

## 30 Watt - LD30W Series

CONSTANT VOLTAGE OR CONSTANT CURRENT LED DRIVER WITH DIMMING



DIMMING  
LD30W Series  
**30W**

### Model: LD30W Series

- Drive Mode: Constant Current or Constant Voltage
- Technology: PFC Off-Line Switch Mode
- Output Power: 30W Max.
- Input Voltage: 90 to 305VAC, 47-63Hz
- Number of Outputs: One
- Output Voltages: 4VDC - 85VDC
- Output Currents: 350mA - 2500mA
- Optional 0-10V or PWM Positive Dimming 10% ~ 100%

### 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: 474,000 hours @ Full Load per MIL-217F Notice 2.

### Safety and Compliance

1. UL8750, EN61347, CSA 22.2 safety compliant
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:  $\geq 0.90$  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:  $<30A$  at 25C, 277Vac, cold start, Max. Load
- Input current: 0.30A at 120Vac, 60Hz, Maximum Load
- Efficiency: 85% typical at 230Vac Full Load
- Constant Current regulation:  $\pm 3\%$  Over Input Line Variation
- Load regulation accuracy:  $\pm 4\%$
- Leakage current: 400uA typical; Hold up time: half cycle



IP66



### Constant Current Versions

Part Number <sup>(2)</sup>	US Class 2	CN Class 2	Output Voltage Range	Output Constant Current	Current Accuracy	Output Power Maximum	Typical Efficiency <sup>(1)</sup>
LD30W-85-C0350	NO	NO	28 - 85 VDC	350 mA	$\pm 3\%$	30W	86%
LD30W-75-C0400	NO	NO	25 - 75 VDC	400 mA	$\pm 3\%$	30W	86%
LD30W-66-C0450	NO	NO	22 - 66 VDC	450 mA	$\pm 3\%$	30W	85%
LD30W-54-C0560	YES	NO	18 - 54 VDC	560 mA	$\pm 3\%$	30W	85%
LD30W-42-C0700	YES	NO	14 - 42 VDC	700 mA	$\pm 3\%$	30W	85%
LD30W-36-C0830	YES	YES	12 - 36 VDC	830 mA	$\pm 3\%$	30W	84%
LD30W-24-C1250	YES	YES	8 - 24 VDC	1250 mA	$\pm 3\%$	30W	84%
LD30W-18-C1660	YES	YES	6 - 18 VDC	1660 mA	$\pm 3\%$	30W	83%
LD30W-12-C2500	YES	YES	4 - 12 VDC	2500 mA	$\pm 3\%$	30W	83%

### Notes

1. Typical efficiency measured at 230VAC input, full load
2. For dimmable versions add appropriate designator to the end of the part number: For Example: LD30W-18-C1660-RD is 0-10V or resistance dimmable version, LD30W-18-C1660-PD is PWM dimmable version.  
-RD 0-10V & Resistance dimmable version comes with an extra two wires +Purple/-Grey on the output side.  
-PD PWM Dimmable version comes with an extra two wires +Purple/-Grey on the output side.
3. -RD 0-10V Dimming is compatible with most quality 0-10V wall dimmers and direct 0-10V analog signal. See page 3 for details.
4. -PD PWM version is PWM Dimmable via a positive 10% to 100% Duty Cycle, 500Hz to 1.5KHz, 0-10V Pulse. See page 4 for details.

