

## 42 W SELV constant current LED driver

Product code: 5902

42 W 220 – 240 V 50 – 60 Hz

- SELV output protection for safety and flexibility in luminaires
- Low current ripple, complying with IEEE 1789 recommendation
- Suitable for use in emergency lighting applications
- Compact dimensions for flexible usage
- Integrated strain reliefs for independent installation
- Ideal solution for Class I, Class II and Class III (SELV) luminaires



### Functional Description

- Adjustable constant current output: 300 mA (default) to 1050 mA
- Current setting via dip-switches
- Overload, open & short circuit protection
- Optional functional earth connection, see page 4 for more details.

### Mains Characteristics

|                                  |  |
|----------------------------------|--|
| Nominal rated voltage range      | 220 V – 240 V, 50 – 60 Hz                                |
| Rated emergency voltage range    | 189 V – 255 V, 0 Hz                                      |
| AC voltage range                 | 198 VAC – 264 VAC  |
| DC voltage range                 | 170 VDC – 280 VDC  |
| Mains current at full load       | 0.19 – 0.23 A  |
| Frequency                        | 50 Hz – 60 Hz  |
| Stand-by power consumption       | < 0.5 W  |
| THD at full power                | < 10 %   |
| Leakage current to earth         | < 0.7 mA   |
| Tested surge protection          | 4 kV L/N-GND (IEC 61000-4-5)<br>2 kV L-N (IEC 61000-4-5) |
| Tested fast transient protection | 2 kV (IEC 61000-4-4)                                     |

### Insulation between circuits & driver case

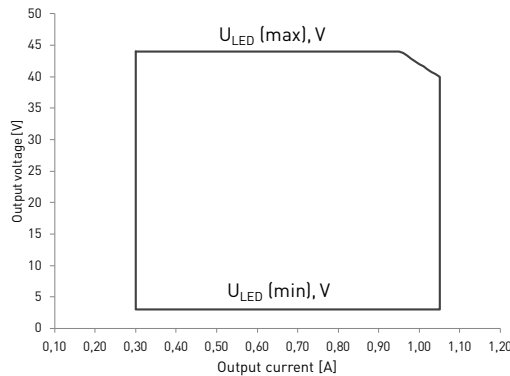
|                                |                              |
|--------------------------------|------------------------------|
| Mains circuit - SELV circuit   | Double/reinforced insulation |
| Mains and output - Driver case | Double/reinforced insulation |
| Mains input - Ground input     | Basic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

### Load Output (SELV <60 V)

|  |  |
|--|--|
| Output current ( $I_{out}$ )               | 300 mA (default) – 1050 mA             |
| Accuracy                                   | ± 5 %                                  |
| Ripple                                     | < 3 %* at ≤ 120 Hz                     |
| *] Low frequency, LED load: Cree XP-G LEDs |  |
| $U_{out}$ (max) (abnormal)                 | 55 V                                   |
| $EOF_1$ (EL use)                           | > 0.98 x output current with AC supply |

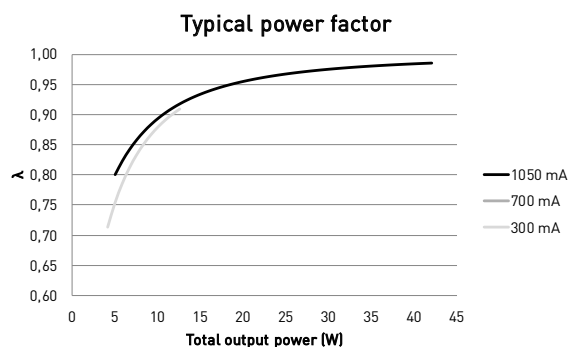
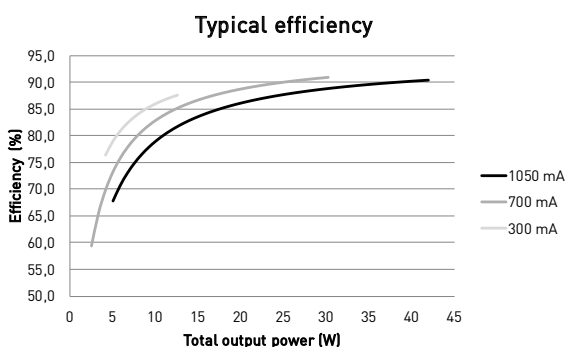
|                                    | 300 mA   | 1050 mA  |
|------------------------------------|----------|----------|
| $I_{LED}$                          | 300 mA   | 1050 mA  |
| $P_{Rated}$                        | 13 W     | 42 W     |
| $U_{LED}$                          | 3 - 44 V | 3 - 40 V |
| PF ( $\lambda$ ) at full load      | 0.91     | 0.95     |
| Efficiency ( $\eta$ ) at full load | 87 %     | 90 %     |

## Operating window



Current value is adjustable in steps via dip-switch. See dip-switch settings in page 3 for details.

