

## Mounting instructions for ballast-type LED drivers

It is recommended to mount eldoLED products in accordance with the IPC-A-610 and IPC-A-620 standards.

The mounting instructions in this document apply to the following ballast-type LED drivers:

- ECOdrive 15
- ECOdrive 30
- ECOdrive 45
- POWERdrive 45
- POWERdrive 90
- POWERdrive 180
- LINEARdrive 100
- LINEARdrive 180
- LINEARdrive 720

### Heat sink

The eldoLED ballast-type drivers have been designed to operate in ambient temperatures ( $T_a$ ) ranging from -20° Celsius to +50° Celsius, and need to be mounted onto a heat sink to ensure lasting maximum performance. The driver's maximum  $T_c$  is +65° Celsius.

Use the following rule of thumb to calculate the heat sink's minimum required dissipating capacity:

$$C_h = \Delta T / P \quad (^\circ\text{C} / \text{Watt})$$

$C_h$  = capacity of the heat sink ( $^\circ\text{C} / \text{watt}$ )

$\Delta T$  = temperature difference between heat sink and ambient temperature ( $^\circ\text{C}$ )

$P$  = dissipated power (watt)

Typically, an LED driver dissipates 10% of the output power to the LED load.. For example, if the connected LED load is 15 watt, the ambient temperature is 25  $^\circ\text{C}$  and the required maximum temperature of the heat sink is 55  $^\circ\text{C}$ , then a heat sink is needed with a minimum dissipating capacity of 20  $^\circ\text{C}$  per watt.



When selecting a heat sink, make sure the heat sink's mounting surface is at least as large as the LED driver.

When mounting the driver onto a heat sink:

- It is preferable to have the heat sink grounded to earth.
- Ensure that the airflow is sufficient to cool the heat sink.
- Use metal or plastic M4 (UNC 6-32) screws to mount the drivers.

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### Cabling

eldoLED recommends that you use insulated cabling with its products that meets the following requirements:

#### *Cabling – in general*

- Make sure you strip just enough insulation material away from the cable: if you strip away too little, it can result in a poor contact, if you strip away too much it can cause a short-circuit:
  - o For VDC (power) wires, strip away 11 mm.
  - o For all other wires, strip away 9 mm, except the LED wires on the LINEARdrives (10 mm).
- Always use the strain reliefs, to prevent undesirable forces on the spring-cage connectors.
- To prevent loss of connections, do not use tinned wires in the spring-cage connectors, but bootlace ferrules for optimum connections.

#### *Power cabling*

- The cabling should have an insulating capacity of 100 volts or more.
- The cabling's insulation must be able to withstand temperatures of 85° Celsius or more.
- A minimum of 0.1 mm<sup>2</sup> for every ampere must be used for the copper cross-sectional area.
- A maximum of 0.75 mm<sup>2</sup> can be used for the VDC connectors.

#### *DMX cabling*

- For DMX data cabling, use CAT5 Shielded Twisted Pair cabling or equivalent.



Due to the integration of slew rate transceivers in eldoLED drivers, Cat5 Twisted Pair cabling yields the same signal quality as more expensive DMX cabling such as Belden 9271. eldoLED recommends using Cat5 Shielded Twisted Pair cabling, although the unshielded version is also acceptable on shorter cable lengths (<10m). On longer cable lengths, EMI might reach undesirable levels.

### Enclosure

When powered by a non-class 2 supply source, the LED driver is required to be enclosed. This can be accomplished either by mounting the driver in a UL listed NEMA enclosure suitably rated for the installation environment, or mounting it internal to a luminaire. In either case, the driver shall be mounted in an enclosure with the following minimum dimensions:

- LINEARdrive: 8" (L) x 2.5" (W) x 1.5" (H). The enclosure can be made of either plastic or metal.
- ECOdrive: 8" (L) x 2.5"(W) x 1.5"(H). The enclosure must be made of metal, and the bottom of the driver needs to be fixed to the bottom of the enclosure for heatsinking.
- POWERdrive: 9.5" (L) x 2.5"(W) x 1.5"(H). The enclosure must be made of metal, and the bottom of the driver needs to be fixed to the bottom of the enclosure for heatsinking.

Driver/controller	Power supply	Enclosure required?
<b>ECOdrive 15/30/45</b>	Class 2 PSU	No
	Non-class 2 PSU	Yes
<b>POWERdrive 45/90</b>	Class 2 PSU	No
	Non-class 2 PSU	Yes
<b>POWERdrive 180</b>	Class 2 PSU	Yes
	Non-class 2 PSU	Yes
<b>LINEARdrive 100</b>	Class 2 PSU	No
	Non-class 2 PSU	Yes
<b>LINEARdrive 180/720</b>	Class 2 PSU	Yes
	Non-class 2 PSU	Yes

The enclosure must also meet the following requirements:

- It must be able to withstand temperatures of 85° Celsius or more.
- Indoor use: the enclosure must meet the IP32 standard or better.
- Outdoor use: the enclosure must meet the IP66 standard or better.



Always make sure that the driver's cabling, housing, way of mounting and installation is in compliance with all applicable regulations, building codes and legislation.

More information, application notes, user manuals and eldoLED's terms and conditions are available at [www.eldoLED.com](http://www.eldoLED.com).