DLE45/60 Series

LED Drivers

XP Power

45/60 Watts

- AC Input LED Driver
- Constant Voltage/Constant Current Operation
- Constant Current Dimming Versions
- High Efficiency
- Water Proof to IP67
- Class 2
- 3 Year Warranty

The DLE series of AC input LED drivers incorporate universal input with active power factor correction in a two power stage design, eliminating flicker while providing a high efficiency solution. Designed as a class II isolation product, without the need for a safety earth, DLE series LED drivers are also approved as a class 2 limited power source, making them suitable for a wide range of applications. Dimmable constant current versions are available with the facility for PWM, voltage and resistance programming.

Dimensions:

DLE45/60:
6.73 x 1.78 x 1.27" (164.1 x 45.3 x 32.5 mm)

Models & Ratings - Constant Voltage / Constant Current Models

Output Power	Output Voltage	Output Current	Output Voltage Range in Constant Current Mode	OVP Range	Efficiency[1]	Model Number
45 W	24 V	1850 mA	16 - 24 V	26.4-31.2 V	85.0%	DLE45PS24
45 W	36 V	1250 mA	24 - 36 V	39.6-46.8 V	86.0%	DLE45PS36
48 W	48 V	1000 mA	34 - 48 V	52.8-62.4 V	87.0%	DLE45PS48
40 W	57 V	700 mA	40 - 57 V	62.9-70.0 V	87.0%	DLE45PS57
50 W	12 V	4200 mA	9 - 12 V	13.2-15.6 V	86.0%	DLE60PS12
60 W	24 V	2500 mA	16 - 24 V	26.4-31.2 V	86.0%	DLE60PS24
60 W	36 V	1650 mA	24 - 36 V	39.6-46.8 V	87.0%	DLE60PS36
60 W	48 V	1250 mA	34 - 48 V	52.8-62.4 V	88.0%	DLE60PS48
60 W	57 V	1050 mA	40 - 57 V	62.9-70.0 V	88.0%	DLE60PS57

Models & Ratings - Dimmable Models

Output Power	Output Voltage	Output Current	Output Voltage Range in Constant Current Mode	OVP Range	Efficiency[1]	Model Number
45 W	24 V	1850 mA	16 - 24 V	26.4-31.2 V	85.0%	DLE45PS1850-AD
45 W	36 V	1250 mA	24 - 36 V	39.6-46.8 V	86.0%	DLE45PS1250-AD
48 W	48 V	1000 mA	34 - 48 V	52.8-62.4 V	87.0%	DLE45PS1000-AD
40 W	57 V	700 mA	40 - 57 V	62.9-70.0 V	87.0%	DLE45PS700-AD
50 W	12 V	4200 mA	9 - 12 V	13.2-15.6 V	86.0%	DLE60PS4200-AD
60 W	24 V	2500 mA	16 - 24 V	26.4-31.2 V	86.0%	DLE60PS2500-AD
60 W	36 V	1650 mA	24 - 36 V	39.6-46.8 V	87.0%	DLE60PS1650-AD
60 W	48 V	1250 mA	34 - 48 V	52.8-62.4 V	88.0%	DLE60PS1250-AD
60 W	57 V	1050 mA	40 - 57 V	62.9-70.0 V	88.0%	DLE60PS1050-AD

Notes

1. Typical efficiency at full load and 230 VAC input.

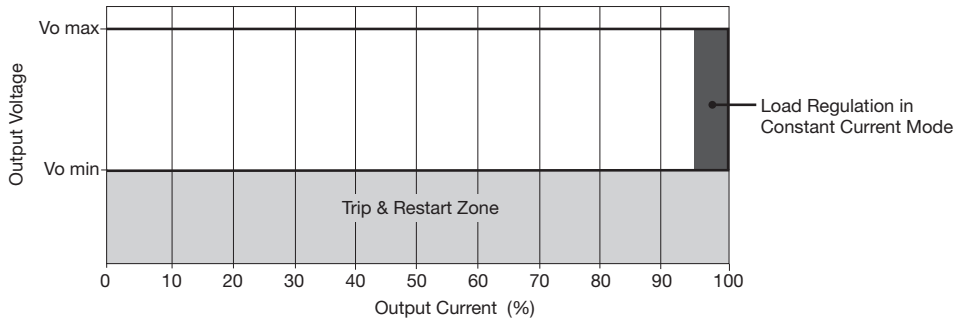
Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage - Operating	90		305	VAC	See derating curve
Input Frequency	47		63	Hz	
Power Factor		>0.9			Measured at 230 VAC, full load
Input Current		0.6		A	115 VAC
		0.3			230 VAC
Inrush Current			45	A	230 VAC cold start, +25 °C
Input Protection	Internal T1.0 A/250 V fuse fitted in line				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	12		57	VDC	See models and ratings table
Minimum Load					No minimum load required
Start Up Delay			1.5	s	Measured at 115 VAC
Hold Up Time	20			ms	
Line Regulation			±0.5	%	
Load Regulation		±1		%	Constant voltage mode
		±5			Constant current mode
Turn On Overshoot			7	%	Constant voltage mode
Transient Response			4	%	Deviation, recovery to within 1% in 10 ms for a 50% load change
Ripple & Noise			200/250	mV pk-pk	≤24 V/>24 V. Measured using 12" twisted pair with 0.1 µF and 47 µF capacitors in parallel at 20 MHz bandwidth, at 25 °C
Overvoltage Protection					See models and ratings table, recycle AC to Reset
Overload Protection	95		105	%	Auto Recovery
Short Circuit Protection					Trip & restart (hiccup mode)
Temperature Coefficient		0.04		%/°C	