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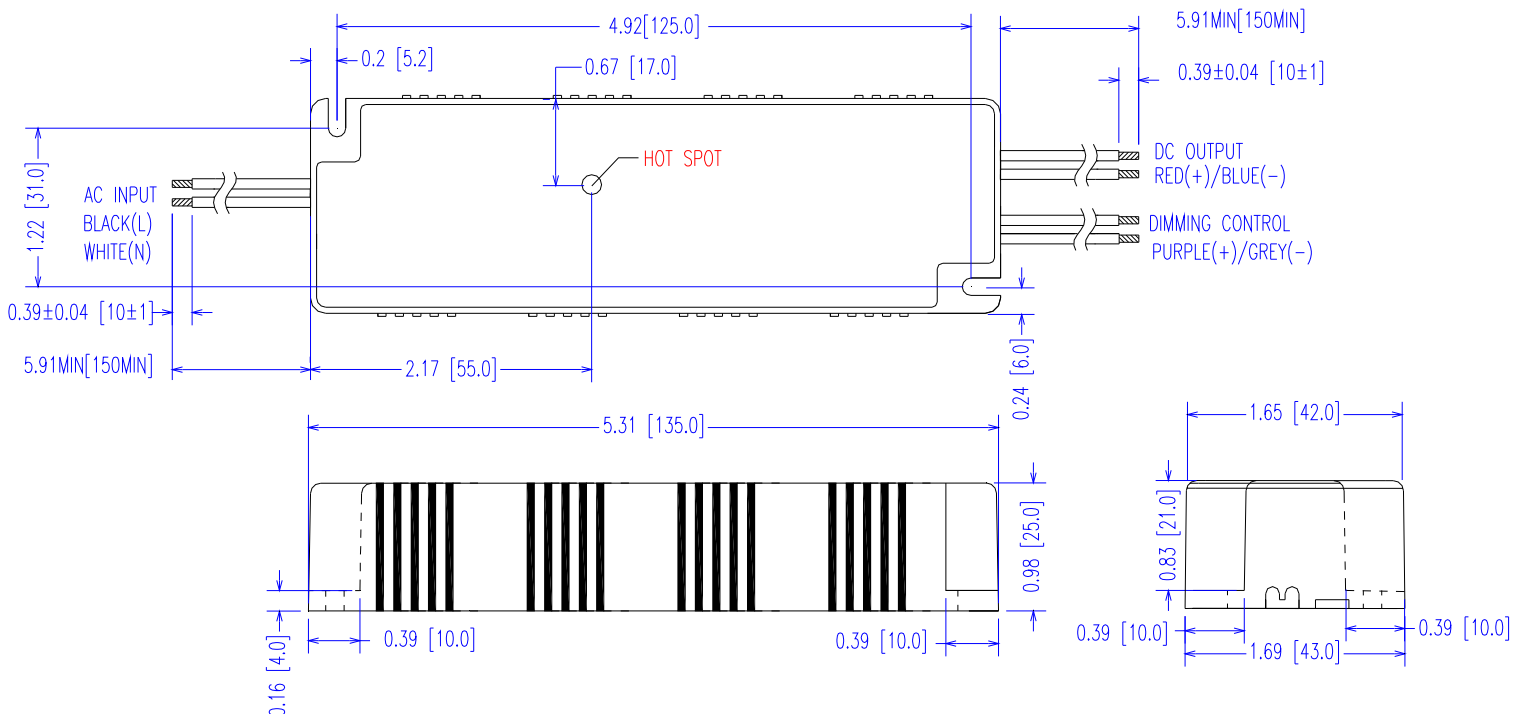
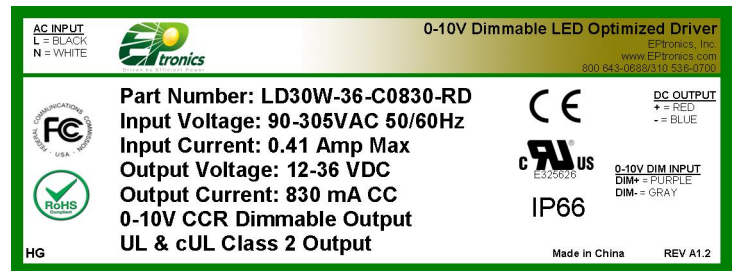
CONSTANT VOLTAGE OR CONSTANT CURRENT LED DRIVER WITH DIMMING

**Constant Voltage Versions**

Part Number	US Class 2	CN Class 2	Output Voltage	Output Current Range	Voltage Accuracy	Output Power Maximum	Typical Efficiency <sup>(1)</sup>
LD30W-85	NO	NO	85 VDC	88 - 350 mA	± 5%	30W	86%
LD30W-75	NO	NO	75 VDC	100 - 400 mA	± 5%	30W	86%
LD30W-66	NO	NO	66 VDC	113 - 450 mA	± 5%	30W	85%
LD30W-54	YES	NO	54 VDC	140 - 560 mA	± 5%	30W	85%
LD30W-42	YES	NO	42 VDC	175 - 700 mA	± 5%	30W	85%
LD30W-36	YES	YES	36 VDC	208 - 830 mA	± 5%	30W	84%
LD30W-24	YES	YES	24 VDC	313 - 1250 mA	± 5%	30W	84%
LD30W-18	YES	YES	18 VDC	415 - 1660 mA	± 5%	30W	83%
LD30W-12	YES	YES	12 VDC	625 - 2500 mA	± 5%	30W	83%