## Driver performance



## Operating Conditions and Characteristics

|  |   |
|--|---|
| Absolute highest allowed $t_c$ point temperature | 80 °C   |
| $T_c$ life (50 000 h) temperature                | 70 °C   |
| Ambient temperature range*                       | -25 °C ... +40 °C*  |
| Storage temperature range                        | -40 °C ... +80 °C   |
| Maximum relative humidity                        | No condensation   |
| Life time (90 % survival rate)                   | 100 000 h, at $t_c = 60$ °C<br>50 000 h, at $t_c = 70$ °C<br>25 000 h, at $t_c = 80$ °C |

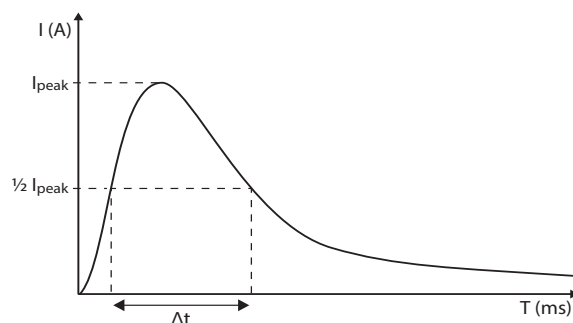
\*) For other than independent use, higher  $t_a$  of the controlgear possible as long as highest allowed  $t_c$  point temperature is not exceeded

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

| Based on inrush current $I_{peak}$ | Typ. peak inrush current $I_{peak}$ | 1/2 value time, $\Delta t$ |
|------------------------------------|-------------------------------------|----------------------------|
| 85 pcs.                            | 5 A                                 | 50 $\mu$ 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 %                            |



## CONTINUOUS CURRENT

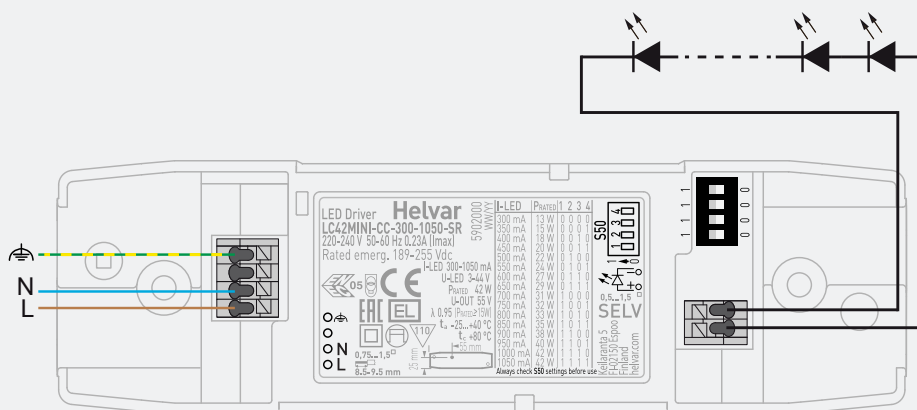
Total continuous current of the drivers and installation environment must always be considered and taken into calculations when installing drivers behind miniature circuit breaker. Example calculation of total drivers amount limited by continuous current:  $n(I_{cont}) = [16 A (I_{nom,Ta}) / \text{"nominal mains current with full load"}] \times 0.76$ . This calculation is an example according to recommended precautions due to multiple adjacent circuit breakers (> 9 MCBs) and installation environment ( $T_a$  30 degrees); variables may vary according to the use case. Both inrush current and continuous current calculations are based on ABB S200 series circuit breakers. More specific information in ABB series S200 circuit breaker documentation.

