

## 25/35 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



**Dimensions:**

**DLE25/35:**

4.33 x 2.89 x 1.30" (110.0 x 73.5 x 33.0 mm)

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.

### Models & Ratings - Constant Voltage / Constant Current Models

| Output Power | Output Voltage | Output Current | Output Voltage Range in Constant Current Mode | OVP Range    | Efficiency <sup>(1)</sup> | Model Number |
|--------------|----------------|----------------|---|--------------|---------------------------|--------------|
| 25 W         | 12 V           | 2100 mA        | 9 - 12 V                                      | 13.8-16.20 V | 79.0%                     | DLE25PS12    |
| 25 W         | 24 V           | 1050 mA        | 12 - 24 V                                     | 27.6-32.40 V | 80.0%                     | DLE25PS24    |
| 25 W         | 36 V           | 700 mA         | 24 - 36 V                                     | 41.4-48.60 V | 80.0%                     | DLE25PS36    |
| 24 W         | 48 V           | 500 mA         | 33 - 48 V                                     | 55.2-64.80 V | 80.0%                     | DLE25PS48    |
| 20 W         | 57 V           | 350 mA         | 40 - 57 V                                     | 65.5-76.95 V | 78.0%                     | DLE25PS57    |
| 30 W         | 12 V           | 2500 mA        | 9 - 12 V                                      | 13.8-16.20 V | 80.0%                     | DLE35PS12    |
| 34 W         | 24 V           | 1400 mA        | 12 - 24 V                                     | 27.6-32.40 V | 81.0%                     | DLE35PS24    |
| 36 W         | 36 V           | 1000 mA        | 24 - 36 V                                     | 41.4-48.60 V | 82.0%                     | DLE35PS36    |
| 34 W         | 48 V           | 700 mA         | 33 - 48 V                                     | 55.2-64.80 V | 83.0%                     | DLE35PS48    |
| 28 W         | 57 V           | 500 mA         | 40 - 57 V                                     | 65.5-76.95 V | 82.0%                     | DLE35PS57    |

### Models & Ratings - Dimmable Models

| Output Power | Output Voltage | Output Current | Output Voltage Range in Constant Current Mode | OVP Range    | Efficiency <sup>(1)</sup> | Model Number   |
|--------------|----------------|----------------|---|--------------|---------------------------|----------------|
| 25 W         | 12 V           | 2100 mA        | 9 - 12 V                                      | 13.8-16.20 V | 79.0%                     | DLE25PS2100-AD |
| 25 W         | 24 V           | 1050 mA        | 12 - 24 V                                     | 27.6-32.40 V | 80.0%                     | DLE25PS1050-AD |
| 25 W         | 36 V           | 700 mA         | 24 - 36 V                                     | 41.4-48.60 V | 80.0%                     | DLE25PS700-AD  |
| 24 W         | 48 V           | 500 mA         | 33 - 48 V                                     | 55.2-64.80 V | 80.0%                     | DLE25PS500-AD  |
| 20 W         | 57 V           | 350 mA         | 40 - 57 V                                     | 65.5-76.95 V | 78.0%                     | DLE25PS350-AD  |
| 30 W         | 12 V           | 2500 mA        | 9 - 12 V                                      | 13.8-16.20 V | 80.0%                     | DLE35PS2500-AD |
| 34 W         | 24 V           | 1400 mA        | 12 - 24 V                                     | 27.6-32.40 V | 81.0%                     | DLE35PS1400-AD |
| 36 W         | 36 V           | 1000 mA        | 24 - 36 V                                     | 41.4-48.60 V | 82.0%                     | DLE35PS1000-AD |
| 34 W         | 48 V           | 700 mA         | 33 - 48 V                                     | 55.2-64.80 V | 83.0%                     | DLE35PS700-AD  |
| 28 W         | 57 V           | 500 mA         | 40 - 57 V                                     | 65.5-76.95 V | 82.0%                     | DLE35PS500-AD  |

#### Notes

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

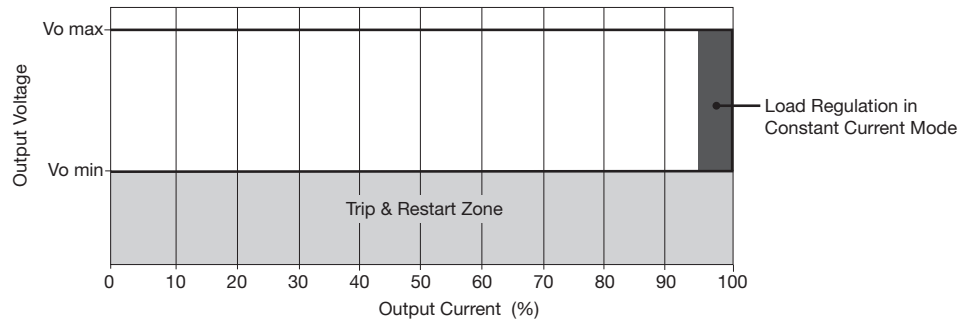
### Input

| 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             |         |         | 2.0         | 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             |         |         | 200/250/300 | mV pk-pk | ≤24 V/≤48 V/57 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    |         | 0.06    |             | %/°C     |  |
| Overtemperature Protection |         |         | 95          | °C       |  |