**Mechanical Dimensions: Inches [mm]**

Material: Black PC ABS Plastic Case  
Fully Encapsulated  
Weight: 233 grams (8.2 oz) Typical

**Labeling Example**

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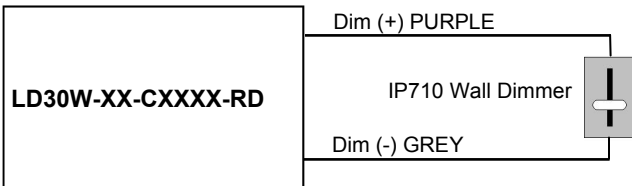
### -RD 2-Wire 0-10V CCR Dimming Scheme

Parameters	Minimum	Typical	Maximum
Source Current out of 0-10V Purple Wire	0mA	—	2mA
Absolute Voltage Range on 0-10V (+) Purple Wire	-2.0V	—	+15V
Sink Current into 0-10V Purple Wire	0mA	—	1.2mA

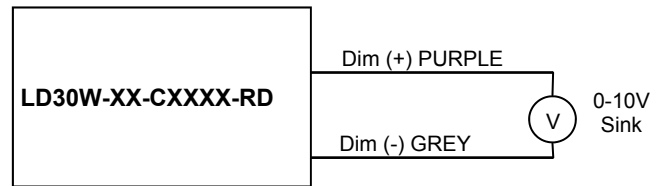
### Notes

- RD 0-10V dimmable version comes with an extra two wires +Purple/-Grey 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 is not intended to dim below about 5% @ 0V or 10% @ 1.0V
- RD 0-10V dimmable version output will be 100% with Purple/Grey open and minimum with Purple/Grey Shorted.

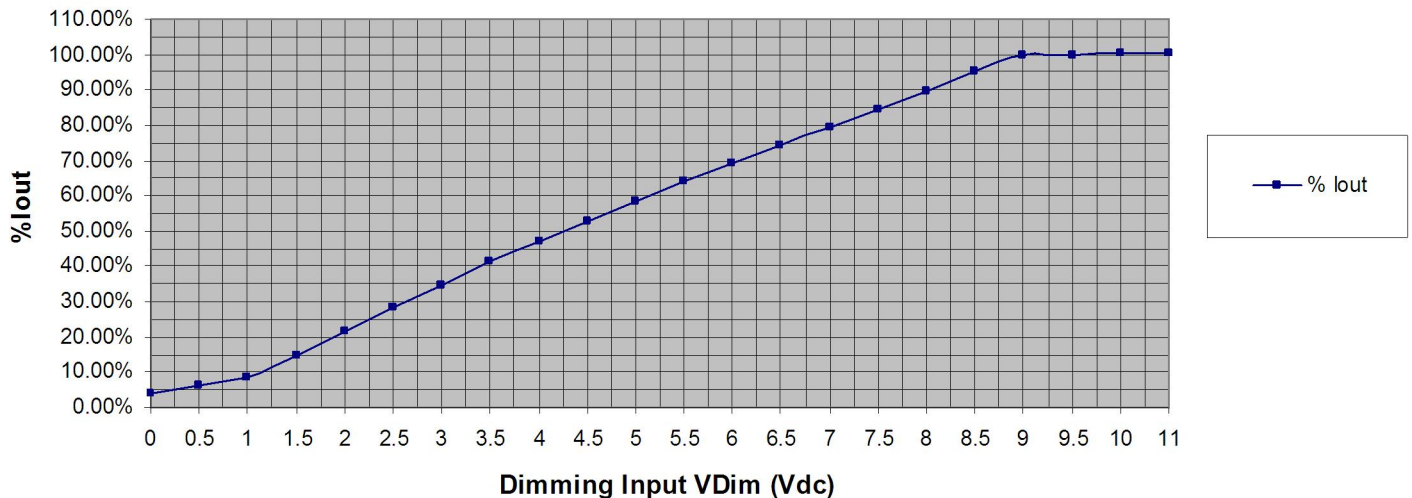
### -RD 2-Wire Resistance Dimming Scheme