Constant Current Curve



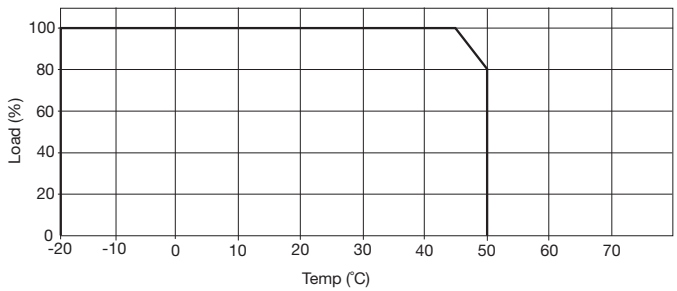
General

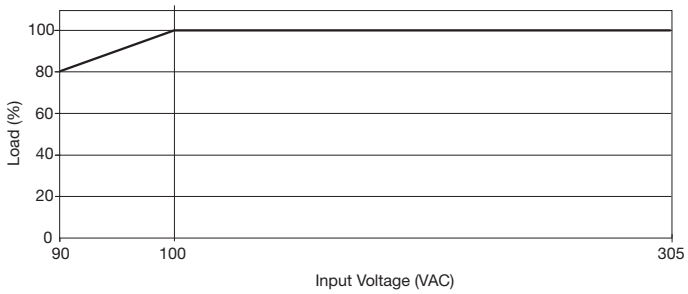
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		87		%	See models and tables
Isolation: Input to Output	3750			VAC	
Switching Frequency		100		kHz	
Mean Time Between Failure		>200		kHrs	MIL-HDBK-217F at 25 °C GB
Weight		0.9 (410)		lb (kg)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-20		+50	°C	See derating curve
Operating Humidity	20		90	%	RH, non-condensing
Storage Temperature	-40		+80	°C	Some specification parameters maybe exceeded until after 20 minutes warm up period.
Operating Altitude			3000	m	
Shock					30 g pk, half sine, 6 axes EN60068-2-27, -2-47 & MIL-STD-810F 514.5 cat 4
Vibration					10-500 Hz, 2 g, 10 mins/cycle, 6 cycles in each of axes

Derating Curves





EMC: Emissions

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Conducted	EN55015	Class B		
Radiated	EN55015	Class B		
Harmonic Current	EN61000-3-2	Class C		
Voltage Fluctuations	EN61000-3-3			

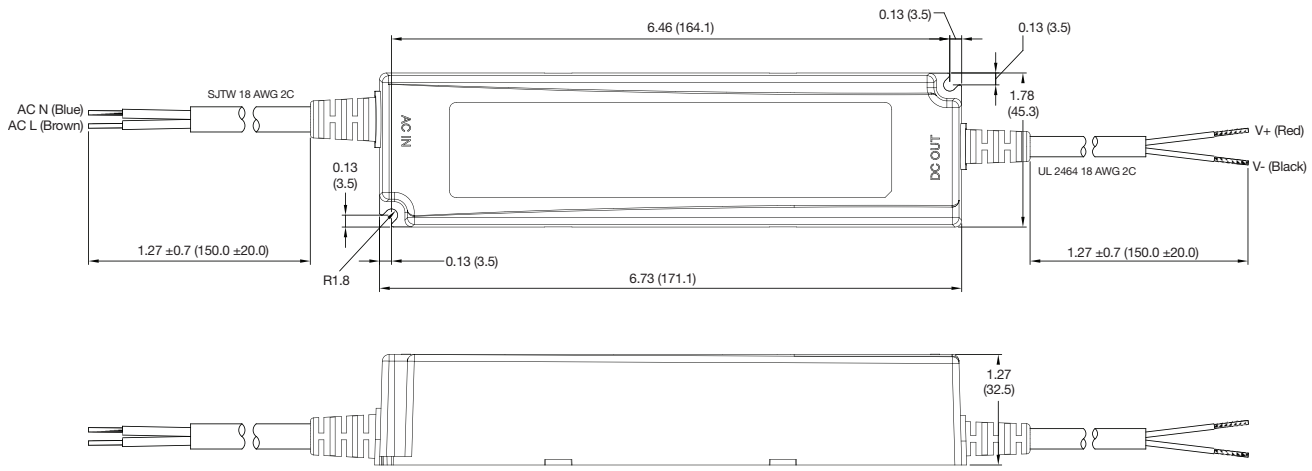
EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Equipment for General Lighting Purposes	EN61547	as below	as below	
ESD Immunity	EN61000-4-2		A	8 kV air and 4 kV contact
Radiated Immunity	EN61000-4-3	2	A	
EFT/Burst	EN61000-4-4	2	A	
Surges	EN61000-4-5	Installation class 3	A	
Conducted	EN61000-4-6	2	A	
Magnetic Field	EN61000-4-8	2	A	
Dips and Interruptions	EN61000-4-11	Dip: 30%, 10 ms	A	
		Dip: 30%, 200 ms	A/B	At 230 VAC/100 VAC
		Int: 100%, 8.3 ms	A/B	At 230 VAC/100 VAC

