

200 Watt - LD200W Series

CONSTANT VOLTAGE OR CONSTANT CURRENT LED DRIVER WITH DIMMING



200W
 LD200W Series
 DIMMING

Model: LD200W Series

- Drive Mode: Constant Current or Constant Voltage
- Technology: PFC Corrected 2-Stage Switch Mode
- Output Power: 200W Max.
- Input Voltage: 120 to 277VAC, 47 - 63Hz
- Number of Outputs: One
- Output Voltages: 8VDC - 445VDC
- Output Currents: 450mA - 8330mA
- 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: 330,000 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: $< 110A$ 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: 940 grams (33.2 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 / 538-0700

Part Number: LD200W-40-C4900-PRD
 Input Voltage: 120-277VAC 50/60Hz
 Input Current: 2.05 Amp Max @ 120Vac
 Output Voltage: 14-40 VDC, 200W Maximum
 Output Current: 4900 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)

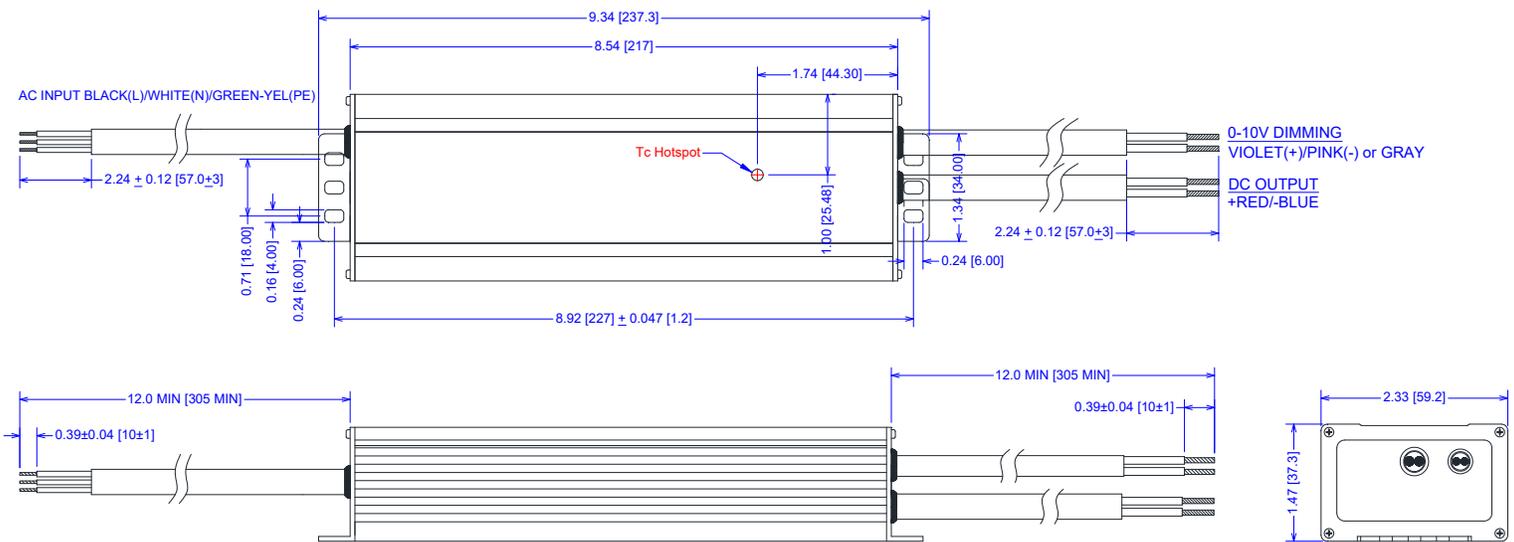
IP67 CE
 LISTED E325626
 DC OUTPUT
 + = RED
 - = BLUE

