LL1x180-CV24

Helvar Components

180 W **Constant Voltage** LED driver

Product code: 5591

180 W 220-240 VAC 50-60 Hz

- 24 V Constant voltage output, max. 180 W load
- Very high efficiency up to 92%
- Low voltage ripple, complying with IEEE 1789-2015 recommendation
- Driver protection Class II
- Suitable for Class I and Class II luminaires
- Suitable for independent use
- SELV output for driving Class III luminaires
- Suitable for use with LL1-CV-DA driver extension for DALI dimmable solutions and LL1-CV-SC for Switch-Control applications*

**) Restrictions apply, see page 3*

SELV

Functional Description

- In-built overvoltage protection, open circuit protection and short circuit protection

Mains Characteristics

Voltage range	198 - 264 VAC
Mains current at full load	0.7 - 0.9 A
Frequency	50 - 60 Hz
Input Power at no load	1 W
THD at full power	< 20%
Tested surge protection	1 kV L-N
Typical peak inrush current	51 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

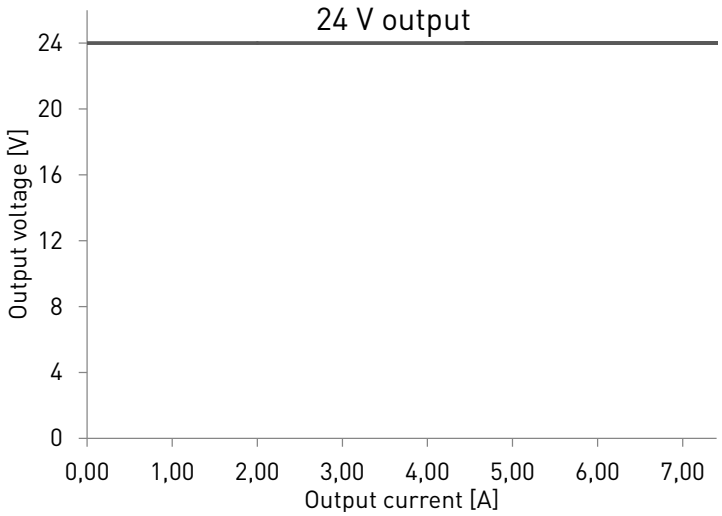
Output voltage (U_{LED})	24 V
Accuracy	± 3 %
Ripple	< 1 %
PstLM	< 0.04*
SVM	< 0.03*

**) At full power, measured with Cree XP-G LED modules.*

U_{out} (max)	25 V
Max output current (I_{LED})	7.5 A
Max output power	180 W

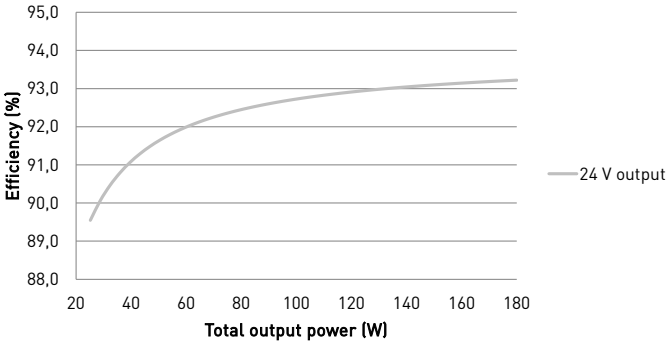
U_{LED}	24 V
P_{Rated}	180 W
I_{LED} (max)	7.5 A
PF (λ) at full load	> 0.95
Efficiency (η) at full load	92 %

