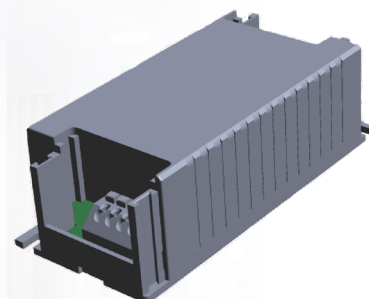


12-48 V, **Dimmable constant voltage 4-channel** LED driver extension

Product code: 5703

5 A, 12-48 VDC

- Freedom control protocol, 0.1 %-100 % dimming range
- 1.25 kHz PWM dimming frequency
- Stand-by power < 0.3 W
- Class III device
- Integrated radio unit for wireless control
- NFC technology for wireless programming
- Sensor output for external sensor use
- Suitable for Class I, II or III (SELV) luminaires and independent use
- 4 independent output channels for RGBW and 2 x Tunable white use



The LL4-CV-FD dimmable extension unit is designed to be used with the Helvar constant voltage LED drivers, creating controllable solutions for decorative lighting providing smooth colour control possibility with four separate output channels. It enables the use of Freedom control in constant voltage (12 / 24 V / 48 V) lighting applications and can be used for both RGBW and 2 x Tunable White control.

Input Characteristics

Input signal	Constant voltage only
Voltage range	12 - 48 VDC
Control signal	Freedom

Insulation between circuits & driver case

Input - Output	Non-isolated
Input and output - Driver extension case	Double/reinforced insulation

Load Output

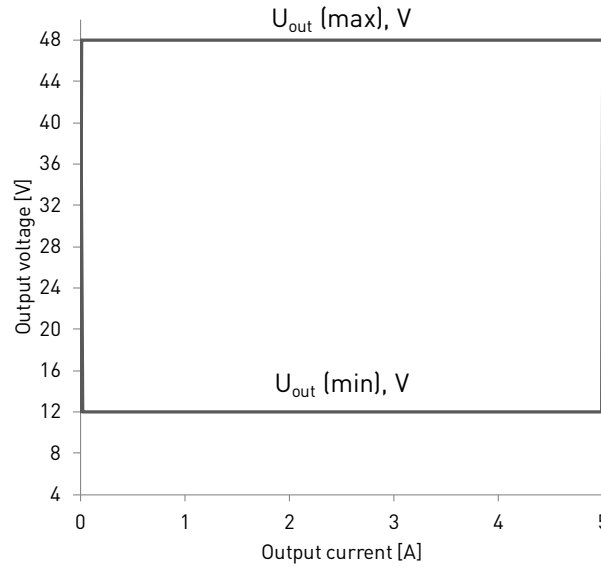
Output current (I-OUT)	Max. 5 A*
Max output power	240 W
N.o channels	4
PWM frequency	1.25 kHz
Sensor output current	Max. 1 mA

U-IN	12 V	24 V	48 V
P-OUT (max)	60 W	120 W	240 W
I-OUT (max)	5 A*	5 A*	5 A*
U-OUT	12 V	24 V	48 V

* LL1-CV-DA LED driver extension must be used with a constant voltage power supply with current limited to max 5 A and proper short circuit protection.

*The current is divided between the output channels.

Operating window



Operating Conditions and Characteristics

Max. temperature at tc point	TBA °C
Ambient temperature range	-20...+50 °C
Storage temperature range	-40...+80 °C
Maximum relative humidity	no condensation
Lifetime (90 % survival rate)	50 000 h, at $t_c = TBA$ °C

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	5 m
Weight	70 g
IP rating	IP20

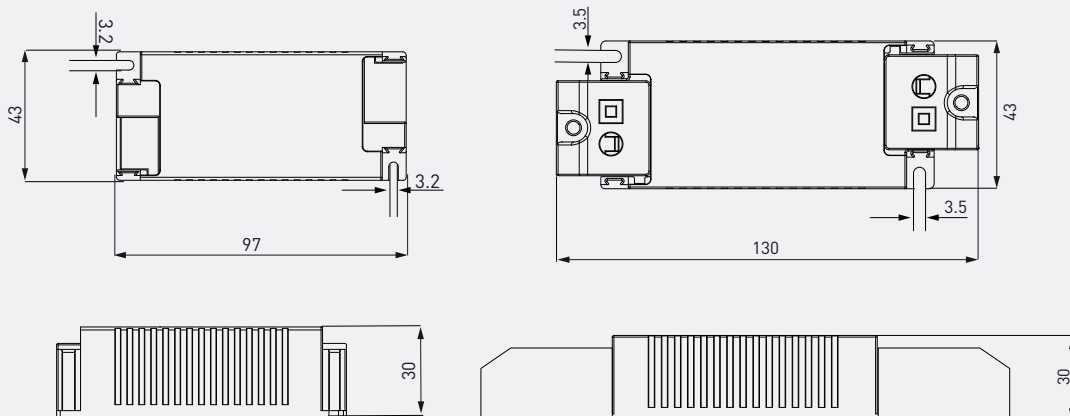
Connections

CONNECTIONS PICTURE TO BE INCLUDED

Note:

- Output voltage is PWM modulated and equal to CV driver output voltage
- Must be used with constant voltage load based on resistor current limiting. Do not use loads with other current limiting methods.

Dimensions



LL4-CV-FD LED driver extension is suited for built-in usage in luminaires as well as independent use. 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 and the LL4-CV-FD DALI LED driver extension 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 and with LL1-CV-DA specifications . Operating conditions of the LED drivers may never exceed the specifications as per the product datasheet.

Installation & operation

Maximum ambient and t_c temperature:

- 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 extension, 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.

LED driver earthing

- LL4-CV-FD LED driver extension is a Class II device and the electrical protection relies on double/reinforced insulation. Do not earth LL4-CV-FD in any way.
- When using a SELV-rated CV LED driver, then the SELV driver output and the LL1-CV-DA output has to be insulated from the luminaire earth connection (ref. EN60598-1 luminaire standard).

Installation considerations

- The LL4-CV-FD allows the use both inside the luminaire and outside the luminaire, with the use of the integrated strain relief. The strain relief provides reliable fastening method for input / output wiring.
- The general preferred installation position of LL4-CV-FD LED driver extension is to have the top cover facing upwards.

Conformity & standards

Particular requirements for miscellaneous electronic circuits used with luminaires	EN 61347-2-11
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
Compliant with relevant EU directives	
RoHS/REACH compliant	
CE marked	

Label symbols



A general symbol for double insulated electrical appliances that are equipped with strain relief and can therefore be used as an independent device.



Symbol for independent control gear.