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

AC INPUT
 LINE = BLACK
 NEUT = WHITE
 (PE) GND = GREEN/YEL

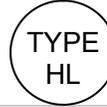
YG

Made in China REV: B



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IP67



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⁾
LD200W-445-C0450-PRD	HL	149 - 445 VDC	450 mA	± 5%	200W	92%
LD200W-285-C0700-PRD	HL	95 - 285 VDC	700 mA	± 5%	200W	92%
LD200W-190-C1050-PRD	HL	64 - 190 VDC	1050 mA	± 5%	200W	91%
LD200W-142-C1400-PRD	HL	48 - 142 VDC	1400 mA	± 5%	200W	91%
LD200W-114-C1750-PRD	HL	38 - 114 VDC	1750 mA	± 5%	200W	91%
LD200W-95-C2100-PRD	HL	32 - 95 VDC	2100 mA	± 5%	200W	91%
LD200W-81-C2450-PRD	HL	27 - 81 VDC	2450 mA	± 5%	200W	90%
LD200W-71-C2800-PRD	HL	24 - 71 VDC	2800 mA	± 5%	200W	90%
LD200W-63-C3150-PRD	HL	21 - 63 VDC	3150 mA	± 5%	200W	90%
LD200W-57-C3500-PRD	HL	19 - 57 VDC	3500 mA	± 5%	200W	90%
LD200W-48-C4160-PRD	HL	16 - 48 VDC	4160 mA	± 5%	200W	89%
LD200W-40-C4900-PRD	HL	14 - 40 VDC	4900 mA	± 5%	200W	89%
LD200W-36-C5500-PRD	HL	12 - 36 VDC	5500 mA	± 5%	200W	89%
LD200W-35-C5600-PRD	HL	12 - 35 VDC	5600 mA	± 5%	200W	89%
LD200W-24-C8330-PRD	HL	8 - 24 VDC	8330 mA	± 5%	200W	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⁾
LD200W-445-P	HL	445 VDC	113 - 450 mA	± 5%	200W	92%
LD200W-285-P	HL	285 VDC	175 - 700 mA	± 5%	200W	92%
LD200W-190-P	HL	190 VDC	263 - 1050 mA	± 5%	200W	91%
LD200W-142-P	HL	142 VDC	350 - 1400 mA	± 5%	200W	91%
LD200W-114-P	HL	114 VDC	438 - 1750 mA	± 5%	200W	91%
LD200W-95-P	HL	95 VDC	525 - 2100 mA	± 5%	200W	91%
LD200W-81-P	HL	81 VDC	613 - 2450 mA	± 5%	200W	90%
LD200W-71-P	HL	71 VDC	700 - 2800 mA	± 5%	200W	90%
LD200W-63-P	HL	63 VDC	788 - 3150 mA	± 5%	200W	90%
LD200W-57-P	HL	57 VDC	875 - 3500 mA	± 5%	200W	90%
LD200W-48-P	HL	48 VDC	1040 - 4160 mA	± 5%	200W	89%
LD200W-40-P	HL	40 VDC	1225 - 4900 mA	± 5%	200W	89%
LD200W-36-P	HL	36 VDC	1375 - 5500 mA	± 5%	200W	89%
LD200W-35-P	HL	35 VDC	1400 - 5600 mA	± 5%	200W	89%
LD200W-24-P	HL	24 VDC	2083 - 8330 mA	± 5%	200W	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: LD200W-24-C8330-P is non-dimmable version, LD200W-24-C8330-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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200W
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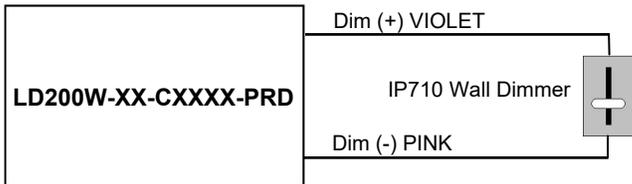
-RD 2-Wire 0-10V CCR Dimming Scheme

