LC1x50-E-CC

freedom in lighting **Helvar**

50 W **Constant Current** LED driver

Product code: 5541
50 W 220 – 240 VAC 50 – 60 Hz

- High efficiency up to 89%
- Low current ripple, complying with IEEE 1789 standard
- Allows open and flexible luminaire design
- Suitable for use with DC input
- Suitable for class I and class II luminaires
- Long lifetime, up to 100 000 h
- Driver protection Class II
- Optional strain relief available for independent use (LC1x70-SR)

Functional description

- Adjustable constant current output: 1050 mA (default) to 1400 mA
- Current setting resistor input. Available Iset resistor values presented on page 3
- Adaptive LED overload protection. Reduces output current if overload of 1 - 4 V is detected
- Open and short circuit protection
- Duplicated mains connection terminal. Maximum continous current via device is 4 A
- Duplicated output terminals for parallel load connection

Mains characteristics

Voltage range	198 VAC – 264 VAC Withstands max. 320 VAC (max. 1 hour)
DC range	176 VDC - 280 VDC
starting voltage	> 190 VDC
Mains current at full load	0.23 A – 0.30 A
Frequency	0 / 50 Hz – 60 Hz
Power consumption, abnormal load	< 1.5 W
THD at full power	< 10 %
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

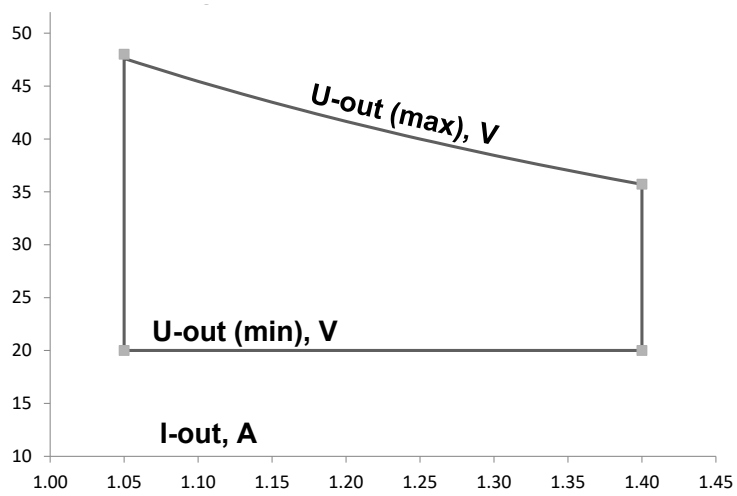
Mains circuit - SELV circuit	Double/reinforced insulation

Load output (SELV <60 V)

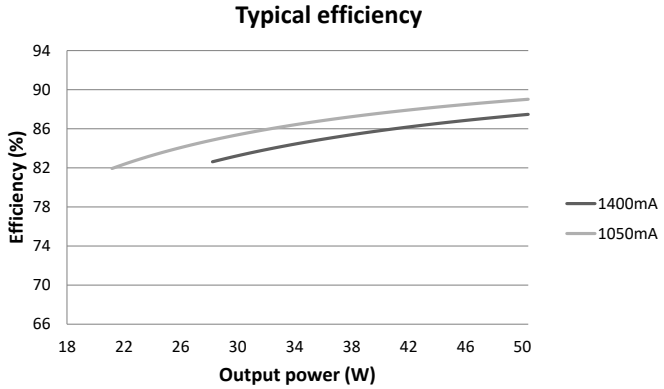
Output current (I_{out})	1050 mA (default) – 1400 mA
Accuracy	± 5 %
Ripple	< 1 %*, at ⩽ 120 Hz *) Low frequency, LED load: Cree XM-L LEDs
U_{out} (max) (abnormal)	60 V
Starting time	< 400 ms

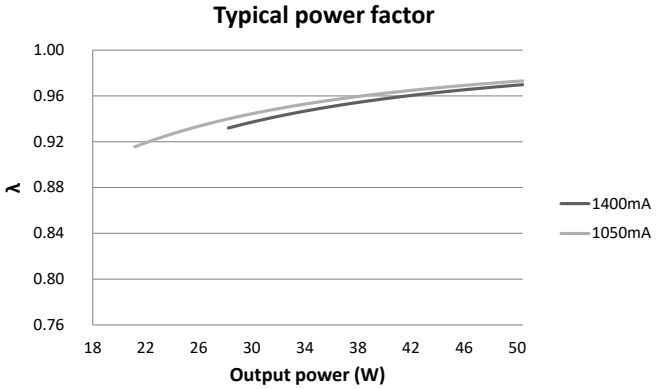
I_{out}	1050 mA	1400 mA
P_{out} (max)	50.4 W	50.4 W
U_{out}	20 V – 48 V	20 V – 36 V
λ, full load	0.97	0.97
Efficiency (η), full load	89 %	88 %

Operating window



Driver performance





Operating conditions and characteristics

Highest allowed t_c point temperature	75 °C
Ambient temperature range	–20 °C ... +50 °C
in independent use	–20 °C ... +45 °C
Storage temperature range	–40 °C ... +80 °C
Maximum relative humidity	No condensation
Life time (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

Optional version available with coated PCB for improved robustness in challenging climate conditions (humidity, temperature).

