LL1x10-42-CC-350-700

freedom in lighting **Helvar**

42 W **Constant Current** LED driver

42 W 220 – 240 V 0 / 50 – 60 Hz

- High efficiency up to 91%
- Uout maximum of 250 V
- Low current ripple
- Long lifetime up to 100 000 h
- Driver protection Class I
- Suitable for closed luminaires where protection done with luminaire construction (Class I or II)

Functional Description

- Adjustable constant current output: 350 mA (default) to 700 mA
- Current setting with external resistors

Mains Characteristics

Voltage range	198 VAC – 264 VAC *Withstands max. 320 VAC (max. 1 hour)* *min. 190 VAC (max. 1 hour)*
DC range	176 VDC – 280 VDC
starting voltage	> 190 VDC
Mains current at full load	0.18 A – 0.24 A
Frequency	0 / 50 Hz – 60 Hz
THD at full power	< 10 %
Leakage current to earth	< 0.5 mA
Tested surge protection	1 kV L-N, 2 kV L-GND (IEC 61000-4-5)
Tested fast transient protection	4 kV (IEC 61000-4-4)

Insulation between circuits & driver case

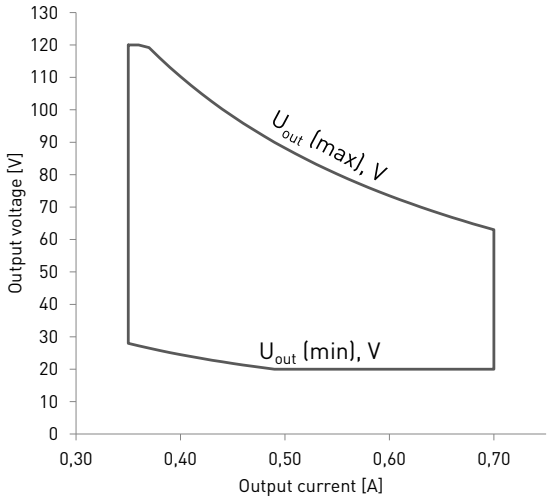
Mains circuit - Output	Non-isolated
Mains and output - Driver case	Basic insulation

Load Output (non-isolated)

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)	250 V

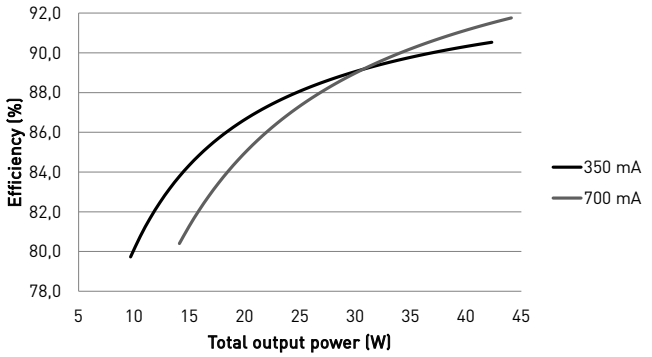
I_{LED}	350 mA	450 mA	700 mA
P_{Rated}	42 W	44.1 W	44.1 W
U_{LED}	28 V – 120 V	22 – 98 V	20 V – 63 V
PF (λ) at full load	0.98	0.98	0.98
Efficiency (η) at full load	90 %	90 %	91 %

Operating window

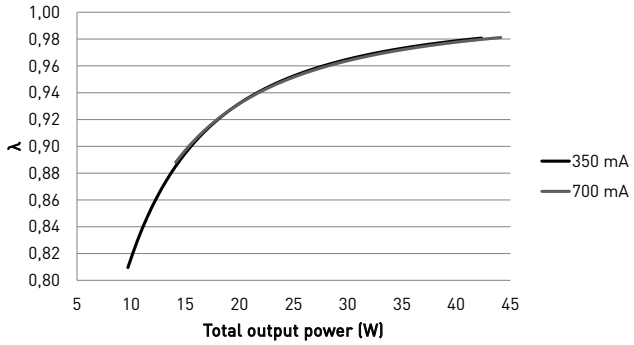


Driver performance

Typical efficiency



Typical power factor



Operating Conditions and Characteristics

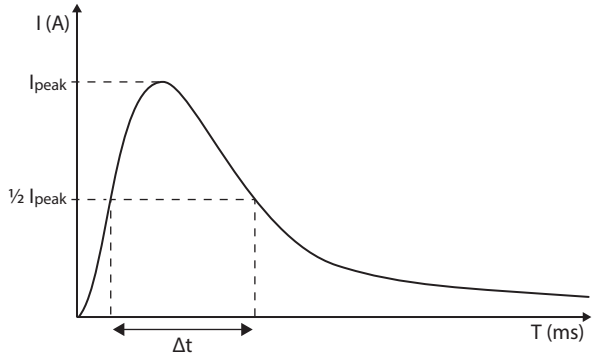
Highest allowed t_c point temperature	75 °C
Ambient temperature range	–25 °C ... +50 °C
Storage temperature range	–40 °C ... +80 °C
Maximum relative humidity	No condensation
Lifetime (90 % survival rate)	100 000 h, at t_c = 65 °C 70 000 h, at t_c = 70 °C 50 000 h, at t_c = 75 °C

Quantity of drivers per miniature circuit breaker 16 A Type C

Based on I_{cont}	Based on inrush current I_{peak}	Typ. peak inrush current I_{peak}	1/2 value time, Δt	Calculated energy, $I_{peak}^2 \Delta t$
49 pcs.	56 pcs.	22 A	191 µs	0.071 A²s

