

LL1x110-E-CC-200-350

1x110 W **Constant Current** LED driver

110 W 220-240 VAC 0/50-60 Hz

- Open & short circuit protection
- Adjustable constant current output: 200 (default) to 350 mA
- Maximum 110 W load
- Protected up to 4 kV power network fast transients
- High efficiency 0.95
- Suitable for Class I luminaires



Mains Characteristics

Voltage range	198-264 VAC,
DC range	176-280 VDC,
	Starting voltage > 190 VDC
Max mains current at full load	0.40-0.60 A
Frequency	0 / 50 - 60 Hz
U-OUT _{max} (abnormal)	400 V

Load Output

Output current (I-OUT)	200 mA (default) - 350 mA
Max output power	110 W
Efficiency, at full load, typical	0.95

I-OUT	200 mA	350 mA
P-out (max)	70 W	110 W
U-OUT	120 - 350 V	120 - 314 V
λ	0.96	0.98
η @ max	0.94	0.95

Operating Conditions and Characteristics

Max.temperature at tc point	75 °C
Ambient temperature range	-20...+50 °C
Storage temperature range	-40...+80 °C
Maximum relative humidity	No condensation
Lifetime	50 000h, at TC max (90 % survival rate)

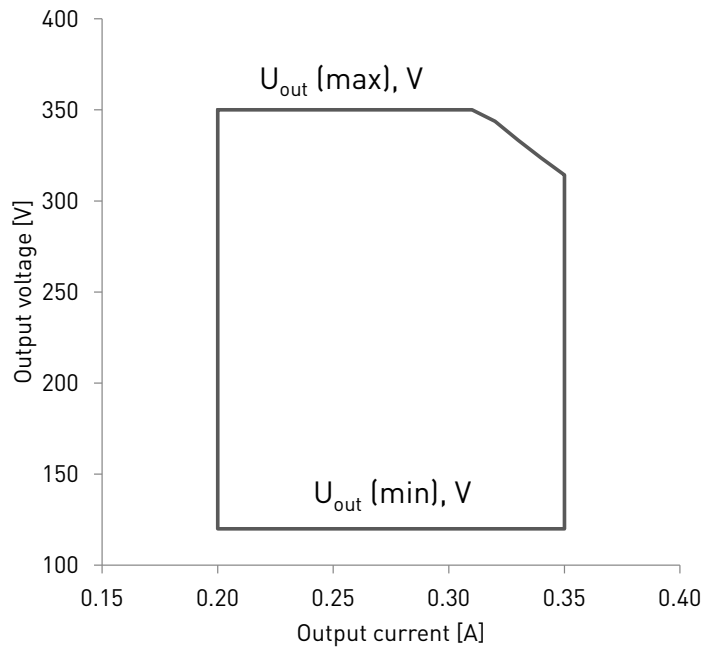
Connections and Mechanical Data

Wire size	0.5 - 1.5 mm ²
Wire type	Solid core and fine-stranded
Wiring insulation	According to EN 60598
Maximum driver to LED wire length	5 m
Weight	173 g
IP rating	IP20

Conformity

General and safety requirements	EN 61347-1
Particular safety requirements for DC or AC supplied electronic controlgear 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 & CE marked



Current setting resistor values (Nominal I_{out} (±5 % tol.))

R (Ω)	0	470	1k	1k5	2k2	3k3	3k9	5k6	6k8	10k	12k	18k	27k	47k	100k	∞
I _{out} (mA)	350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	200

Connections

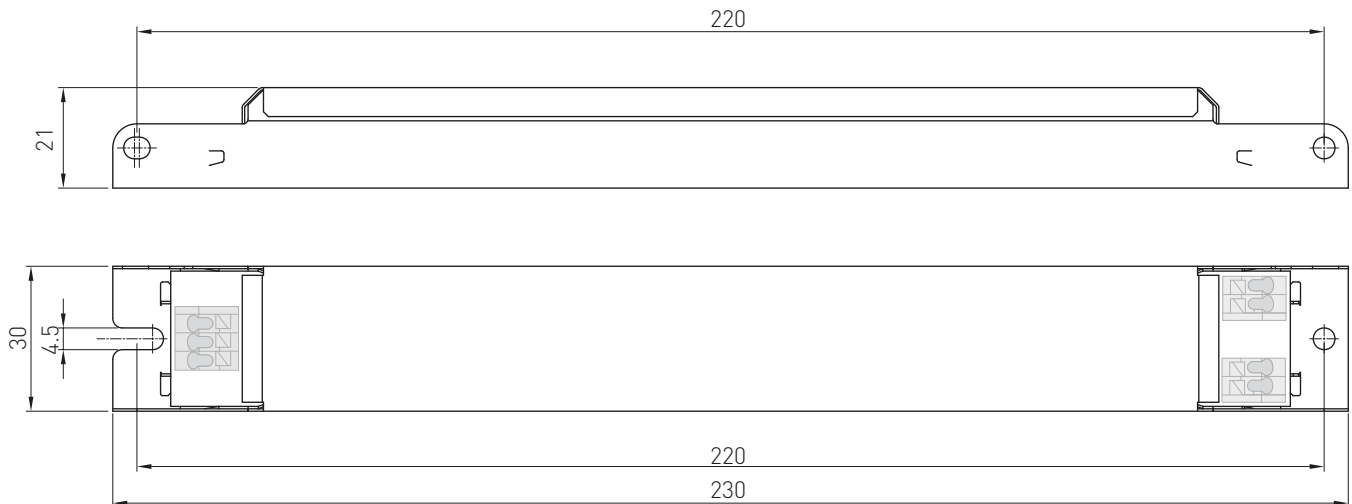
The diagram shows the physical LED driver with its input (L, N, PE) and output (+, -) terminals. The Iset terminal is connected to a resistor R. A schematic of the LED load is shown above the driver, consisting of three LEDs in series.

Note:
* Not suitable for load side switching operation.

Current setting (p.2)	
Resistor R	output I _v
open	200 mA
0 Ω	350 mA

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)
22	24	41	236	0.301



Installation & operation

LL1x110-E-CC-200-350 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. Operating conditions of the LED drivers may never exceed the specifications as per the product datasheets.

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

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

Current setting resistor

The Helvar LL1x110-E-CC-200-350 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 (200 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 table on page 2.

Miniature Circuit Breakers (MCB)

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

LED driver earthing

- For Helvar LED drivers to have a reliable operation and EMC performance, the luminaires are expected to have an earth connection.

Company Address:

Helvar Oy Ab

Keilaranta 5

FI-02150, Espoo