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

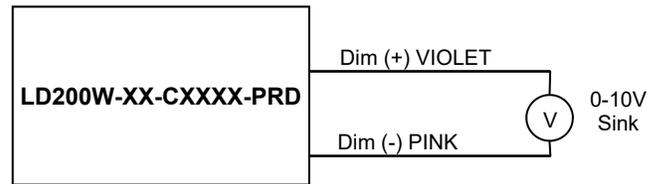
Notes

1. -RD 0-10V dimmable version comes with an extra two wires +VIOLET/-PINK on the output side.
2. -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
3. -RD 0-10V dimmable version will be $\leq 5\%$ @ $\leq 1.0V$ or with VIOLET/PINK Shorted.
4. -RD 0-10V dimmable version output will be 100% with VIOLET/PINK open and minimum with VIOLET/PINK Shorted.

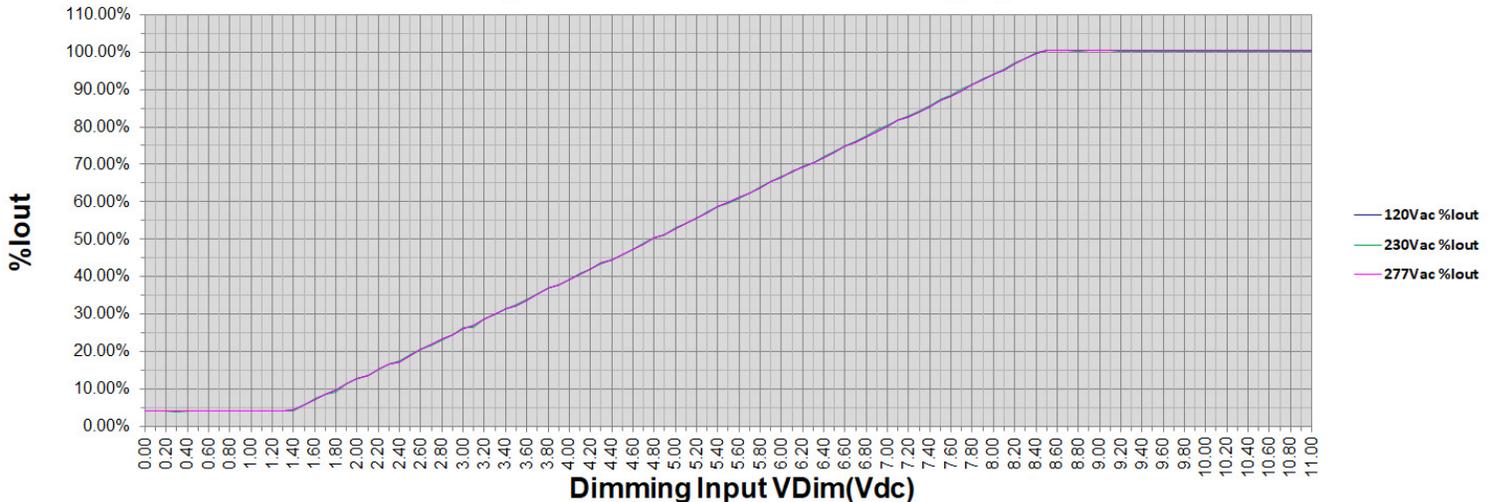
-RD 2-Wire Resistance Dimming Scheme



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



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



200 Watt - LD200W Series

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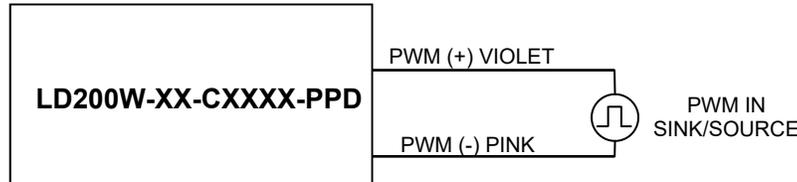
-PD 2-Wire CCR PWM Positive Dimming Scheme