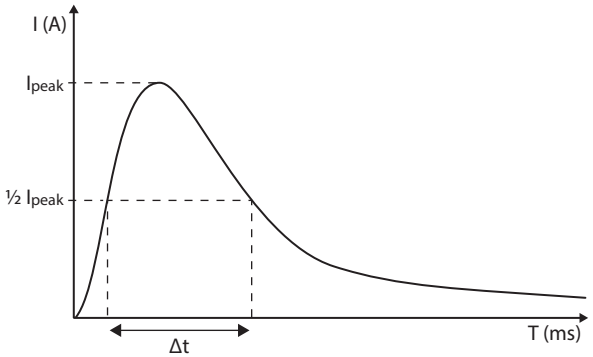
Coated version: Partially allowed condensation, ambient temperature range -30...+50 ˚C

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.	57 pcs.	29 A	156 µs	0.1041 A^2s

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 %

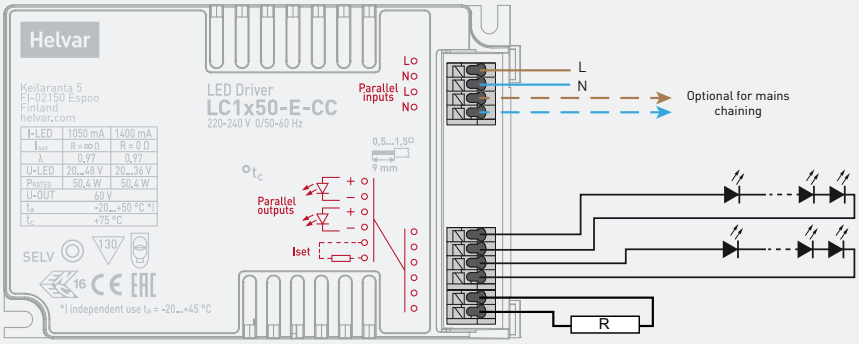


Type C MCB's are strongly recommended to use with LED lighting. Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

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 EN60598
Maximum driver to LED wire length	5 m
Weight	180 g
	(+25 g, strain relief LC1x70-SR)
IP rating	IP20

Connections



Note:

- *Not suitable for load side switching operation.*
- *Hot plug of LED load is not allowed.*

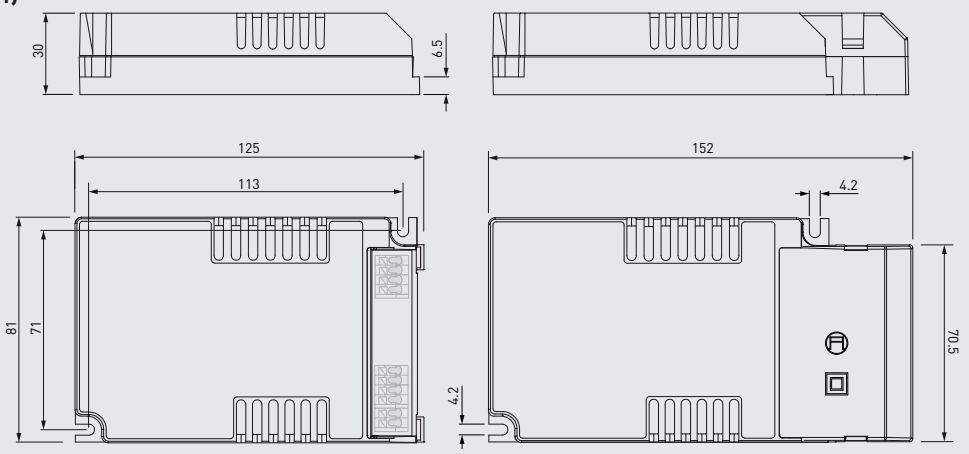
Available Iset resistor values (Nominal I_{out} (±5 % tol.))

Resistor (Ω)	0	1k	2k2	3k3	4k7	8k2	10k	18k	Open
I_{out} (mA)	1400	1380	1360	1340	1320	1290	1270	1220	1050
SAP code	N/A	T70102	T70222	T70332	T70472	T70822	T70103	T70183	N/A

Current setting resistor values, E24 series resistors (Nominal Iout (±5 % tol.)

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

Dimensions (mm)



LC1x50-E-CC LED driver is suited for built-in 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 & 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 exceed the specified value on the datasheet

Installation site:

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

Current setting resistor

LC1x50-E-CC LED driver features an adjustable constant current output.

- 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
- If no external resistor is connected, the LED driver will operate at the lowest current level by default
- Resistor/current values are presented on page 3

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
Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers	IEEE 1789-2015
Compliant with relevant EU directives	
ENEC and CE marked	

Company Address:
Helvar Oy Ab
Keilaranta 5
FI-02150, Espoo