Operating window

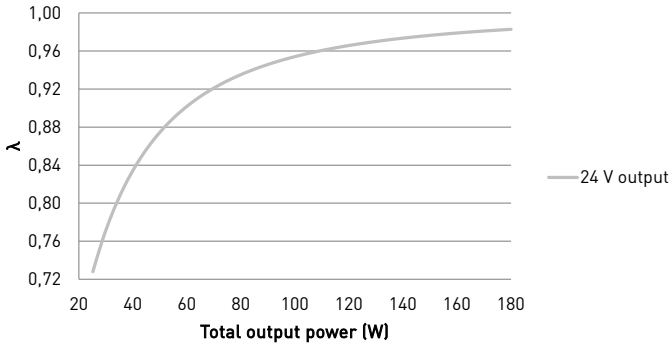


Driver performance

Typical efficiency



Typical power factor



Operating Conditions and Characteristics

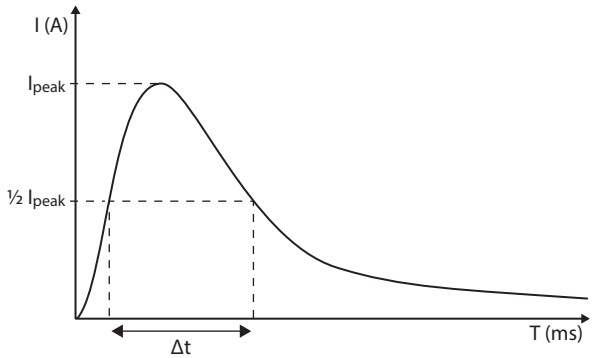
Max.temperature at tc point	95 °C
Ambient temperature range	-20...+50 °C
Storage temperature range	-40...+80 °C
Maximum relative humidity	No condensation
Mains switching cycles	> 100 000 cycles
Life time (90 % survival rate)	50 000 h at t_c = 85 °C 40 000 h at t_c = 90 °C 30 000 h at t_c = 95 °C

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, $I_{peak}^2 \Delta t$
14 pcs.	13 pcs.	70 A	**260 µs**	0.943 **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 %

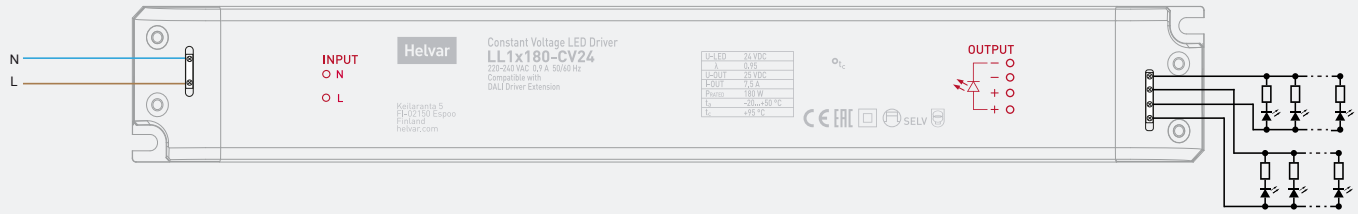


Type C MCB's are strongly recommended to use with LED lighting. Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

Connections and Mechanical Data

Wire size	0.5 - 1.5 mm^2
Wire type	Solid-core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	1.5 m
Weight	665 g
IP rating	IP20

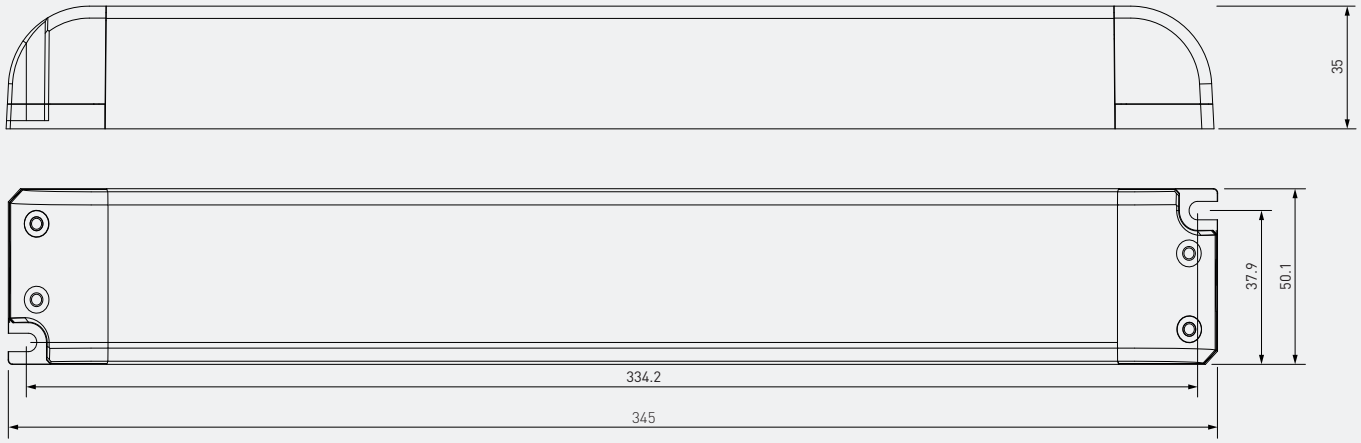
Connections



Attention: If using LL1-CV-DA or LL1-CV-SC control units to control LED load with this driver, make sure the total output current from the LL1x180-CV24 driver does not exceed 5 A!

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

Helvar Components

LL1x180-CV24 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:

- The maximum ambient temperature is a guideline given for luminaire components such as LED drivers. However, integrator must always ensure proper thermal management (i.e. ventilation) so that the t_c point does not exceed the t_c max limit.
- Reliable operation and lifetime is only guaranteed if the t_c point temperature does not exceed the specified maximum t_c point temperature 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

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
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.