### Constant Current Curve



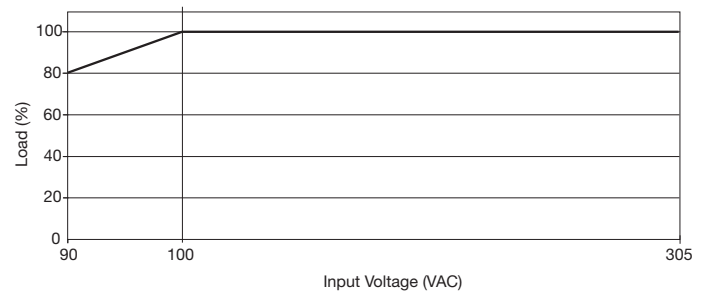
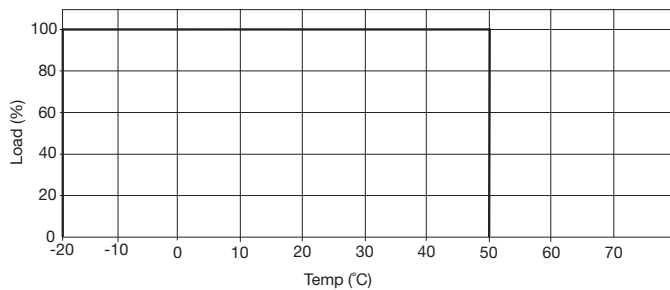
### General

| Characteristic             | Minimum | Typical    | Maximum | Units  | Notes & Conditions        |
|----------------------------|---------|------------|---------|--------|---------------------------|
| Efficiency                 |         | 82         |         | %      | 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                     |         | 0.77 (350) |         | lb (g) |                           |

### Environmental

| Characteristic        | Minimum | Typical | Maximum | Units | Notes & Conditions  |
|-----------------------|---------|---------|---------|-------|---|
| Operating Temperature | -20     |         | +50     | °C    | See derating curve  |
| Operating Humidity    | 5       |         | 100     | %     | 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 | Notes & Conditions                     |
|----------------------|-------------|------------|--|
| Conducted            | EN55015     | Class B    |  |
| Radiated             | EN55015     | Class B    |  |
| Harmonic Current     | EN61000-3-2 | Class C    |  |
| Voltage Fluctuations | EN61000-3-3 |            | Pst = 6% of limit, Ptt = 4.3% of limit |