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



% Output Current vs. 0-10VDC Dimming Input



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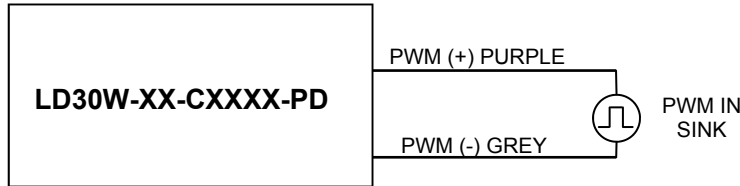
## -PD 2-Wire CCR PWM Positive Dimming Scheme

Parameters	Minimum	Typical	Maximum
Absolute Maximum Voltage Range on PWM Input (Purple Wire)	-2.0V	10V	+15V
Input LOW Level Voltage Range (Purple Wire)	-2.0V	0V	+5.5V
Input HIGH Level Voltage Range (Purple Wire)	+9.0V	10V	+15V
Current into PWM Input (Purple Wire)	0mA	—	1.2mA
Source Current out of PWM Input (Purple Wire)	0mA	—	2mA
PWM Input Signal Frequency	500Hz	—	1500Hz
PWM Input Signal Positive Duty Cycle	0%	10-90%	100%

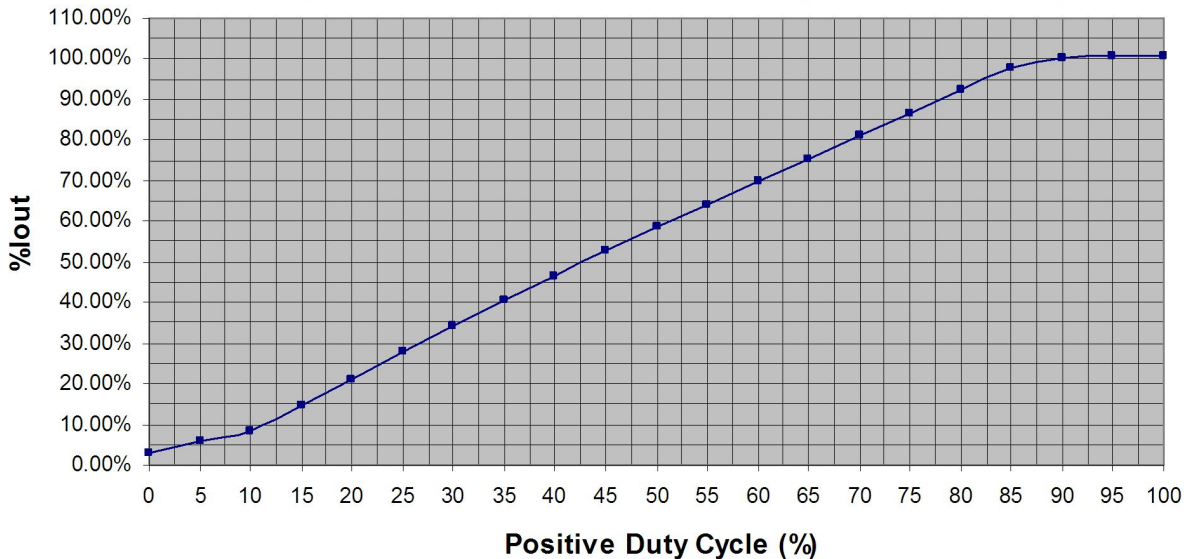
### Notes

1. -PD PWM Dimmable version comes with an extra 2 wires +Purple/-Grey on the output side.
2. -PD PWM Dimmable version is not intended to dim below about 5% @ 0% Duty Cycle or 10% @ 10% Duty Cycle
3. -PD PWM dimmable version output will be 100% with Purple/Grey open and minimum with Purple/Grey Shorted.