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%

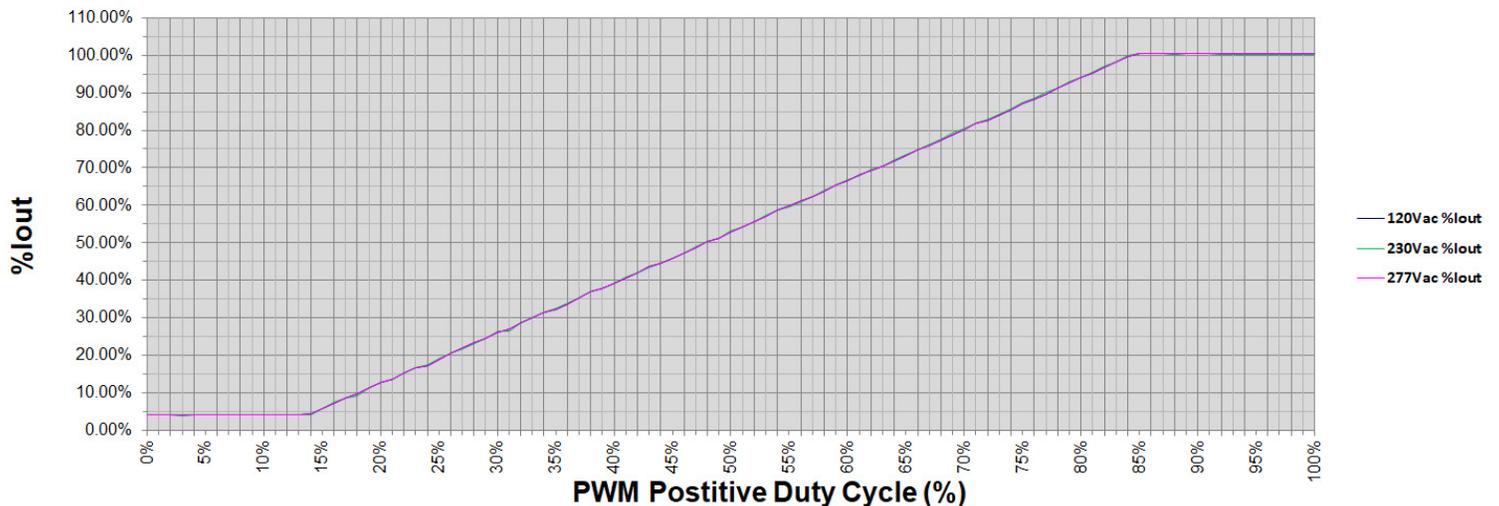
Notes

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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200W
 LD200W Series
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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	—	—	2.05 A	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.98 A	Measured at 277Vac/60Hz Input, Output Full load.
Inrush Current (Peak)	—	—	80 A	Measured at 120Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start
Ipk 10%Pw @120V≤600usec	—	—	110 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	330,000 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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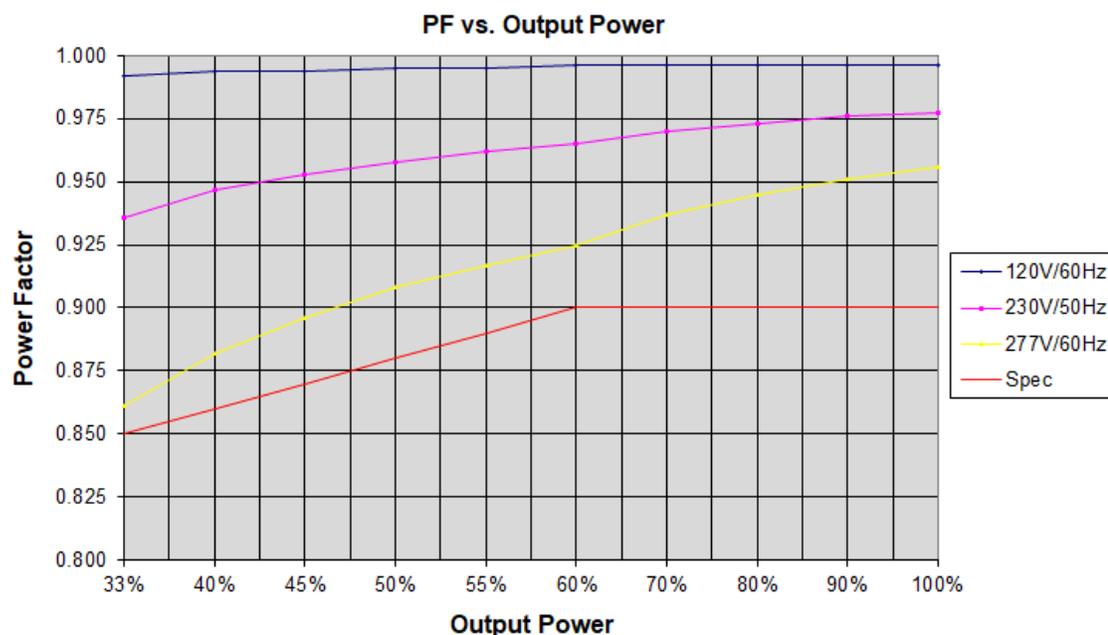
Safety Compliance

