LL60-CV48

Helvar Components

60 W **Constant Voltage (48 V)** LED driver

Product code: 5962

60 W 220-240 VAC 50-60 Hz

- 48 V Constant voltage output
- Ideal fit for e.g. 48 V LED strips or DC track systems
- Very low voltage ripple, complying with IEEE 1789-2015 recommendation
- High efficiency up to 89%
- Driver protection Class II
- Suitable for Class I and Class II luminaires
- Suitable for independent use with integrated strain reliefs
- SELV output for driving Class III luminaires

SELV

Functional Description

- In-built overvoltage protection, open circuit protection and short circuit protection
- Mechanical size: 160 mm (L) x 58 mm (W) x 18 mm (H)

Mains Characteristics

Nominal rated voltage range	220 V – 240 V, 50 – 60 Hz
AC Voltage range	198 – 264 VAC
Mains current at full load	Max 0.35 A
Frequency	50 - 60 Hz
Input Power at no load	< 0.5 W
THD at full power	< 7 %
Tested surge protection	1 kV L-N
Typical peak inrush current	30 A*
	** See the MCB chart on page 2 for more details*

Insulation between circuits & driver case

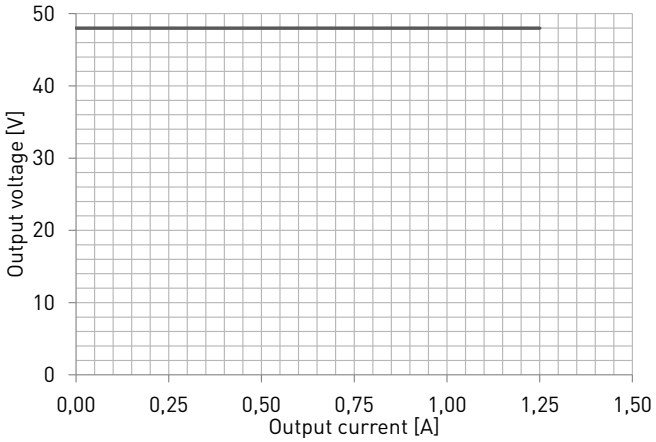
Mains circuit - Output (SELV) circuit	Double / reinforced insulation
Input and output - Driver case	Double / reinforced insulation

Load Output

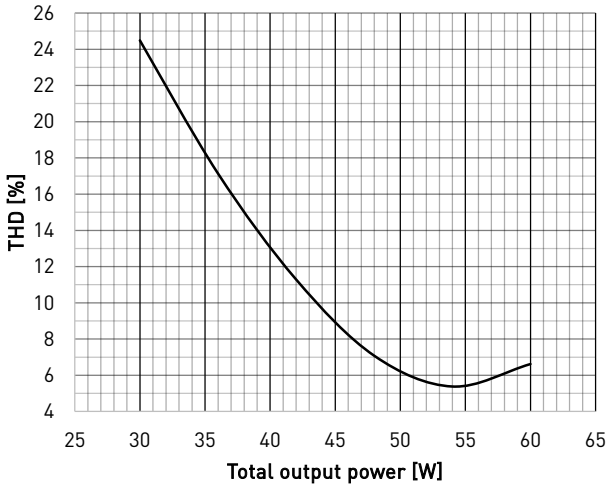
Output voltage (U_{LED})	48 V	
Accuracy	± 5 %	
Ripple	< 2 %* at ⩽ 120 Hz	*) Low frequency, measured at full load, 240 VAC
PstLM	⩽ 1*	
SVM	⩽ 0.4*	*) At full power
Max output current (I_{LED})	1.25 A	
Max output power	60 W	

U_{LED}	48 V
P_{Rated}	60 W
I_{LED} (max)	1.25 A
PF (λ) at full load	> 0.95
Efficiency (η) at full load	> 89 %

