LC22MINI-CC-125-500

22 W **SELV constant current** LED driver

Product code: 5905

22 W 220 – 240 V 50 – 60 Hz

- SELV output protection for safety and flexibility in luminaires
- Low current ripple, complying with IEEE 1789 recommendation
- Suitable for use in emergency lighting applications
- Extremely compact dimensions for flexible usage
- Ideal solution for Class I and Class II luminaires

SELV

Functional Description

- Adjustable constant current output: 125 mA (default) to 500 mA
- Current setting via dip-switches
- Overload, open & short circuit protection

Mains Characteristics

Nominal rated voltage range	220 V – 240 V, 50 – 60 Hz
Rated emergency voltage range	189 V – 255 V, 0 Hz
AC voltage range	198 VAC – 264 VAC
DC voltage range	170 VDC - 280 VDC
Mains current at full load	0.10 – 0.12 A
Frequency	50 Hz – 60 Hz
Stand-by power consumption	< 0.5 W
THD at full power	< 15 %
Tested surge protection	4 kV L-GND (IEC 61000-4-5)
	2 kV L-N (IEC 61000-4-5)
Tested fast transient protection	2 kV (IEC 61000-4-4)

Insulation between circuits & driver case

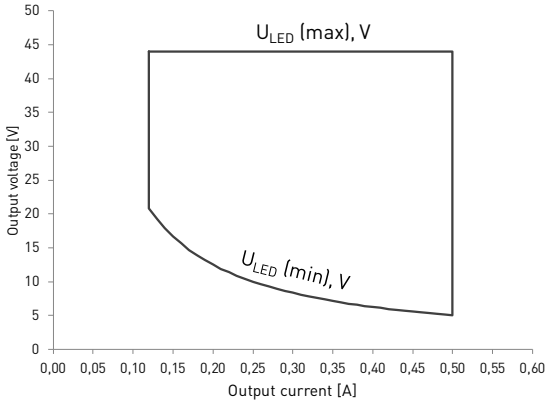
Mains circuit - SELV circuit	Double/reinforced insulation
Mains and output - Driver case	Double/reinforced insulation

Load Output (SELV <60 V)

Output current (I_{out})	125 mA (default) – 500 mA
Accuracy	± 5 %
Ripple	< 3 %* at ≤ 120 Hz
	*) Low frequency, LED load: Cree XP-G LEDs
PstLM	< 0.20*
SVM	< 0.02*
	*) At full power, measured with Cree XP-G LED modules.
U_{out} (max) (abnormal)	59 V
EOF_I (EL use)	> 0.98 x output current with AC supply

I_{LED}	125 mA	500 mA
P_{Rated}	5.5 W	22 W
U_{LED}	20 - 44 V	5 - 44 V
PF (λ) at full load	0.87	0.95
Efficiency (η) at full load	83 %	89 %

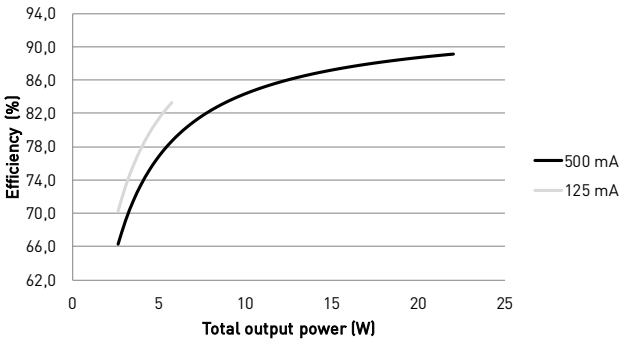
Operating window



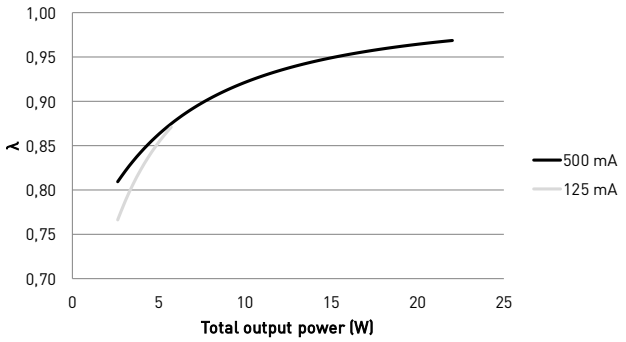
Current value is adjustable in steps via dip-switch. See dip-switch settings in page 3 for details.

Driver performance

Typical efficiency



Typical power factor



Operating Conditions and Characteristics

Absolute highest allowed t_c point temperature	75 °C
Tc life (50 000 h) temperature	75 °C
Ambient temperature range*	–25 °C ... +50 °C*
Storage temperature range	–40 °C ... +80 °C
Maximum relative humidity	No condensation
Mains switching cycles	> 100 000 cycles
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

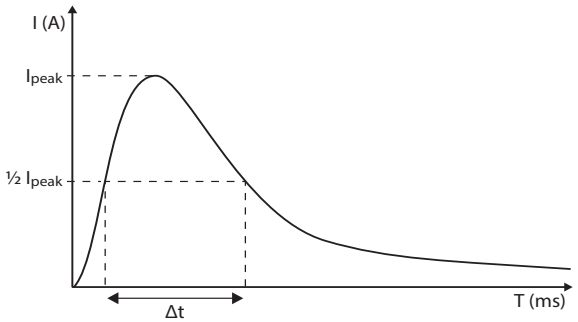
**) For other than independent use, higher t_a of the controlgear possible as long as highest allowed t_c point temperature is not exceeded*