NOTE! 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

|                                   |  |
|-----------------------------------|--|
| Cable Size                        | Ø 2 mm – 11 mm                                     |
| Wire size                         | Input: 0.75 mm <sup>2</sup> – 1.5 mm <sup>2</sup>  |
|                                   | Output: 0.50 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 | 1.5 m  |
| Weight                            | 122 g  |
| IP rating                         | IP20   |

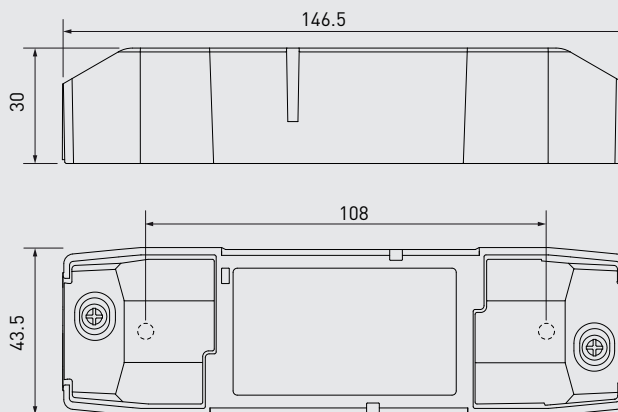
## Connections



Note:

- Earth connection to functional earth terminal is optional and not needed for the functionality of the driver. See page 4 for details
- Not suitable for load side switching operation

## Dimensions (mm)



In LC42MINI-CC-300-1050-SR, the current can be set with dip-switches. With each combination of switch setup, a different output current value can be set. The maximum value can be reached with all switches set to "1" (pushed towards the label, see connections picture above) and minimum with all switches set to "0". The output current values according to the dip-switch settings are presented below.

## Dip-switch combinations, output currents and voltage ranges (Nominal I<sub>out</sub> (±5 % tol.))

| Dip-Switch combination | 1111     | 1110     | 1101     | 1100     | 1011     | 1010     | 1001     | 1000     |
|------------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| I <sub>out</sub> (mA)  | 1050     | 1000     | 950      | 900      | 850      | 800      | 750      | 700      |
| Voltage range          | 3 - 40 V | 3 - 42 V | 3 - 42 V | 3 - 42 V | 3 - 42 V | 3 - 42 V | 3 - 44 V | 3 - 44 V |
| Dip-Switch combination | 0111     | 0110     | 0101     | 0100     | 0011     | 0010     | 0001     | 0000     |
| I <sub>out</sub> (mA)  | 650      | 600      | 550      | 500      | 450      | 400      | 350      | 300      |
| Voltage range          | 3 - 44 V | 3 - 44 V | 3 - 44 V | 3 - 44 V | 3 - 44 V | 3 - 44 V | 3 - 44 V | 3 - 44 V |

LC42MINI-CC-300-1050-SR LED driver is suited for independent use and built-in usage in luminaires. 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 via dip-switch

LC42MINI-CC-300-1050-SR LED driver features a constant current output adjustable via dip-switch combinations

- For the combination/current values, refer to the table on page 3.

### LED driver earthing

- LC42MINI-CC-300-1050-SR is Class I LED driver suitable for Class I and II luminaires, as well as driving Class III (SELV) luminaire parts in independent installation.
- When used inside **Class I and Class II** luminaires, the earth cable is recommended to be connected to improve the EMC performance of the driver, but it is not mandatory. It is the responsibility of the integrator to ensure that the assembled luminaire EMC performance complies with the latest standards.
- If used in **independent** installation with Class I/II/III luminaires, the earth cable connection is optional.

### 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.

### Installation site

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

## Lamp failure functionality

### No load

When open load is detected, driver limits output voltage according to  $U_{out} (max)$  (abnormal).

### Overload

Driver can withstand overload, however reliable operation is only guaranteed in specified voltage range.

### Short circuit

Driver can withstand output short circuit.

## Conformity & standards

|   |  |
|---|--|
| General and safety requirements   | EN 61347-1: 2015                       |
| Particular safety requirements for DC or AC supplied electronic control gear for LED modules                | EN 61347-2-13: 2014 + A1: 2017         |
| Additional safety requirements for AC or DC supplied electronic controlgear for emergency lighting          | EN 61347-2-13: 2014 + A1:2017, Annex J |
| Thermal protection class  | EN 61347, C5a                          |
| 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: 2006+ A1:2009                |
| Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers | IEEE 1789-2015                         |
| Compliant with relevant EU directives   |  |
| RoHS/REACH compliant  |  |
| ENEC and CE marked  |  |

## Label symbols



Safety isolating control gear with short circuit protection (SELV control gear).



Double insulated control gear suitable for independent use.



Symbol for independent control gear.



Thermally controlled control gear, incorporating means of protection against overheating to prevent the case temperature under any conditions of use from exceeding 110 °C.



AC/DC supplied electronic control gear for emergency lighting purposes intended for connection to a centralized emergency power supply.