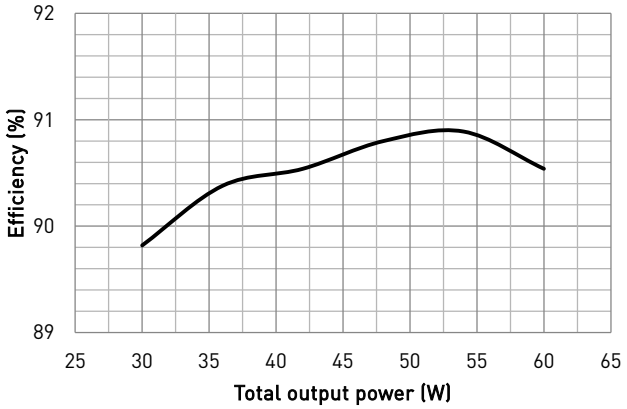
Operating window & driver performance



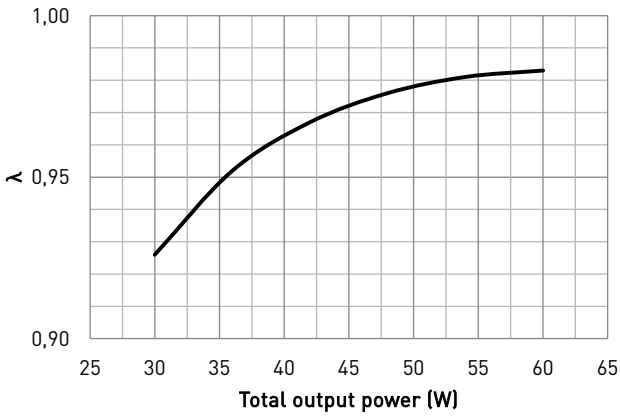
Current THD



Typical efficiency



Typical power factor



Operating Conditions and Characteristics

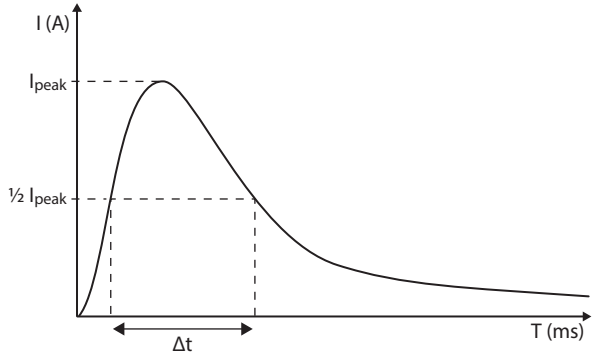
Max.temperature at tc point	85 °C
Tc life (50 000 h) temperature	85 °C
Ambient temperature range	-20...+40 °C
Storage temperature range	-40...+80 °C
Maximum relative humidity	No condensation
Life time (90 % survival rate)	50 000 h at t_c = 85°C

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	Calculated energy, $I_{peak}^2 \Delta t$
38 pcs.	30 A	**170 µs**	0.153 **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 %

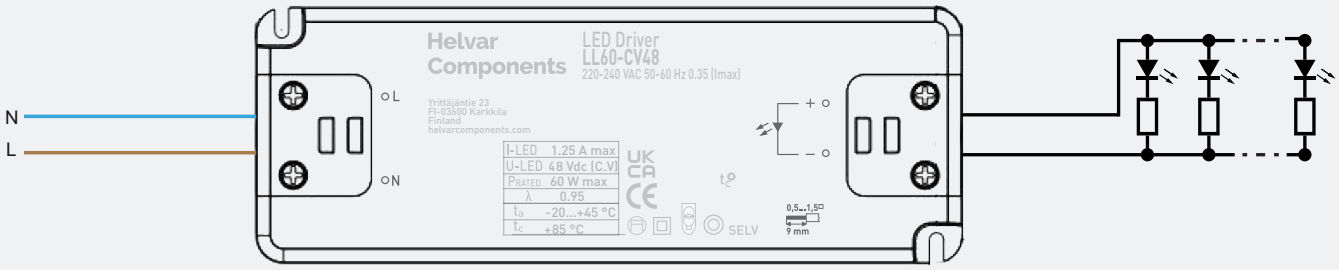


Type C MCB's are strongly recommended to use with LED lighting. Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

Connections and Mechanical Data

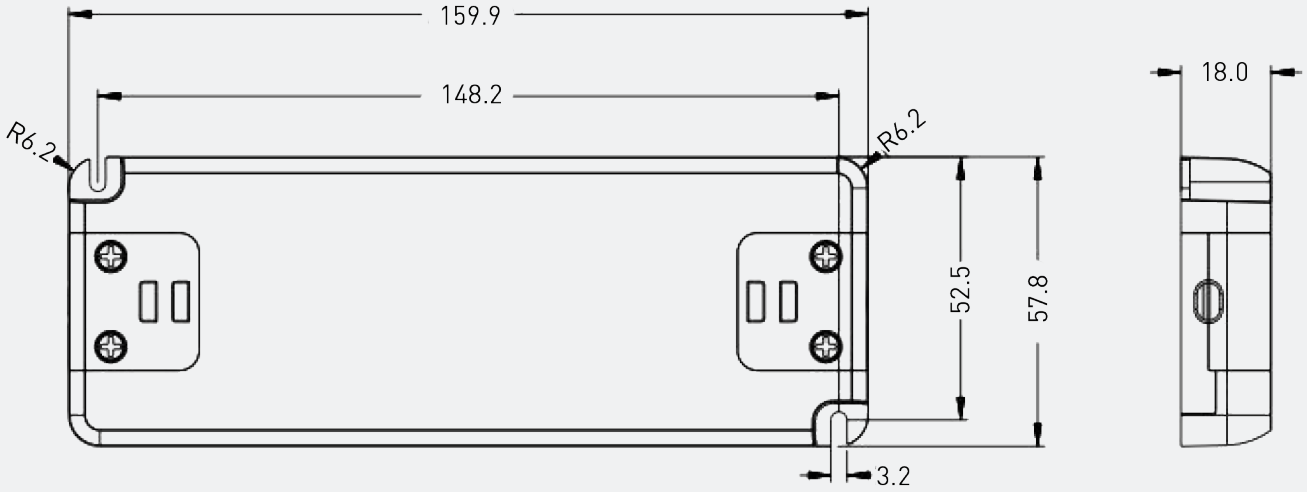
Wire size	0.5 - 1.5 mm²
Wire type	Solid-core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	1.5 m
Weight	250 g
IP rating	IP20

Connections



Note: Avoid using longer LED strips that 5 meters, the voltage losses grow substantial with long runs. In case of uneven brightness of LEDs in long strips, parallel connection of shorter strips is recommended.

Dimensions



Information and conformity

LL60-CV48 LED driver is suited for built-in 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. Operating conditions of the LED drivers may never exceed the specifications as per the product datasheet.

Installation & operation

Maximum 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.

Installation site:

- The general preferred installation position of LED drivers for independent use is to have the top cover facing upwards
- In order to prevent condensation, relative humidity shall be low enough in relation to the ambient temperature

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) voltage.

Overload

The driver can withstand output overload.

Short circuit

The 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
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	
CE / UKCA marked	

Label symbols


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


Double insulated control gear suitable for independent use.


Symbol for independent 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.