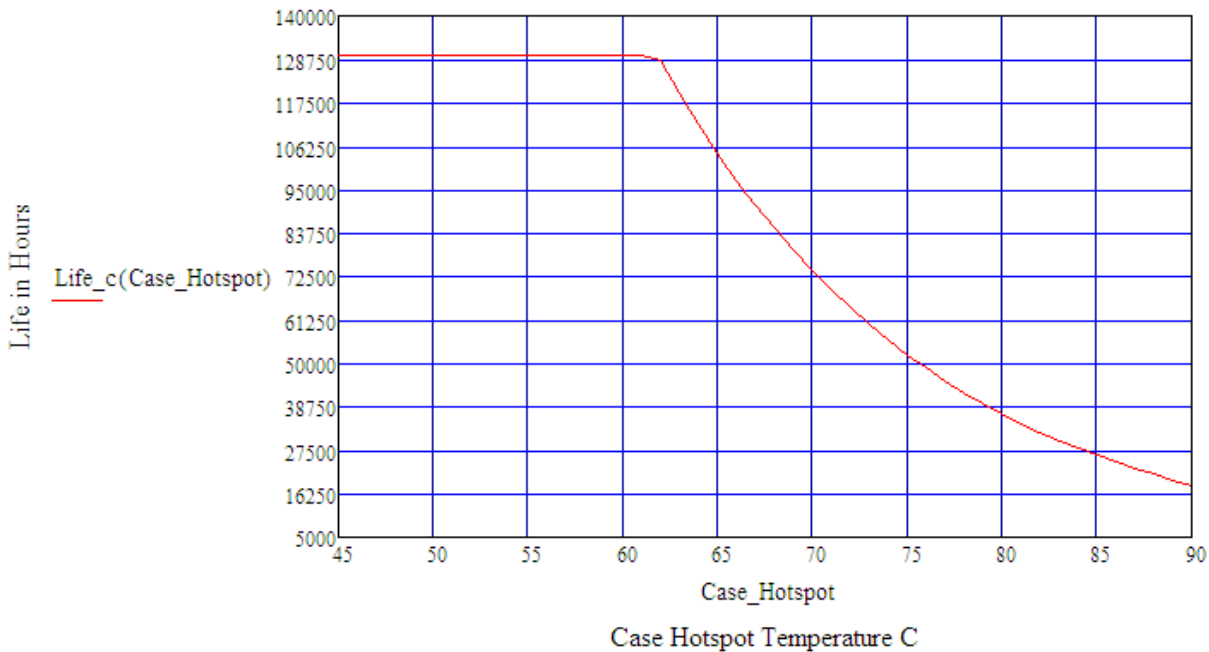
Life vs. Ambient Temperature

LD150W Estimated Life Full Load @ 120Vac



Life vs. Case (Tc) Temperature

LD150W Estimated Life Full Load @ 120Vac





LED Optimized Drivers

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Revision History

REV - Change Date	Description of Changes		
	Items	Changed From	Changed To
REV B - 08/18/2020	Initial spec release	REV A1.3 non-isolated dimming	REV B Isolated Dimming
REV B - 06/18/2021	DIM Wire Colors	PURPLE/GREY	VIOLET/PINK, per NEMA 100
REV B - 12/20/2021	Inrush Current Page 1 & 5	Old Values	Corrected to proper values

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