# Harvard <br> ENGINEERING PLC <br> ELECTRONICS ENGINERS \& MANUFACTURERS 

Cool-LED - High Power, Switchable LED DRI VERS

## 350/ 700mA, 500/ 1000mA, 1200/ 1400mA


#### Abstract

Cool-LED DRIVERS provide a high performance solution for powering high-brightness LED's from a mains supply. The power factor corrected, class II driver has fully-isolated, SELV output delivering up to 33W of power. The well regulated output current will typically power a series string of between 3 and 14 LEDs with a 1 W to 3 W rating up to a combined forward voltage of $48 \mathrm{~V}(1000 \mathrm{~mA}=33 \mathrm{~V}, 1200 \mathrm{~mA}=21 \mathrm{~V}$, $1400 \mathrm{~mA}=18 \mathrm{~V}$ ).

\section*{Cool-LED Switchable Drivers} feature a switch, accessible during installation, to select between full and half rated output current.

High efficiency design ensures cool operation and long life. The compact enclosure is available in Remote with Flying Leads (A), Integral (B) and Remote Mount (C) versions. Remote types feature screwless cable clamps. Cool-LED DRIVERS are open and short-circuit protected and have self-resetting over temperature trip.

Consult the sales office for versions where the current level can be set by external switch or presence detector. These drivers include a "soft dim" feature to avoid sudden steps in LED brightness.


## Technical Specification <br> n

- Power factor corrected (0.98)
- Constant current output
- Switchable between $350 / 700 \mathrm{~mA}$, 500/1000mA or $1200 \mathrm{~mA} / 1400 \mathrm{~mA}$
- Self resetting thermal trip
- Double insulated (Class II)
- Screwless cable clamps for fast assembly
- Up to 88\% efficient

| Parameter / Model | $\begin{gathered} \text { CL700S-240-A, B or } \\ C \end{gathered}$ | $\begin{gathered} \text { CL1000S-240-A, B or } \\ \text { C } \end{gathered}$ | CL1400S-240-A, B or C | T Flying Lead |
| :---: | :---: | :---: | :---: | :---: |
| Mains input voltage range | 198 to 265V ac rms |  |  | $\Lambda_{151} \Lambda_{1}$ 'A' type |
| Mains frequency | 47 to 63Hz |  |  |  |
| Power factor at full load | >0.95 (0.98 typical) |  |  | $5 \times$ |
| Efficiency at full load | 88\% typical |  |  | - |
| Mains surge protection | 3.75 kV common-mode 2 kV differential |  |  | 143 |
| Input-output isolation | 4 kV ac rms |  |  |  |
| Ambient temperature range | $-25^{\circ} \mathrm{C}$ to $50^{\circ} \mathrm{C}$ |  |  | Integral |
| Maximum Tc temperature | $80^{\circ} \mathrm{C}$ |  |  | 'B' type |
| Humidity | 95\% max non-condensing |  |  |  |
| Thermal trip | $110^{\circ} \mathrm{C}$ self-resetting |  |  |  |
| Maximum output power | 33W | 33W | 25W |  |
| Output current (switchable) | 350mA \& 700mA | 500mA \& 1000mA | 1200 mA \& 1400mA |  |
| Output current accuracy | $\pm 5 \%$ | $\pm 5 \%$ | $\pm 5 \%$ |  |
| LED string voltage | 9 V to 48V | $\begin{gathered} 9 \mathrm{~V} \text { to } 48 \mathrm{~V}(33 \mathrm{~V} \text { at } \\ 1000 \mathrm{~mA}) \end{gathered}$ | $\begin{gathered} 9 \mathrm{~V} \text { to } 21 \mathrm{~V}(18 \mathrm{~V} \text { at } \\ 1400 \mathrm{~mA}) \\ \hline \end{gathered}$ |  |
| Typical no. of LEDs (1-3W) | 3 to 14 | 3 to 14(8 at 1000mA) | 3 to 7 (6 at 1400mA) |  |
| Open-circuit output voltage | 55 V maximum |  |  |  |
| Enclosure | White polycarbonate UL94-V0 rated |  |  |  |
| Dimensions | See diagrams for A, B and C types |  |  |  |
| Terminal blocks | Rising clamp 5mm pitch ('B' and 'C' type only) |  |  |  |
| Current ripple | $\begin{aligned} & 10 \mathrm{~V} \text { output }=22 \% \\ & 48 \mathrm{~V} \text { output }=7.5 \% \end{aligned}$ | $\begin{gathered} 10 \mathrm{~V} \text { output }=38 \% \\ 33 \mathrm{~V} \text { output }=14.5 \% \end{gathered}$ | $\begin{aligned} & 10 \mathrm{~V} \text { output }=\mathrm{TBC} \\ & 21 \mathrm{~V} \text { output }=\mathrm{TBC} \end{aligned}$ | WIRING DIAGRAM $\square$ |
| Wire size | 0.5 to $1.5 \mathrm{~mm}^{2}$ |  |  |  |
| Weight | 120 g |  |  |  |
| Compliant standards | EN 61347-2-13 EN 6100-3-2 EN 6100-3-3 EN 61547 EN55015EN62384 |  |  |  |

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Performance Graphs


CoolLED Driver Power Factor Characteristic at 230V Input


NB. Low power driver available at $350 \mathrm{~mA} \& 700 \mathrm{~mA}$ to improve efficiency for output loading of 10 W and below.

