

1x50 W **Dimmable** LED driver with Active+ functionality

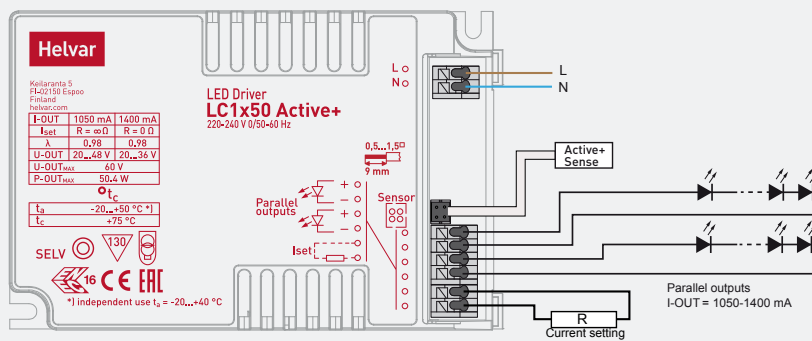
- Fully automatic standalone setup with smart learning functionality
- Optimised presence detection, daylight harvesting and Constant Light Output (CLO) operation
- No programming, configuration, or external control wiring needed
- Inbuilt power supply for sensor use
- Overwriting option for sensor parameters
- Hybrid dimming technique for high quality light
- Overload, open, and short circuit protection
- Adjustable constant current output: 1050 mA (default) to 1400 mA
- Optional strain relief for independent use (LC1x70-SR)
- Low standby power < 0.5 W
- Suitable for Class I, II, and III luminaires



50 W
220 VAC – 240 VAC
50 Hz – 60 Hz



Connections



| Current setting (p. 2) | |
|------------------------|-----------------|
| Resistor R | output I_{IV} |
| open | 1050 mA |
| 0 Ω | 1400 mA |

Note:

- Not suitable for load side switching operation.

Mains Characteristics

| | |
|--------------------------------|--|
| Voltage range | 198 VAC – 264 VAC |
| DC range | 176 VDC – 280 VDC, starting voltage > 190 VDC |
| Max mains current at full load | 0.22 A – 0.31 A |
| Frequency | 0 / 50 Hz – 60 Hz |
| Stand-by power | 0.47 W |

Connections and Mechanical Data

| | |
|-----------------------------------|---|
| Wire size | 0.5 mm ² – 1.5 mm ² |
| Wire type | solid core and fine-stranded |
| Maximum driver to LED wire length | 1 m |
| Weight | 270 g |
| IP rating | IP20 |

Load Output (SELV <60 V)

| | |
|------------------------------|------------------------------|
| Output current (I_{out}) | 1050 mA (default) – 1400 mA |
| - Accuracy | $\pm 5 \%$ |
| - Ripple | < $\pm 15 \%$ high frequency |
| U_{out} (max) (abnormal) | 60 V |

| | 1050 mA | 1400 mA |
|---------------------------------|-------------|-------------|
| P_{out} (max) | 50.4 W | 50.4 W |
| U_{out} | 20 V – 48 V | 20 V – 36 V |
| λ | 0.98 | 0.98 |
| Efficiency (η), max load | 0.88 | 0.87 |

Functional Description

- Active functionality as default (see User Guide)
- Overriding setting of sensor parameters by Helvar Active+ Mobile application (see User Guide)
- Linear dimming curve
- Adaptive overload protection
- Full load recognition

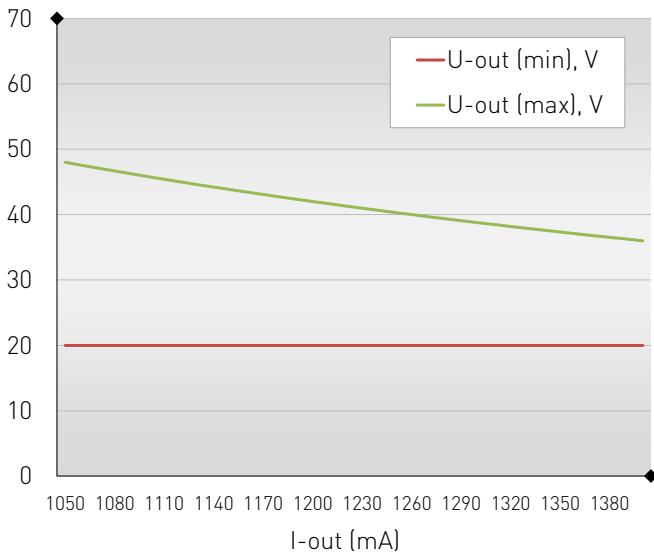
Note: See page 2 - 3 for dimensions and additional information

