LL1x23-80-E-CC

1x23-80 W **Constant Current** LED driver

Helvar
freedom in lighting

- Open & short circuit protection
- Adjustable and selectable constant current output: 150 (default) to 350 mA
- Maximum 80 W load
- High efficiency 0.95
- Suitable for Class I luminaires

80 W 220-240 VAC 50-60 Hz

Connections

Current setting (p.2) **	
Resistor R	output I_{fv}
open	150 mA
0 Ω	350 mA

Note:
** Not suitable for load side switching operation.*
*** Connect load between terminal (+) and (150mA / Iset) for adjusted output currents.*

Mains Characteristics

Voltage range	198-264 VAC,
DC range	176-280 VDC,
	starting voltage > 190 VDC
Max mains current at full load	0.34-0.44 A
Frequency	0 / 50 - 60 Hz
U-OUT_{max} (abnormal)	400 V

Load Output

Output current (I-OUT)	150 mA (default) - 350 mA
Max output power	80 W
Efficiency, at full load, typical	0.95

I-OUT	150 mA	200 mA	350 mA
P-out (max)	52.5	70	80
U-OUT	150 -350	120 - 350	120-228
λ	0.98	0.98	0.98
η @ max	0.95	0.95	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
Life time	60 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
Maximum driver to LED wire length	5m
Weight	170 g
IP rating	IP20

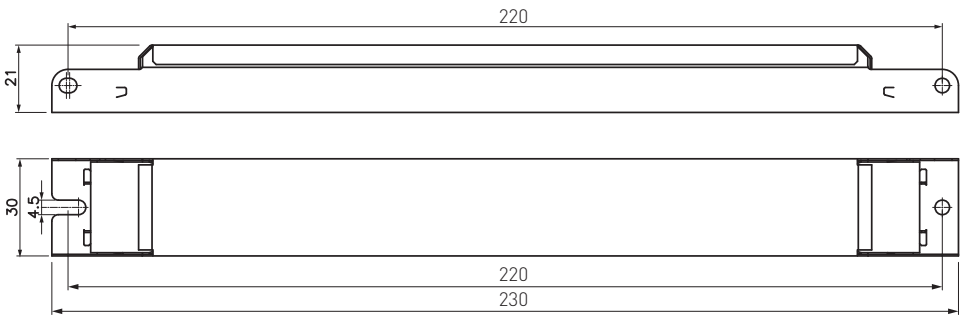
Conformity

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 marked

Note: See page 2 for dimensions

Dimensions



Wiring & connectivity

LL1x23-80-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 LL1x23-80-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 (150 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.

Current setting resistor values (Nominal Iout (±5 % tol.)

R (Ω)	0	100	220	390	560	680	820	1k	1k5	1k8	2k2	2k7	3k3	3k9	4k7	5k6	8k2	12k	18k	39k	∞
I_{out} (mA)	350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	150

Quantity of drivers per miniature circuit breaker 16 A Type C

Based on I_{Cont} (pcs.)	Based on I_{peak} (pcs.)	Typ.inrush current I_{peak} (A)	1/2 value time Δt (µs)	Calculated energy $I_{peak}^2 \Delta t$ (A^2s)
30	36	40	173	0.198