

LL2x25-E-CC

2x25 W Constant Current LED driver

2x25 W 220-240 VAC 50-60 Hz

- Adjustable constant current output: 350 (default) to 700 mA
- Two SELV rated output channels
- SELV < 60 V output protection
- Overload, open & short circuit protection
- Suitable for operation with DC input
- Suitable for Class I and Class II luminaires
- Current setting resistor input
- Long lifetime, up to 100 000 h



Connections



| Current setting (p.2) | |
|-----------------------|-----------------------|
| Resistor R | output I _v |
| open | 350 mA |
| 0 Ω | 700 mA |

Note:

- 1) Not suitable for load side switching operation.
- 2) Both output channels must be connected

Mains characteristics

| | |
|----------------------------|----------------|
| Voltage range | 198-264 VAC, |
| DC range | 176-280 VDC, |
| starting voltage | > 190 VDC |
| Mains current at full load | 0.23-0.30 A |
| Frequency | 0 / 50 - 60 Hz |

| | |
|--|--|
| Highest allowed t _c point temperature | 75 °C |
| Life time (90 % survival rate) | 60 000 h, at t _c = 75 °C 90 000 h, at t _c = 70 °C 100 000 h, at t _c = 65 °C |

Load output (SELV 60 V)

| | | |
|---------------------------------|--|--|
| Output current (I-OUT) | 350 mA (default) - 700 mA | |
| Accuracy | ± 5 % | |
| Ripple | < 2 % at ≤ 120 Hz * | |
| | *] Low frequency, LED load: Cree XM-L LEDs | |
| U-OUT _{max} (abnormal) | 60 V | |

| | |
|---------------------------|-----------------|
| Ambient temperature range | -20...+50 °C |
| Storage temperature range | -40...+80 °C |
| Maximum relative humidity | no condensation |

| | I-OUT 350 mA | 700 mA |
|-----------------------|--------------|-----------|
| P-out (max) / channel | 17.5 W / ch | 25 W / ch |
| U-OUT | 20 - 50 V | 20 - 36 V |
| λ @ max | 0.93 | 0.96 |
| η @ max | 0.87 | 0.87 |

Connections and mechanical data

| | |
|-----------------------------------|------------------------------|
| Wire size | 0.5 - 1.5 mm ² |
| Wire type | solid core and fine-stranded |
| Maximum driver to LED wire length | 5 m |
| Weight | 270 g |
| IP rating | IP20 |

Functional description

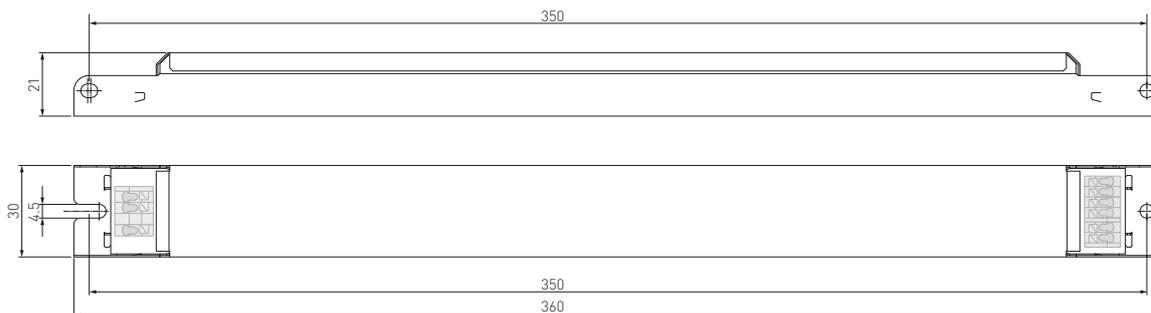
- Current setting input sets equal output current to both channels
- Forward voltage over LED load can be different between the channels
- Load has to be connected to both channels meaning that neither of the channels can be left open. See operating window on page 2 for suitable Voltages.

Insulation between circuits

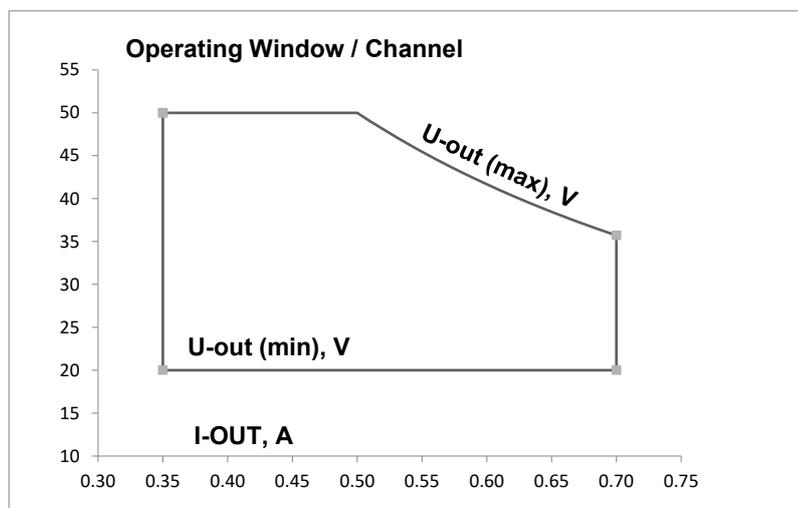
Mains - SELV circuit Double/reinforced insulation

