

## 30 W Dimmable DALI LED driver

Product code: 5502

30 W 220 – 240 V 0 / 50 – 60 Hz

- DALI dimmable LED driver, 1 - 100 % dimming range
- Suitable for DC use
- SELV output protection for safety and flexibility in luminaire design
- Driver protection Class II
- Suitable for Class I and Class II luminaires
- For driving Class III (SELV) luminaires, optional strain reliefs available for independent use outside of luminaire (LC-SRA/LC1x30-SR or LC-SRA-LOOP for looping the input cables)



### Functional Description

- Selectable constant current output: 350 mA / 500 mA / 700 mA
- Switch-Control functionality for easy-to-use intensity control
- NTC terminal for overtemperature protection
- Helvar Driver Configurator Support

### Mains Characteristics

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Voltage range                    | 198 VAC – 264 VAC                     |
|                                  | Withstands max. 320 VAC (max. 1 hour) |
| DC range                         | 176 VDC - 280 VDC                     |
| starting voltage                 | > 190 VDC                             |
| Mains current at full load       | 0.14 – 0.18 A                         |
| Frequency                        | 0 / 50 Hz – 60 Hz                     |
| Stand-by power consumption       | 0.3 W                                 |
| THD at full power                | < 17 %                                |
| Tested surge protection          | 1 kV L-N, 2 kV L-GND (IEC 61000-4-5)  |
| Tested fast transient protection | 2 kV (IEC 61000-4-4)                  |

### Insulation between circuits

|                                |                              |
|--------------------------------|------------------------------|
| Mains circuit - SELV circuit   | Double/reinforced insulation |
| DALI circuit - SELV circuit    | Double/reinforced insulation |
| Mains circuit - DALI circuit   | Basic insulation             |
| Mains and output - Driver case | Double/reinforced insulation |

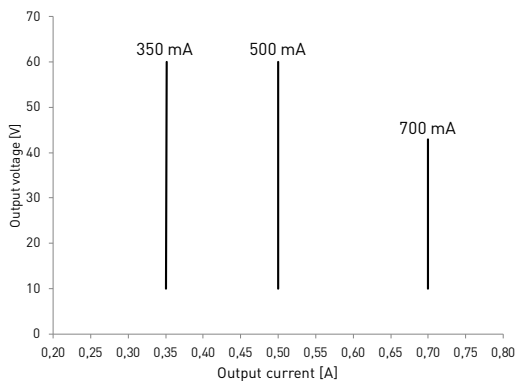
### Load Output (SELV <120 V)

|                              |                          |
|------------------------------|--------------------------|
| Output current ( $I_{OUT}$ ) | 350 mA / 500 mA / 700 mA |
| Accuracy                     | ± 5 %                    |
| Ripple                       | < 2 %, at ≤ 120 Hz       |
| PstLM                        | < 1*                     |
| SVM                          | < 0.4*                   |
|                              | *] At full load          |

$U_{out}$  (max) (abnormal) 80 V

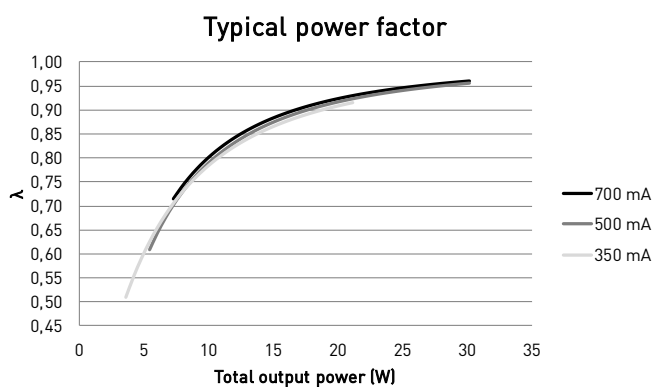
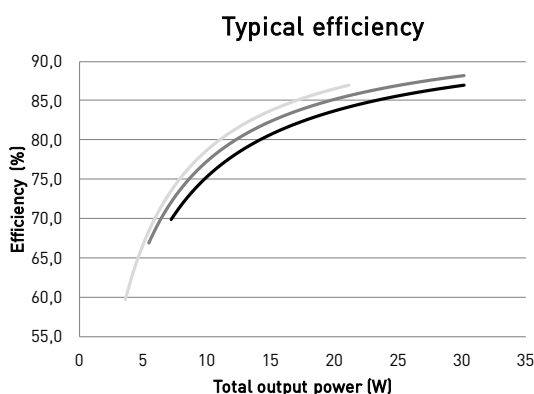
|                             | 350 mA    | 500 mA    | 700 mA    |
|-----------------------------|-----------|-----------|-----------|
| $I_{LED}$                   | 350 mA    | 500 mA    | 700 mA    |
| $P_{RATED}$                 | 21 W      | 30 W      | 30 W      |
| $U_{LED}$                   | 10 – 60 V | 10 – 60 V | 10 – 43 V |
| PF (λ) at full load         | 0.93      | 0.96      | 0.96      |
| Efficiency (η) at full load | 87 %      | 88 %      | 86 %      |