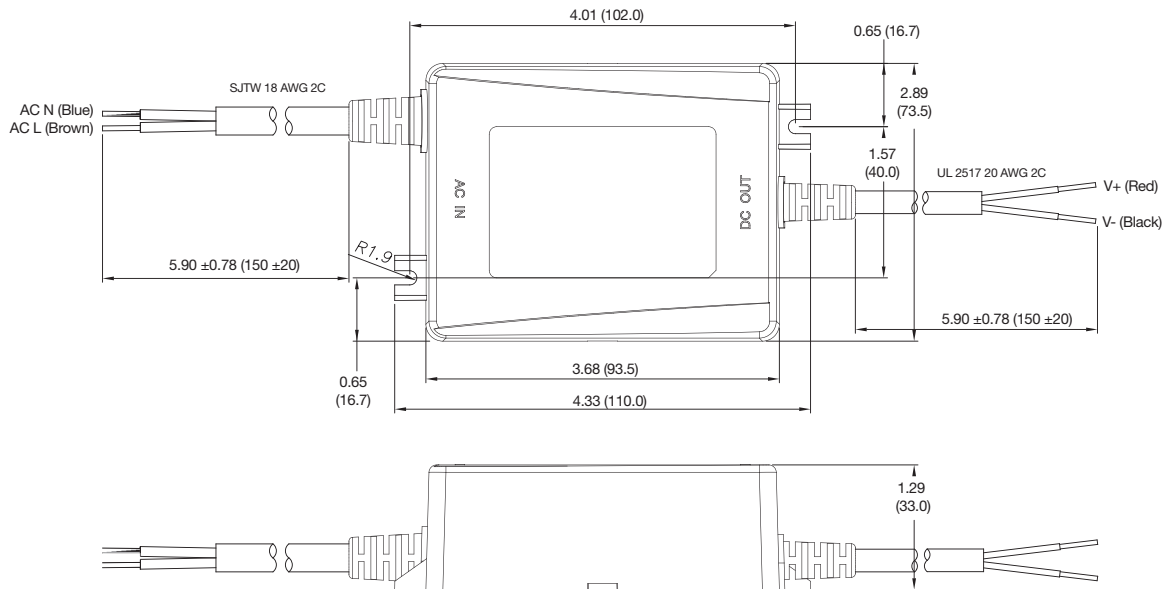
### EMC: Immunity

| Phenomenon                              | Standard     | Test Level           | Criteria | Notes & Conditions       |
|---|--------------|----------------------|----------|--------------------------|
| Equipment for General Lighting Purposes | EN61547      | as below             | as below |                          |
| ESD Immunity                            | EN61000-4-2  | 3/2                  | A        | ±8 kV air ± 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%, 200 ms     | A/B      | At 230 VAC/100 VAC       |
|   |              | Int: 100%, 10 ms     | A        |                          |
|   |              | Int: 100%, 8.4 ms    | A        |                          |

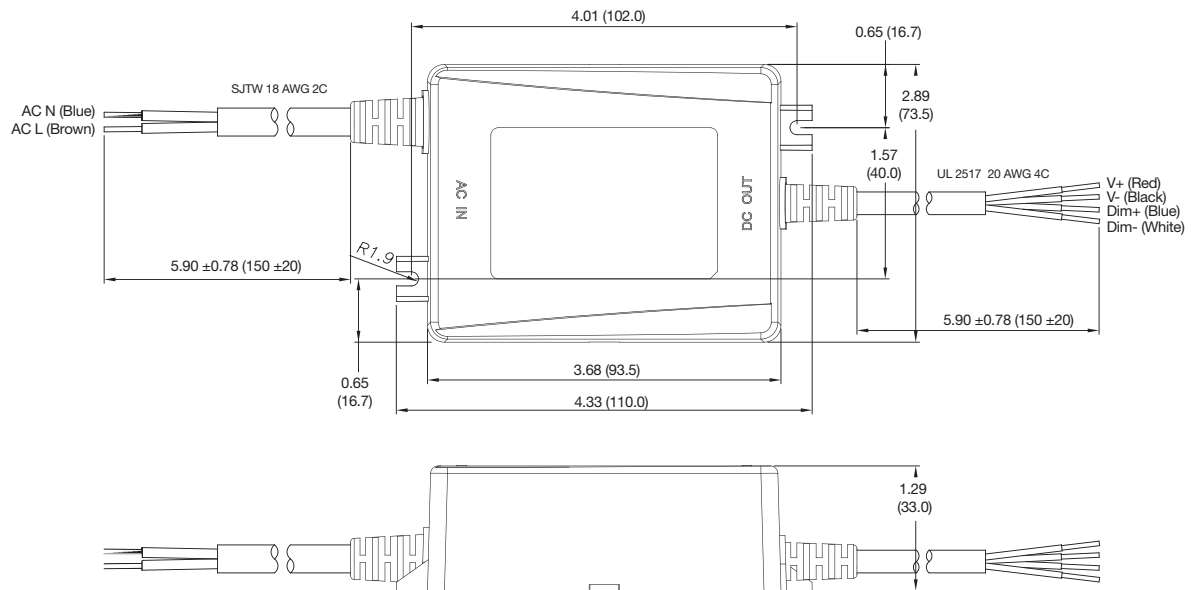
### Safety Approvals

| Safety Agency | Safety Standard                                   | Notes & Conditions          |
|---------------|---|-----------------------------|
| UL            | UL8750  | Approved as Class 2 product |
| 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



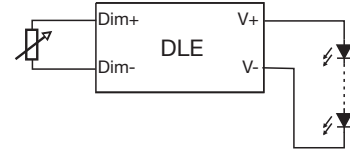
#### Notes

1. Dimensions shown in inches (mm).
2. Weight: 0.77 lb (350 g).

3. Tolerance: 0.X =  $\pm 0.008$  ( $\pm 0.2$ )  
0.XX =  $\pm 0.002$  ( $\pm 0.05$ )

## Output Current Adjustment by Variable Resistor

Connect a variable resistor between Dim+ and Dim-.



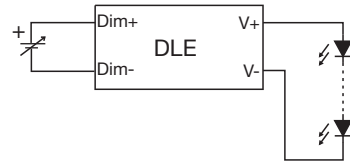
The Dimmed output current can be determined using the equation:

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

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 between Dim+ and Dim-



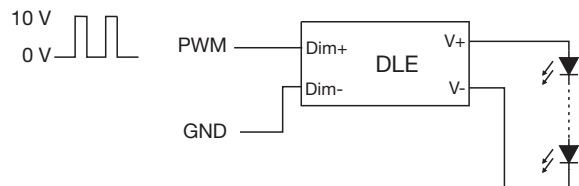
The dimmed output current is given by:

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

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 DPWM can be applied between Dim+ and Dim-.



The dimmed output current is given by:

$$\text{Dimmed Current} = \text{Maximum Current} \times \text{DP}_{\text{PWM}} \%$$

Where DP<sub>WM</sub> is the % of PWM 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