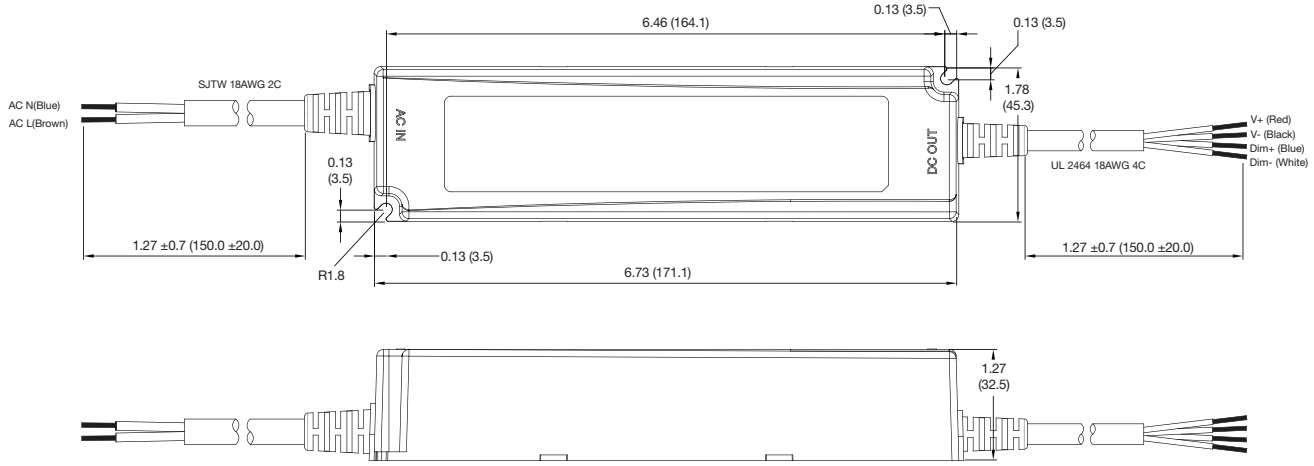
Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
UL	UL8750	
TUV	EN61347	
CE	CE Mark	
IEC	IEC61347-2-13 used in conjunction with IEC61347-1	
IP	IEC60529	

Mechanical Details - Constant Voltage / Constant Current



Mechanical Details - Dimmable Version

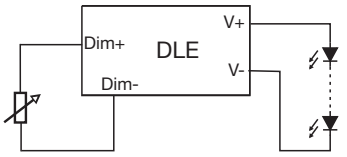


Notes

1. Dimensions shown in inches (mm).
2. Weight: 2.8 lb (1.27 kg).
3. Tolerance: 0.X = ±0.008 (±0.2)
   0.XX = ±0.002 (±0.05)

Output Current Adjustment by Variable Resistor

Connect a variable resistor between Dim+ and Dim-.



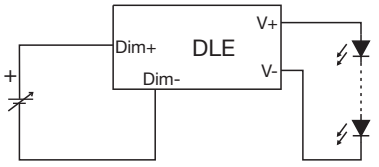
The Dimmed output current can be determined using the equation:

$$\text{Dimmed Current} = \frac{\text{Maximum Current x R}}{100\text{ k}}$$

Where the value of R is between 10 kΩ and 100 kΩ. The corresponding range of output current is 10% to 100%

Output Current Adjustment by DC Voltage

Connect a variable voltage betwen Dim+ and Dim-



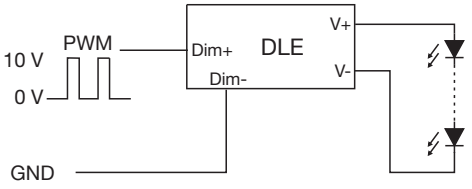
The dimmed output current is given by:

$$\text{Dimmed Current} = \frac{\text{Maximum Current x V}}{10\text{ k}}$$

Where V is the value of control voltage in the range of 1.0 V to 10.0 VDC. The corresponding range of output current is 10% to 100%.

Output Current Adjustment by PWM

A Pulse Width Modulated (PWM) signal with duty cycle D_{PWM} can be applied between Dim+ and Dim-.



The dimmed output current is given by:

Dimmed Current = Maximum Current x D_{Pwm} % (Dpwm = PWM duty cycle)

Where Dpwm is the % of duty cycle between 10% and 100%. The corresponding range of output current is 10% to 100%. PWM frequency should be in the range 0.5 kHz to 5 kHz