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)



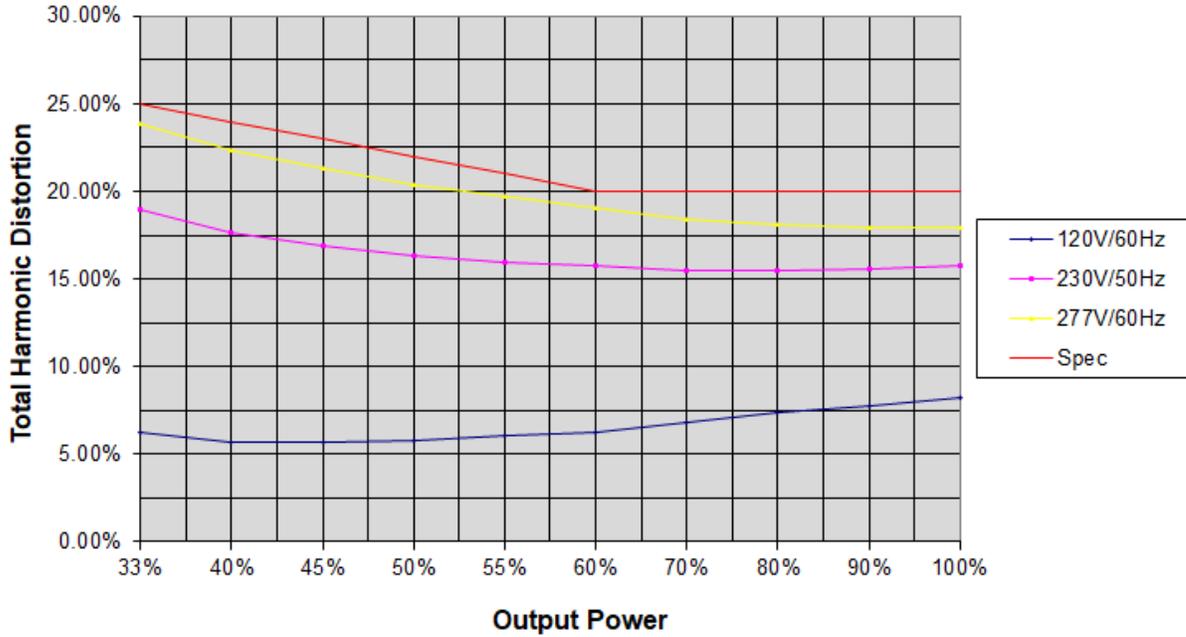
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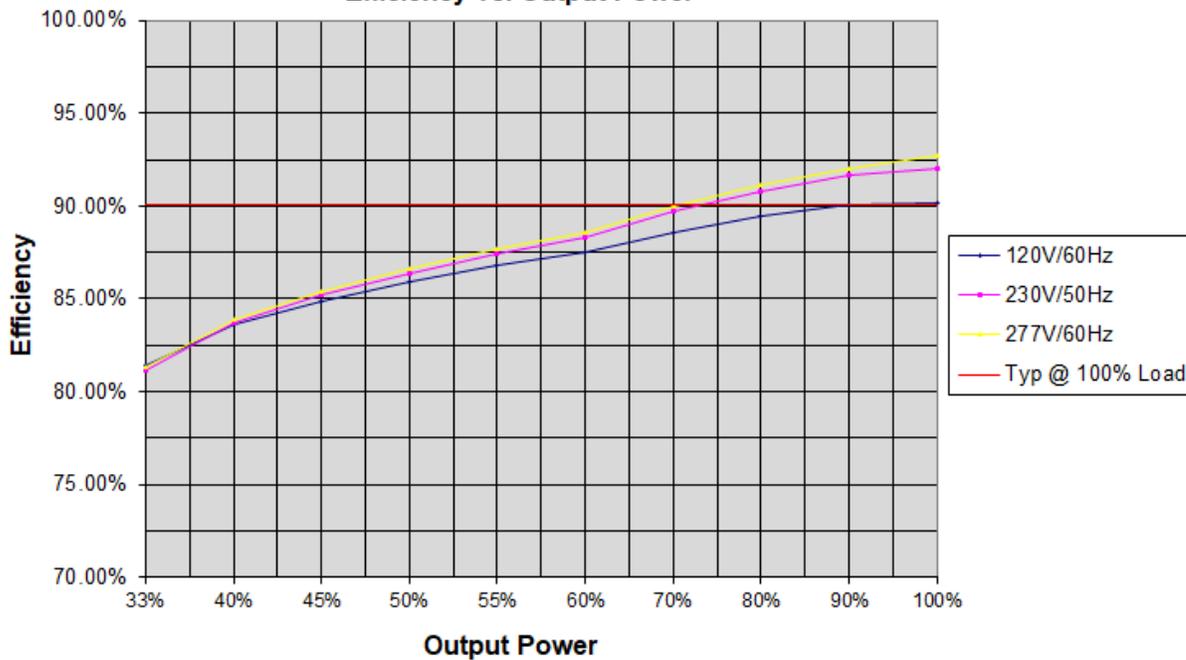
THD Curves (Typical)