Quantity of drivers per miniature circuit breaker 16 A Type C

Based on inrush current I_{peak}	Typ. peak inrush current I_{peak}	1/2 value time, Δt
85 pcs.	5 A	50 µs

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 %



CONTINOUS CURRENT

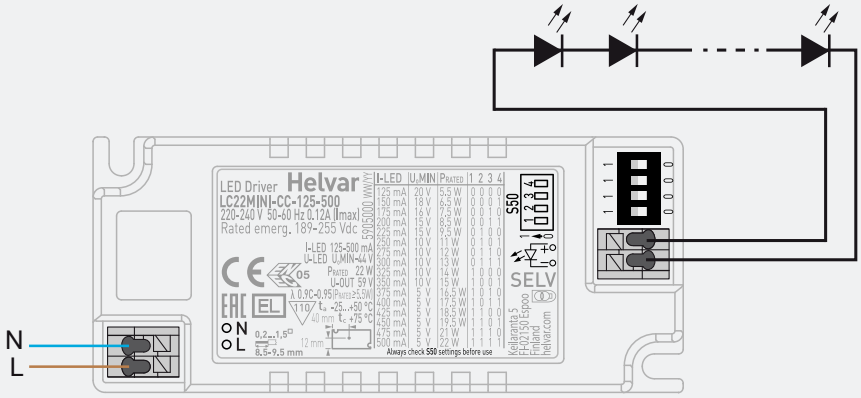
Total continous current of the drivers and installation environment must always be considered and taken into calculations when installing drivers behind miniature circuit breaker. Example calculation of total drivers amount limited by continous current: I_{cont} = (16 A ($I_{nom,Ta}$) / "nominal mains current with full load") x 0.76). This calculation is an example according to recommended precautions due to multiple adjacent circuit breakers (> 9 MCBs) and installation environment (T_a 30 degrees); variables may vary according to the use case. Both inrush current and continous current calculations are based on ABB S200 series circuit breakers. More specific information in ABB series S200 circuit breaker documentation.

NOTE! 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	0.2 mm² – 1.5 mm²
Wire type	Solid core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	1.5 m
Weight	86 g
IP rating	IP20

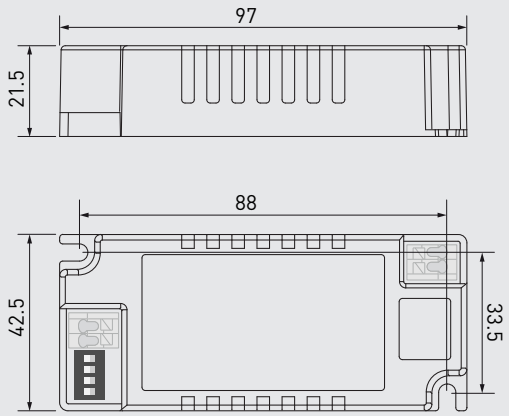
Connections



Note:

- *Not suitable for load side switching operation*

Dimensions (mm)



In LC22MINI-CC-125-500, the current can be set with dip-switches. With each combination of switch setup, a different output current value can be set. The maximum value can be reached with all switches set to "1" (pushed towards the label, see connections picture above) and minimum with all switches set to "0". The output current values according to the dip-switch settings are presented below.

Dip-switch combinations, output currents and voltage ranges (Nominal I_{out} (±5 % tol.))

Dip-Switch combination	1111	1110	1101	1100	1011	1010	1001	1000
I_{out} (mA)	500	475	450	425	400	375	350	325
Voltage range	5 - 44 V	5 - 44 V	5 - 44 V	5 - 44 V	5 - 44 V	5 - 44 V	10 - 44 V	10 - 44 V
Dip-Switch combination	0111	0110	0101	0100	0011	0010	0001	0000
I_{out} (mA)	300	275	250	225	200	175	150	125
Voltage range	10 - 44 V	10 - 44 V	10 - 44 V	15 - 44 V	15 - 44 V	16 - 44 V	18 - 44 V	20 - 44 V

Information and conformity

Helvar Components

LC22MINI-CC-125-500 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 ambient and t_c temperature:

- For built-in components inside luminaires, the t_a ambient temperature range is a guideline given for the optimum operating environment. However, integrator must always ensure proper thermal management (i.e. mounting base of the driver, air flow etc.) so that the t_c point temperature does not exceed the t_c maximum limit in any circumstance.
- Reliable operation and lifetime is only guaranteed if the maximum t_c point temperature is not exceeded under the conditions of use.

Current setting via dip-switch

LC22MINI-CC-125-500 LED driver features a constant current output adjustable via dip-switch combinations

- For the combination/current values, refer to the table on page 3.

Miniature Circuit Breakers (MCB)

- Type-C MCB's with trip characteristics in according to EN 60898 are recommended.
- Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

Lamp failure functionality

No load

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

Overload

Driver can withstand overload, however reliable operation is only guaranteed in specified voltage range.

Short circuit

Driver can withstand output short circuit.

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
Additional safety requirements for AC or DC supplied electronic controlgear for emergency lighting	EN 61347-2-13, Annex J
Thermal protection class	EN 61347, C5a
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	
RoHS / REACH compliant	
ENEC and CE / UKCA marked	

Label symbols

Safety isolating control gear with short circuit protection (SELV control gear).

Thermally controlled control gear, incorporating means of protection against overheating to prevent the case temperature under any conditions of use from exceeding 110 °C.

AC/DC supplied electronic control gear for emergency lighting purposes intended for connection to a centralized emergency power supply.