## -PD 2-Wire PWM Positive Dimming Scheme



% Output Current vs. 1.0 kHz, Positive Duty Cycle 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	—	—	0.30 A	Measured at 120Vac/60Hz Input, Output Full load.
	—	—	0.14 A	Measured at 230Vac/60Hz Input, Output Full load.
Inrush Current (Peak)	—	—	30A	Measured at 277Vac/60Hz Input, Output Full Load, Ta 25°C, Cold Start 50% I <sub>peak</sub> duration $\approx$ 750 $\mu$ sec (1/2*I <sub>p</sub> <sup>2</sup> *t)
Inrush Current (I <sup>2</sup> t)	—	—	0.34 A <sup>2</sup> 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%	$\geq$ 60% Load @ 120Vac/230Vac, $\geq$ 80% Load @ 277Vac
Power Factor (PF)	0.90	—	—	$\geq$ 60% 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	-3%	Per Table	+3%	Per Tables on Page 1
Output Power	—	—	Per Table	Per Tables on Page 1
Ripple & Noise (V <sub>pk-pk</sub> )	—	—	20% V <sub>o</sub>	20 MHz BW, Full load output in parallel with 0.1 $\mu$ F ceramic & 10 $\mu$ F Electrolytic.
Ripple (I <sub>pk-pk</sub> )	—	—	50% I <sub>o</sub>	20 MHz BW, Full load output in parallel with 0.1 $\mu$ F ceramic & 10 $\mu$ F Electrolytic. 120 Hz component
Start-up Time	—	700 mS	1000 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 <sub>c</sub> )	-30 °C	—	+90 °C	Measured at location specified on case.
Operating Temperature (T <sub>a</sub> )	-30 °C	—	+60 °C	This is a reference range. T <sub>c</sub> controls temperature range.
Storage Temperature (T <sub>s</sub> )	-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	474,000 Hours	—	—	MIL-HDBK-217F Notice 2, T <sub>a</sub> = 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 <sub>o</sub>	Constant Current Limiting circuit.
Output Over Voltage (OVP)	—	—	120% V <sub>o</sub>	No Damage, Auto recovery after fault is removed.

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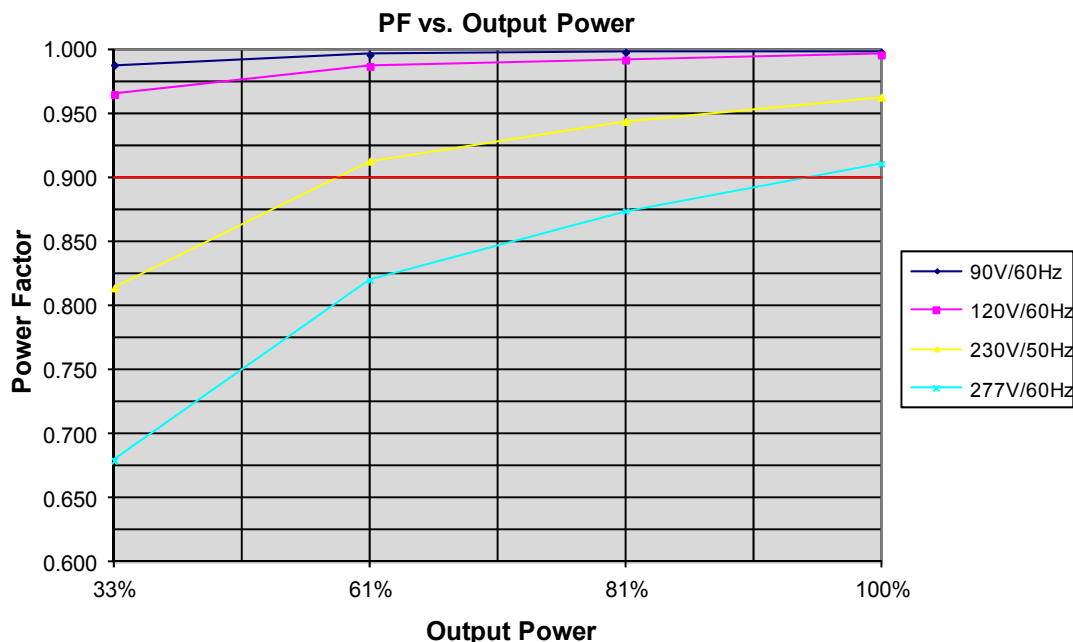
## Safety Compliance

Safety	Notes/Standards
UL/CUL	UL8750 & CAN/CSA-22.2 No. 250.13-12, UL1310 & CAN/CSA-22.2 No. 223-M91 for Class 2, UL1012/CSA-C22.2 No. 107.1 for Non Class 2
CE	EN61347-1, EN61347-2-13
Withstand Voltage	Input to Output: 3750 Vac
Isolation Resistance	Input to Output: >100 M $\Omega$ , 500VDC @ 25 °C, 70 % RH
Dimming Circuit	Dim+ Purple/Dim- Grey are considered part of the secondary circuit.