CONVERSION TABLE FOR OTHER TYPES OF MINIATURE CIRCUIT BREAKER

MCB type	Relative quantity of LED drivers
B 10 A	37 %
B 16 A	60 %
B 20 A	75 %
C 10 A	62 %
C 16 A	100 % (see table above)
C 20 A	125 %

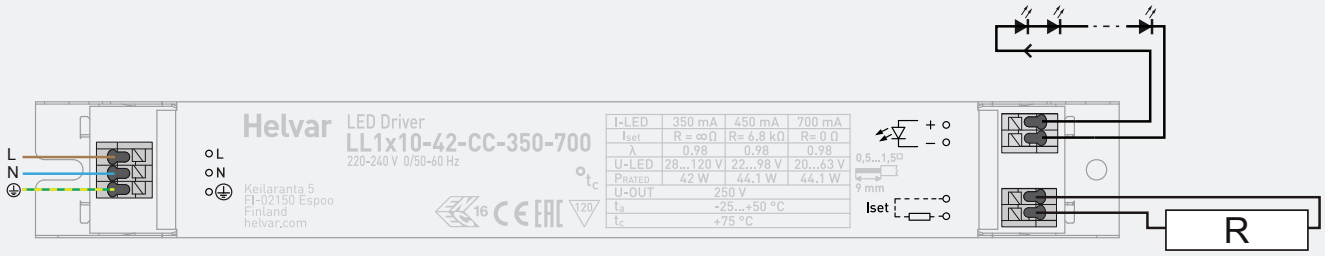


Type C MCB's are strongly recommended to use with LED lighting. Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

Connections and Mechanical Data

Wire size	0.5 mm^2 – 1.5 mm^2
Wire type	Solid core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	1 m
Weight	160 g
IP rating	IP20

Connections



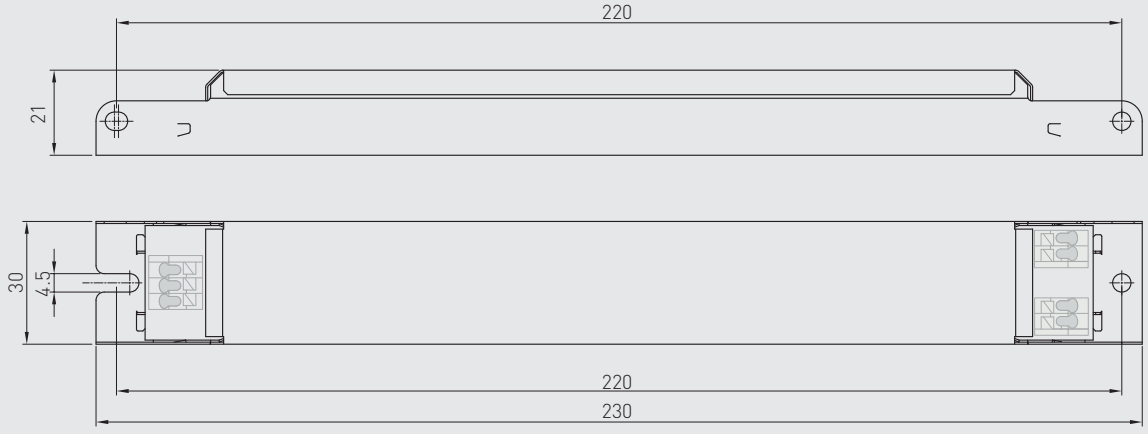
Note:

- *Not suitable for load side switching operation*
- *Label may differ if the unit is preset to fixed current*

Default current setting resistor values, E48 series (Nominal I_{out} (±5 % tol.))

Resistor (Ω)	0	220	470	820	1k2	1k5	2k2	2k7	3k9	5k6	6k8	10k	18k	39k	Open
I_{out} (mA)	700	675	650	625	600	575	550	525	500	475	450	425	400	375	350
Order code	T70000	T70221	T70471	T70821	T70122	T70152	T70222	T70272	T70392	T70562	T70682	T70102	T70183	T70393	N/A

Dimensions (mm)



LL1x10-42-CC-350-700 LED driver is suited for built-in usage in luminaires. 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 datasheet.

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
- Ensure that the tc point temperature does not rise higher than specified on the product datasheets

Current setting resistor

LL1x10-42-CC-350-700 LED driver features a constant current output adjustable via current setting resistor.

- 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 3.
- For drivers not providing isolation (non-isolated), current setting resistor must be insulated according safety regulations.

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. Protection Class I devices must always have protective earth connected for safety reasons.

Lamp failure functionality

No load

When open load is detected, driver limits output voltage according to Uout (max) (abnormal).

Short circuit

Driver can withstand output short circuit.

Conformity & standards

General and safety requirements	EN 61347-1: 2008+ A1:2011+A2:2013
Particular safety requirements for DC or AC supplied electronic control gear for LED modules	EN 61347-2-13: 2014
Thermal protection class	EN 61347, C5e
Mains current harmonics	EN 61000-3-2: 2014
Limits for voltage fluctuations and flicker	EN 61000-3-3: 2013
Radio frequency interference	EN 55015: 2013
Immunity standard	EN 61547: 2009
Performance requirements	EN 62384: 2006+ A1:2009
Compliant with relevant EU directives	
RoHS/REACH compliant	
ENEC and CE marked	

Label symbols

Thermally controlled control gear, incorporating means of protection against overheating to prevent the case temperature under any conditions of use from exceeding 120 °C.