

LL1x40-E-CC

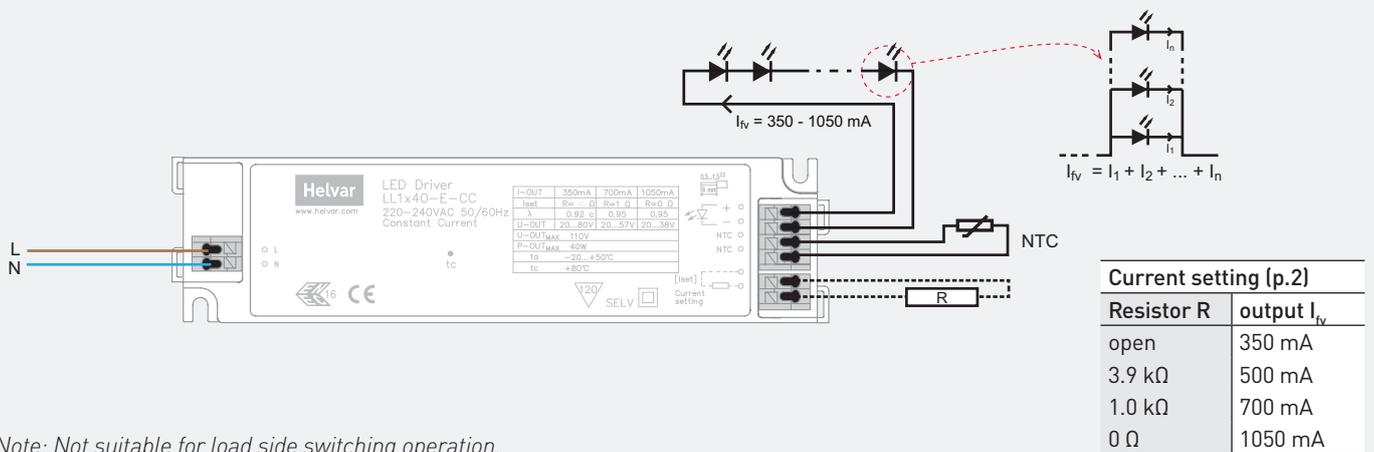
1x40 W Constant Current LED driver

- Adjustable constant current output: 350 mA (default) - 1050 mA
- Protected up to 4 kV power network fast transients
- High efficiency, 0.89
- Overload, open & short circuit protection
- Suitable for Class I, II or SELV luminaire
- External NTC thermal input
- Current setting resistor input
- Optional click-on strain relief for independent use (LL1x40-SR)

40 W 220-240 VAC 50-60 Hz



Connections



Note: Not suitable for load side switching operation.

Mains Characteristics

Voltage range	198 - 264 VAC
DC range	176 - 280 VDC, starting voltage > 190 VDC
Max mains current at full load	0.18-0.23 A
Frequency	0 / 50 - 60 Hz
U-OUT _{max} (abnormal)	100 V

Load Output

Output current (I-OUT)	350 mA (default) - 1050 mA
Max output power	40 W
Efficiency, at full load, typical	≥ 0.89

I-OUT	350 mA	700 mA	1050 mA
P-out (max)	28 W	40 W	40 W
U-OUT	20 - 80 V	20 - 57 V	20 - 38 V
λ	0.92c	0.95	0.95
η @ max	0.90	0.89	0.87

Operating Conditions and Characteristics

Max. temperature at t _c point	75 °C
Ambient temperature range	-20...+50 °C *
	(* Independent use t _{a,max} = +45 °C)
Storage temperature range	-40...+80 °C
Maximum relative humidity	no condensation
Life time	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
Maximum driver to LED wire length	5m (1 m with NTC)
Weight	150 g (+17 g, strain relief LL1x40-SR)
Thermal sensor input	Input for external NTC thermal sensor
NTC trigger point	8.2 kΩ
IP rating	IP20

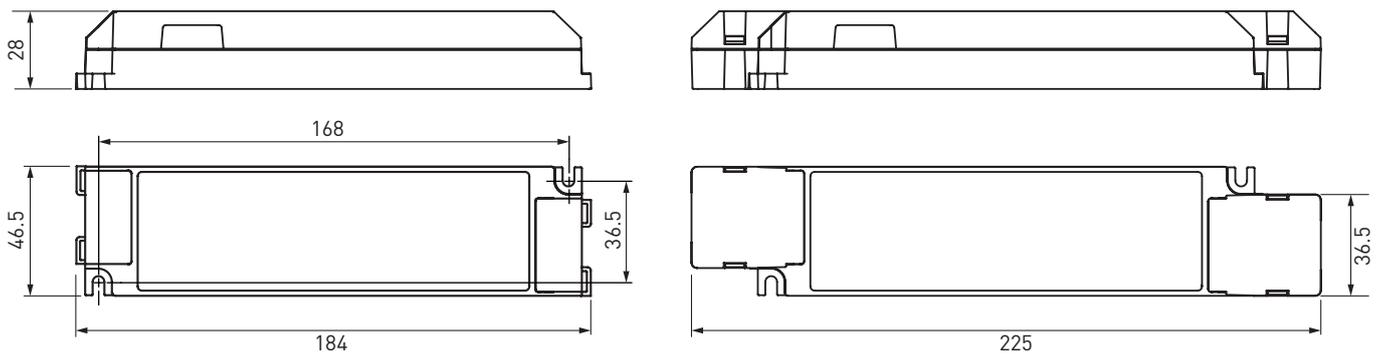
Conformity & Standards

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 & SELV marked

Note: See page 2 for dimensions

With strain relief (LL1x40-SR)



LL1x40-E-CC LED driver is suited for either in-built and independent 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.
- When using a SELV-rated LED driver, then the SELV driver output has to be insulated from the luminaire earth connection (ref. EN60598-1 luminaire standard).

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.

Strain Relief for independent use

- LL1x40-E-CC LED driver allow use both inside the luminaire and outside the luminaire, via the LL1x40-SR strain relief. The strain relief provides reliable fastening method for the mains and LED output wiring.
- 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 LL1x40 driver platforms 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 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.
- For the resistor / current value selection, please refer to the enclosed table below.

Current setting resistor values

R (Ω)	0	47	150	270	390	560	820	1k	1k5	1k8	2k7	3k9	6k8	10k	∞
I _{out} (mA)	1050	1000	950	900	850	800	750	700	650	600	550	500	450	400	350