## Operating window



Note: Dimming between 1 % - 100 % possible across the whole operating window

## Driver performance



## Operating Conditions and Characteristics

|  |   |
|--|---|
| Highest allowed $t_c$ point temperature          | 75 °C   |
| Ambient temperature range*<br>in independent use | -20 °C ... +50 °C<br>-20 °C ... +45 °C  |
| Storage temperature range                        | -40 °C ... +80 °C   |
| Maximum relative humidity                        | no condensation   |
| Life time (90 % survival rate)                   | 100 000 h, at $t_c = 65$ °C<br>70 000 h, at $t_c = 70$ °C<br>50 000 h, at $t_c = 75$ °C |

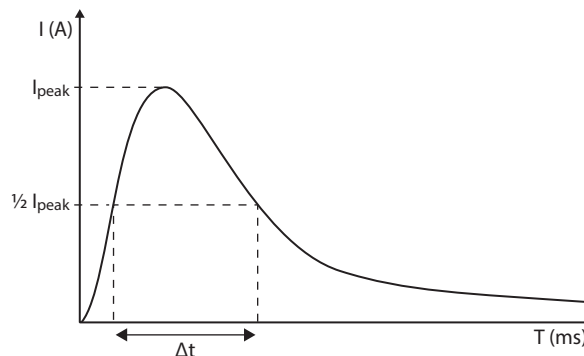
\*] For other than independent use, higher  $t_s$  of the controlgear possible as long as highest allowed  $t_c$  point temperature is not exceeded

## Quantity of drivers per miniature circuit breaker 16 A Type C

| Based on $I_{cont}$ | Based on inrush current $I_{peak}$ | Typ. peak inrush current $I_{peak}$ | 1/2 value time, $\Delta t$ | Calculated energy, $I_{peak}^2 \Delta t$ |
|---------------------|------------------------------------|-------------------------------------|----------------------------|--|
| 73 pcs              | 1528 pcs                           | 7 A                                 | 26 $\mu$ s                 | 0,0011 A <sup>2</sup> s                  |

## CONVERSION TABLE FOR OTHER TYPES OF MINIATURE CIRCUIT BREAKER

| MCB type | Relative quantity of LED drivers |
|----------|----------------------------------|
| B 10 A   | 37 %                             |
| B 16 A   | 60 %                             |
| B 20 A   | 75 %                             |
| C 10 A   | 62 %                             |
| C 16 A   | 100 % (see table above)          |
| C 20 A   | 125 %                            |

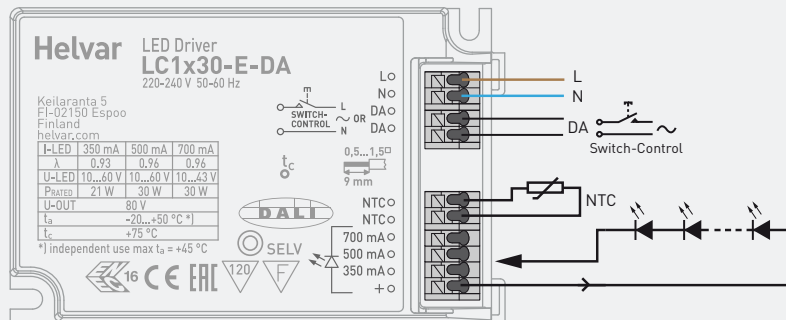


Type C MCB's are strongly recommended to use with LED lighting. Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

## Connections and Mechanical Data

|                                   |   |
|-----------------------------------|---|
| Wire size                         | 0.5 mm <sup>2</sup> – 1.5 mm <sup>2</sup> |
| Wire type                         | Solid core and fine-stranded              |
| Wire insulation                   | According to EN 60598                     |
| Maximum driver to LED wire length | 5 m (1 m with NTC)                        |
| Weight                            | 123 g                                     |
| NTC trigger point                 | 8.2 kΩ                                    |
| IP rating                         | IP20                                      |