Operating Conditions and Characteristics

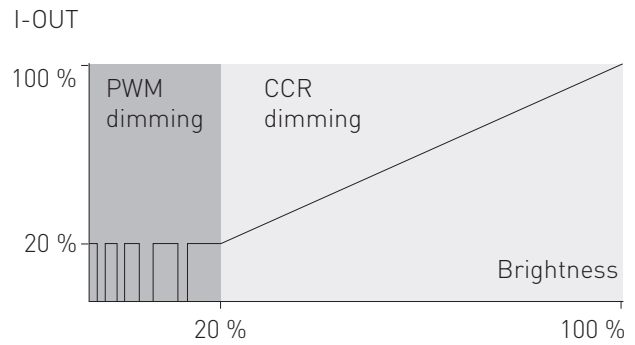
| | |
|---------------------------------|--|
| Max. temperature at t_c point | 75 °C |
| Ambient temperature range | -20 °C ... +50 °C * |
| Storage temperature range | -40 °C ... +80 °C |
| Maximum relative humidity | no condensation |
| Life time | 50 000 h, at t_c (max) (90 % survival rate) |

* Note: ambient temperature for independent use -20 °C ... +40 °C

Load output



Hybrid dimming technique in automatic dimming



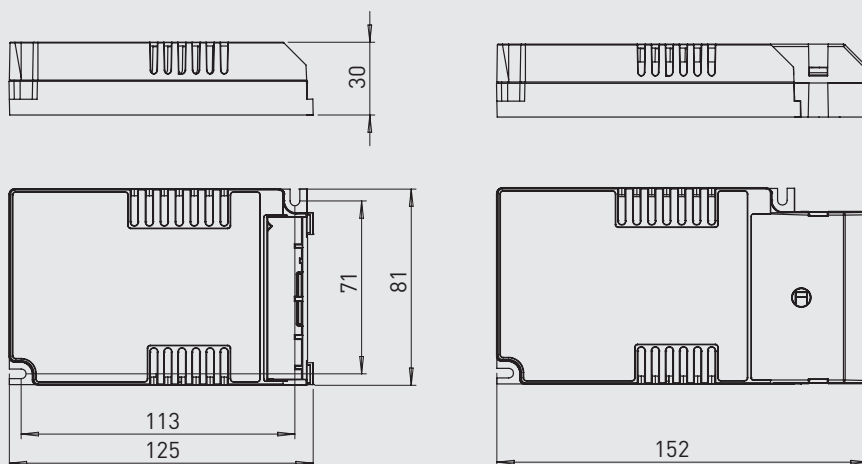
| Dimming range | Dimming technique |
|---------------|----------------------------------|
| 1 % – 20 % | Pulse Width Modulation (PWM)* |
| 20 % – 100 % | Constant Current Reduction (CCR) |

* PWM dimming frequency 800 Hz

Current setting resistor values (Nominal I_{out} ($\pm 5\%$ tol.))

| R (Ω) | 0 | 1k | 2k2 | 3k3 | 4k7 | 8k2 | 10k | 15k | 22k | 33k | 47k | 68k | 100k | 220k | open |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| I_{out} (mA) | 1400 | 1380 | 1360 | 1340 | 1320 | 1290 | 1270 | 1240 | 1200 | 1170 | 1140 | 1120 | 1100 | 1070 | 1050 |

Dimensions



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, Δt | Calculated energy, $I_{peak}^2 \Delta t$ |
|---------------------|---------------------|--------------------|----------------------------|--|
| 43 pcs. | 61 pcs. | 29 A | 146 μs | 0.097 A ² s |

LC1x50 Active+ 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

Wire type and cross section: Refer to datasheets connections & mechanical data

Wiring insulation: According to recommendations in EN 60598

Maximum wire lengths: Refer to datasheet's connections & mechanical data

Wire connections: Refer to datasheet's 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, such as Class I or Class II fittings (no earth required). 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 & operation

Maximum t_c temperature: Reliable operation and lifetime is only guaranteed if the maximum t_c 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 for independent use is to have the top cover facing upwards.

Current setting resistor

LC1x50 Active+ LED driver features 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 drivers will operate at their default lowest current level.
- 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. Minimum diameter for resistor leg is 0.51mm.
- For the resistor/current value selection, refer to the table on page 2.
- For drivers not providing isolation (non-isolated), current setting resistor must be insulated according safety regulations.

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 | EN61347, 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 |
| Compliant with relevant EU directives | |
| ENEC and CE marked | |

Lamp failure functionality

No load

When open load detected, driver will go to stand by, automatic recovery on first 10 minutes. After 10 minutes if no load detected driver goes to standby mode and will recover with mains reset.

Short circuit

When short circuit detected, driver goes to standby, and return by mains reset.

Overload

When high over load detected, driver goes to stand by and follow the same functions described in open load condition. When low over load is detected, output current will be reduced to result maximum rated power.

Underload

when under voltage is detected, driver goes to STB, and return by mains reset.