## EMC Compliance

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, $\geq 80\%$ 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)



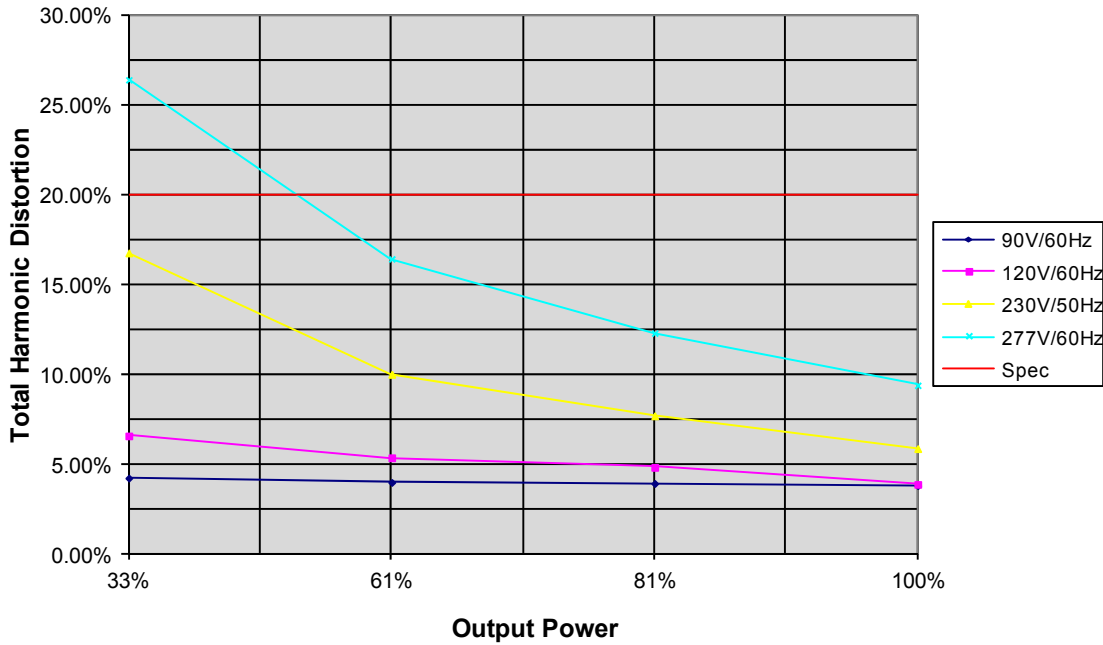
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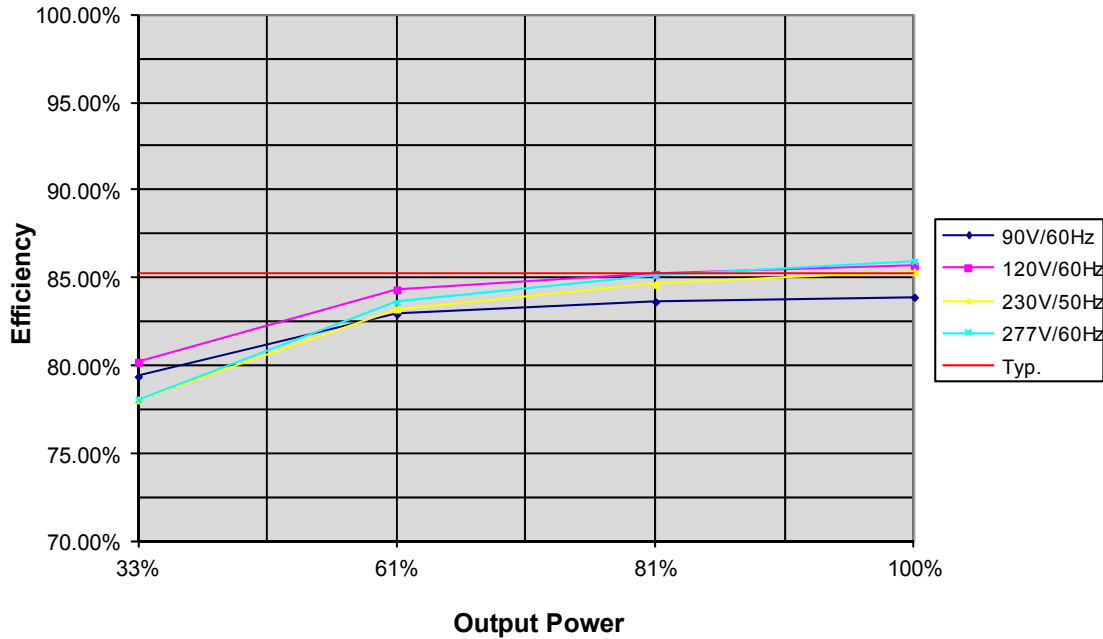
### THD Curves (Typical)