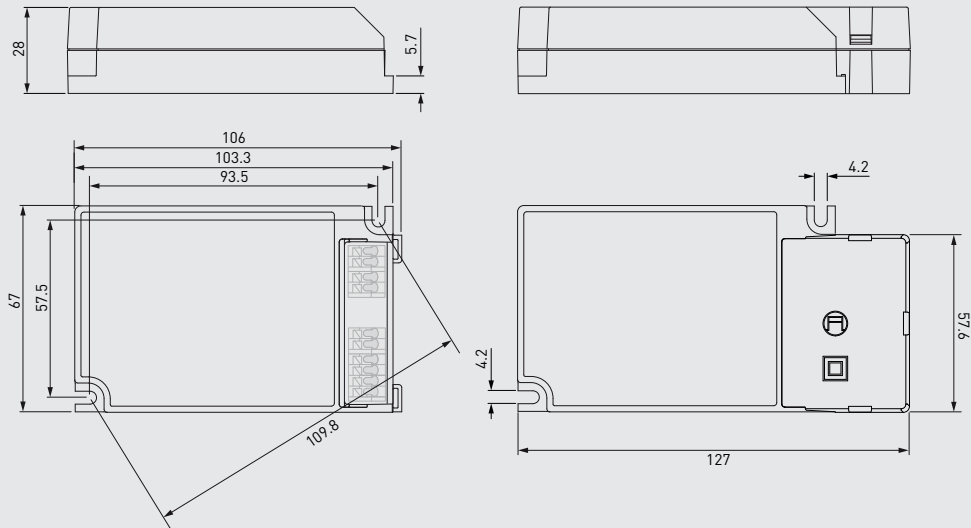
## Connections



**Note:**

- Not suitable for load side switching operation.
- Label may differ if the unit is preset to fixed current.
- Gray label from revision U onwards

## Dimensions (mm)



LC1x30-E-DA LED driver is suited for built-in usage in luminaires. With LC1x30-SR/LC-SRA/LC-SRA-LOOP strain reliefs, independent use is possible too. In order to have safe and reliable LED driver operation, the LED luminaires will need to comply with the relevant standards and regulations (e.g. IEC/EN 60598-1). The LED luminaire shall be designed to adequately protect the LED driver from dust, moisture and pollution. The luminaire manufacturer is responsible for the correct choice and installation of the LED drivers according to the application and product datasheets. Operating conditions of the LED drivers may never exceed the specifications as per the product datasheet.

## Installation & operation

### Maximum ambient and $t_c$ temperature:

- For built-in components inside luminaires, the  $t_a$  ambient temperature range is a guideline given for the optimum operating environment. However, integrator must always ensure proper thermal management (i.e. mounting base of the driver, air flow etc.) so that the  $t_c$  point temperature does not exceed the  $t_c$  maximum limit in any circumstance.
- Reliable operation and lifetime is only guaranteed if the maximum  $t_c$  point temperature is not exceeded under the conditions of use.

### Current setting

- LC1x30-E-DA driver features three separate constant current outputs selectable via current output terminals.

### Miniature Circuit Breakers (MCB)

- Type-C MCB's with trip characteristics in according to EN 60898 are recommended.
- Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

### Use of Switch-Control functionality

- Maximum numbers of LED drivers to be connected to one switch is 30.
- The maximum cabling length from the switch to the driver is 25 meters. If longer cabling is needed, please connect a capacitor across the Switch-Control input (1  $\mu$ F, min. 275 VAC RMS, X2 Class, according to IEC 60384-14).
- Ensure that all components connected to Switch-Control circuitry are mains rated.
- More information in Switch-Control User Guide at [www.helvarcomponents.com](http://www.helvarcomponents.com).

### Installation site

- The general preferred installation position of LED drivers for independent use is to have the top cover facing upwards.

## Helvar Driver Configurator support

LC1x30-E-DA LED driver is supported by Helvar Driver Configurator software. Helvar Driver Configurator allows user to enable NTC, Switch Control and linear dimming curve. The user is also able to adjust dimming range, as well as enable the power level to be set on last adjusted level, after power shutdown.

### Lamp failure functionality

**No load:** When open load is detected, driver limits output voltage according to  $U_{out}$  (max) (abnormal).

**Overload:** When low overload is detected (> 30 W), the driver will reduce the output current, however reliable operation is only guaranteed in specified voltage range.

**Underload:** Reliable operation is only guaranteed in specified voltage range.

**Short circuit:** Driver can withstand output short circuit.

**NTC trigger:** When NTC is enabled via Helvar Driver Configurator, driver follows NTC feature behaviour. Default NTC trigger point is 8,2 k $\Omega$ , after which the driver starts to decrease the output level.

## Conformity & standards

|  |               |
|--|---------------|
| General and safety requirements  | EN 61347-1    |
| Particular safety requirements for DC or AC supplied electronic control gear for LED modules | EN 61347-2-13 |
| Thermal protection class   | EN 61347, C5e |
| Mains current harmonics  | EN 61000-3-2  |
| Limits for voltage fluctuations and flicker  | EN 61000-3-3  |
| Radio frequency interference   | EN 55015      |
| Immunity standard  | EN 61547      |
| Performance requirements   | EN 62384      |
| <b>Digital addressing lighting interface:</b>  |               |
| General requirements for DALI system   | EN 62386-101  |
| Requirements for DALI control gear   | EN 62386-102  |
| Requirements for control gear of LED modules (DALI Device Type 6)                            | EN 62386-207  |
| Compliant with relevant EU directives  |               |
| RoHS/REACH compliant   |               |
| CE / UKCA and ENEC marked  |               |

## Label symbols



Double insulated control gear suitable for built-in use.



Thermally controlled control gear, incorporating means of protection against overheating to prevent the case temperature under any conditions of use from exceeding 120 °C.



Control gear suitable for direct mounting on normally flammable surfaces, with or without thermally insulating material. Normally flammable surfaces are defined to include building materials such as wood, and materials based on wood, of more than 2 mm thickness.



DALI certified control gear.