THD vs. Output Power



Efficiency Curve (Typical)

Efficiency vs. Output Power

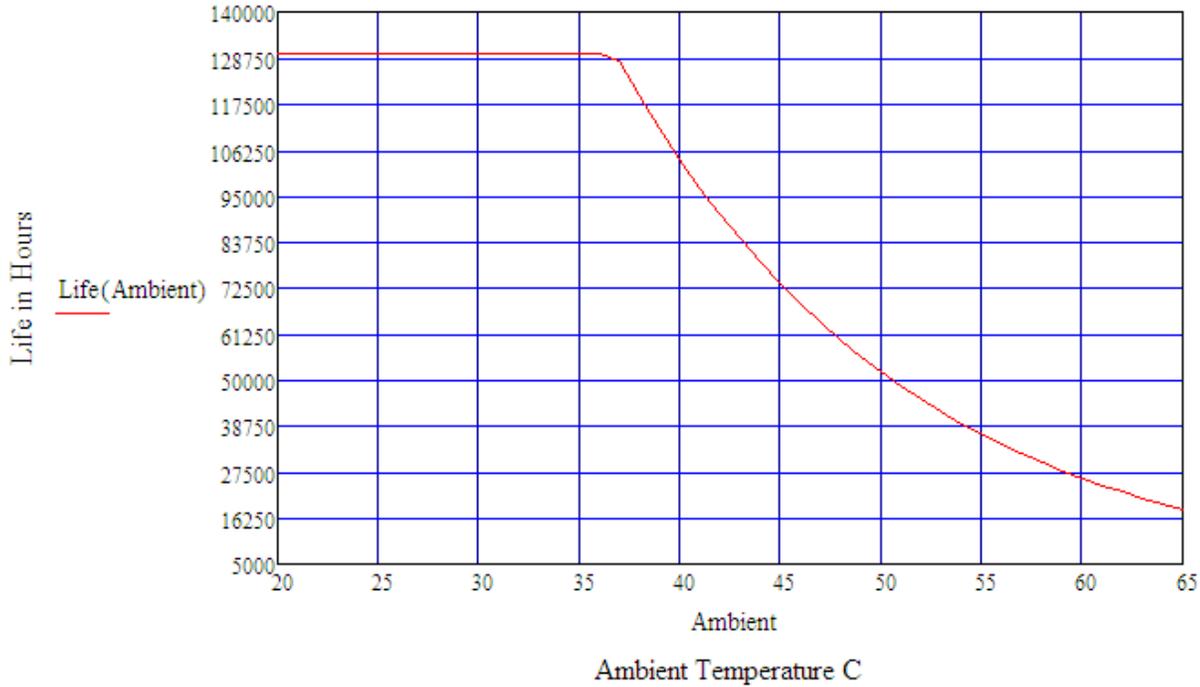


200 Watt - LD200W Series

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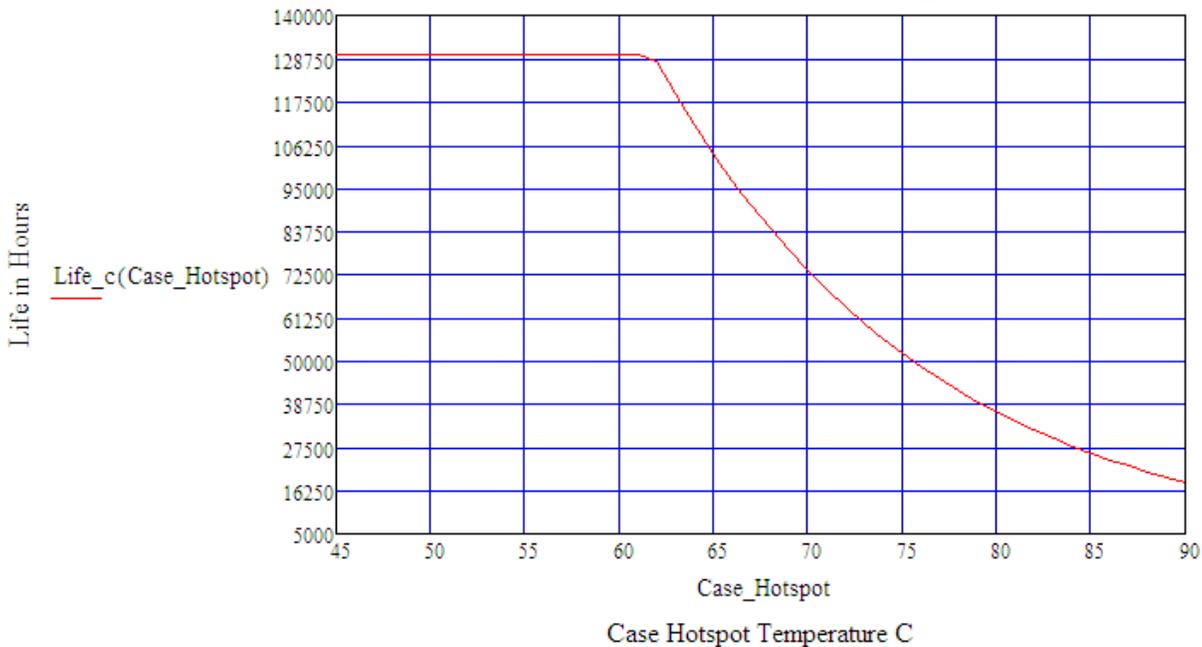
Life vs. Ambient Temperature

LD200W Estimated Life Full Load @ 120Vac



Life vs. Case (Tc) Temperature

LD200W 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 - 12/22/2021	Inrush Current Page 1 & 5	Old Values	Corrected to proper values

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