THD vs. Output Power



### Efficiency Curve (Typical)

Efficiency vs. Output Power



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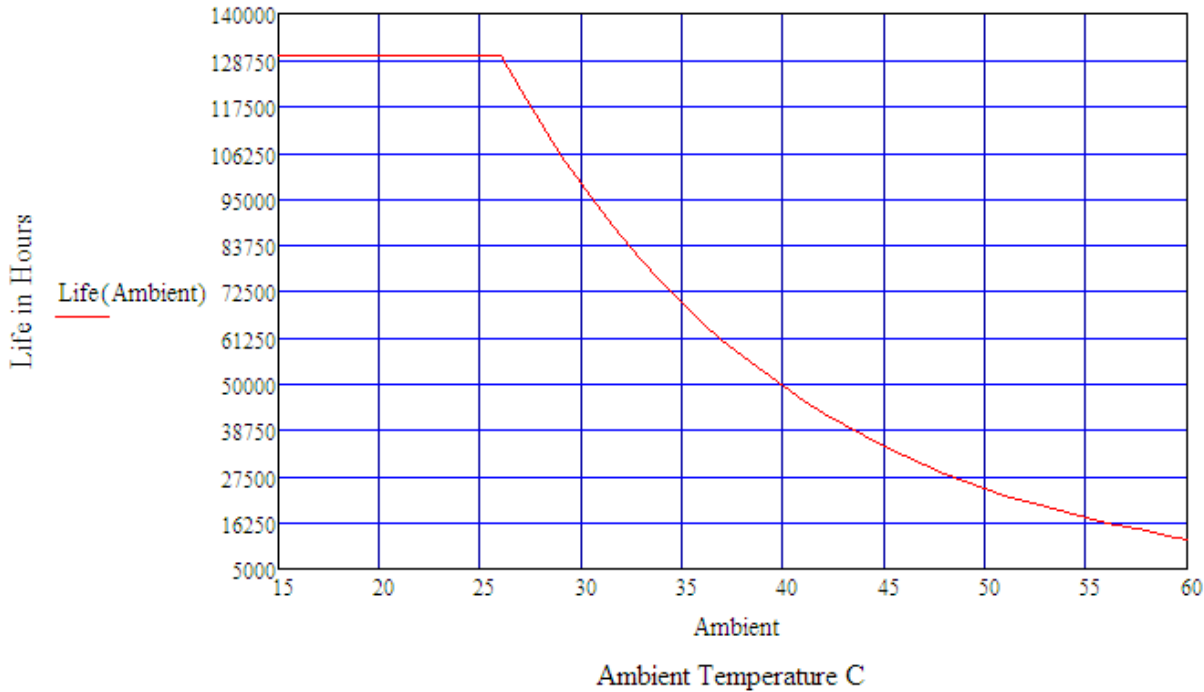
LED Optimized Drivers

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## Life vs. Ambient Temperature

LD30W Estimated Life Full Load @ 120Vac



## Life vs. Case (Tc) Temperature

LD30W Estimated Life Full Load @ 120Vac