Operating conditions and characteristics

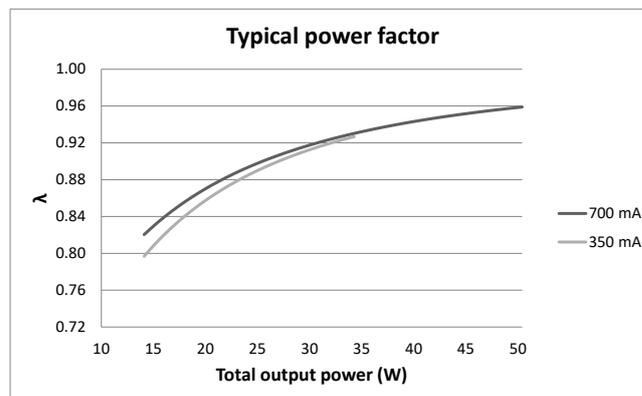
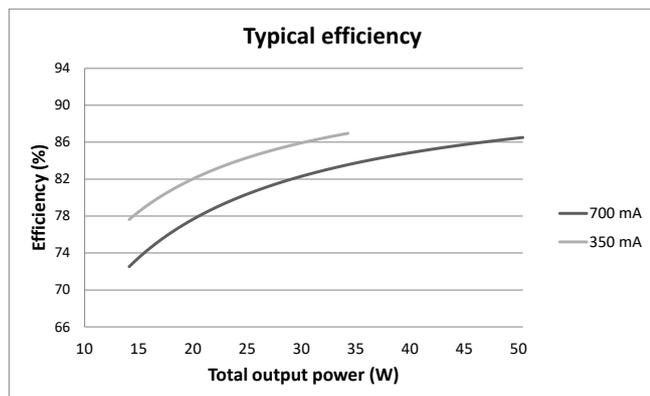
Dimensions



Load output



Driver performance



Current setting resistor values (Nominal I-OUT $\pm 5\%$ tol.)

| R (Ω) | 0 | 220 | 470 | 680 | 1k | 1k5 | 1k8 | 2k2 | 2k7 | 3k3 | 3k9 | 4k7 | 6k8 | 8k2 | 12k | 18k | 33k | 47k | ∞ |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------|
| I _{out} (mA) | 700 | 680 | 665 | 650 | 635 | 615 | 605 | 590 | 575 | 555 | 540 | 525 | 495 | 480 | 450 | 420 | 395 | 380 | 350 |

Quantity of drivers per miniature circuit breaker 16 A Type C

| Based on I _{Cont} | Based on I _{peak} | Typ.inrush current | 1/2 value time | Calculated energy |
|----------------------------|----------------------------|-----------------------|------------------------|--|
| (pcs.) | (pcs.) | I _{peak} (A) | Δt (μs) | I _{peak} ² Δt (A ² s) |
| 43 | 53 | 30 | 16 | 0.104 |

LL2x25-E-CC LED driver is suited for in-built luminaire usage. 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. Specifications of the LED drivers may never exceed the operating conditions as per the product datasheets.

Wiring considerations

Wire type and cross section

- Please refer to datasheets connections & mechanical data

Wiring insulation

- According to recommendations in EN 60598

Maximum wire lengths

- Please refer to datasheets connections & mechanical data

Wire connections

- Please refer to datasheets connections diagram

Miniature Circuit Breakers (MCB)

- Type-C MCB's with trip characteristics in according to EN 60898 are recommended.

LED driver earthing

- LED drivers are designed to support different luminaire classifications, like Class I or Class II fittings (no earth required). Please check the individual LED driver type for its exact safety class rating.
- For Helvar LED drivers to have a reliable operation and EMC performance, the luminaires are expected to have an earth connection.

Installation & operational considerations

Maximum tc temperature

- Reliable operation and lifetime is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.

Installation site

- Ensure that the LED driver does not exceed temperature higher than specified on the product datasheets.
- The general preferred installation position of LED drivers is to have the top cover facing upwards.

Current setting resistor

The Helvar LL2x25-E-CC LED driver feature an adjustable constant current output.

- An external resistor can be inserted in to the current setting terminal, allowing the user to adjust the LED driver output current.
- When no external resistor is connected, then the LED driver will operate at their default lowest current level (350 mA).
- A standard through-hole resistor can be used for the current setting. To achieve the most accurate output current it is recommended to select a quality low tolerance resistor.
- For the resistor / current value selection, please refer to the enclosed table below.

Conformity

| | |
|--|---------------|
| General and safety requirements | EN 61347-1 |
| Particular safety requirements for d.c. or a.c. supplied electronic controlgear for LED modules, acc. to | EN 61347-2-13 |
| Thermal protection class | EN61347, C5e |
| Mains current harmonics, acc. to | EN 61000-3-2 |
| Limits for Voltage Fluctuations and Flicker, acc to | EN 61000-3-3 |
| Radio Frequency Interference, acc. to | EN 55015 |
| Immunity standard, acc. to | EN 61547 |
| Performance requirements, acc to | EN 62384 |

Compliant with relevant EU directives
ENEC, CE and SELV marked