

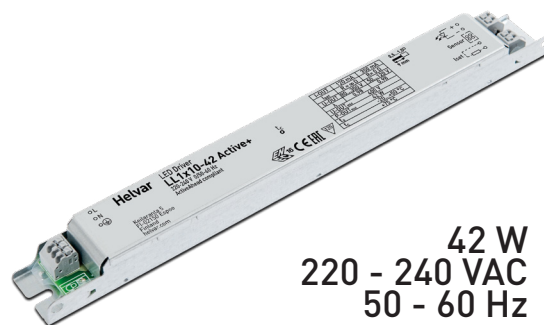
# LL1x10-42 Active+

Helvar

1x10-42 W **Dimmable** LED driver with Active+ / ActiveAhead functionality

*freedom in lighting*

- Fully automatic standalone setup with smart learning functionality
- Optimised presence detection, daylight harvesting and Constant Lumen Output (CLO) operation
- No programming, configuration, or external control wiring needed
- Suitable for Class I and Class II luminaires
- Fully automatic standalone setup with smart learning functionality for stairway



## Connections



Note:

- Not suitable for load side switching operation.

Current setting (p.2)	
Resistor R	output $I_{lv}$
open	120 mA
0 $\Omega$	350 mA

## Mains Characteristics

Voltage range	198-264 VAC
DC range	176 - 280 VDC, starting voltage > 190 VDC
Max mains current at full load	0.18-0.24 A
Frequency	0 / 50 - 60 Hz
Stand-by power	0.47 W

## Load Output (Non-Isolated)

Output current (I-OUT)	120 mA (default) - 350 mA
- Accuracy	$\pm 5 \%$
- Ripple	< 2 %* at $\leq 120$ Hz
*Low frequency, LED load: Cree MX3 LEDs	
Max output power	42 W
U-OUTmax (abnormal)	400 V

	I-OUT 120 mA	350 mA
P-out (max)	42 W	42 W
U-OUT	80 - 350 V	50-120 V
$\lambda$ at full load	0.96	0.96
Efficiency ( $\eta$ ) at full load	0.93	0.91

## Operating Conditions and Characteristics

Max.temperature at Tc point	75 °C
Ambient temperature range	-20...+50 °C
Storage temperature range	-40...+80 °C
Maximum relative humidity	No condensation
Life time (90% survival rate)	100 000 h, at Tc = +65 °C 80 000 h, at Tc = +70 °C 60 000 h, at Tc = +75 °C

## Connections and Mechanical Data

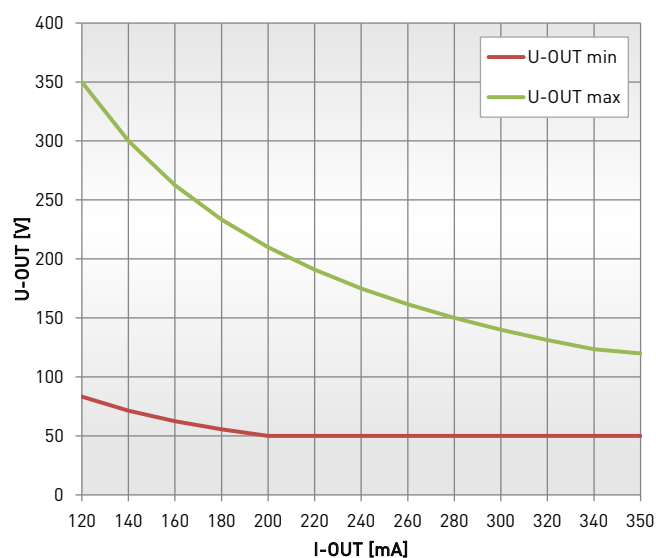
Wire size	0.5 - 1.5 mm <sup>2</sup>
Wire type	solid core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	5 m
Weight	190 g
IP rating	IP20

## Functional Description (more information from User Guide)

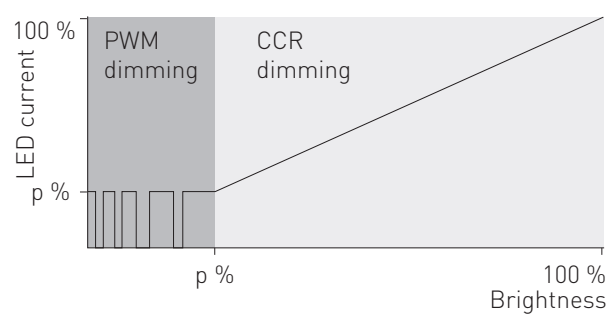
- Adaptive overload protection up to 52 W
- Limited outrush current (600 mA) during load change
- Full Load recognition, automatic recovery
- ON level: fully automatic Constant Lumen Output, dynamic operational area between ON level and energy saving level
- Occupancy timeout: 3.5 min, fadetime to energy saving level: 1.5 min
- Lighting experience in ActiveAhead according to predicted people flow
- Customization of luminaire parameters through use of Helvar Active+ mobile app (see User Guide)
- Inbuilt power supply for use of sensor and control unit

Note: See page 2 - 3 for dimensions and additional information

## Operating window



## Hybrid dimming technique



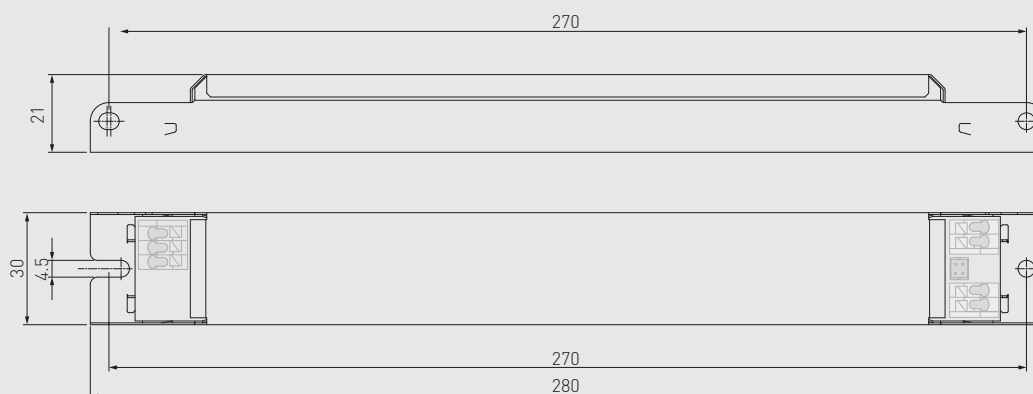
Dimming range	Dimming technique
1-20 %	Pulse Width Modulation (PWM)*
20-100 %	Linear current reduction

\* PWM dimming frequency 1 kHz

## Current setting resistor values (Nominal $I_{out}$ ( $\pm 5\%$ tol.))

R ( $\Omega$ )	0	47	120	180	270	330	470	560	680	820	1k	1k2	1k5	1k8	2k2	2k7	3k3	3k9	4k7	5k6	8k2	12k	22k	$\infty$
$I_{out}$ (mA)	350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	150	140	130	120

## Dimensions



## Quantity of drivers per miniature circuit breaker 16 A Type C

Based on $I_{cont}$	Based on $I_{peak}$	Typ.inrush current $I_{peak}$ (A)	1/2 value time $\Delta t$ ( $\mu s$ )	Calculated energy $I_{peak}^2 \Delta t$ ( $A^2 s$ )
(pcs.)	(pcs.)			
53	56	25	177	0.08

LL1x10-42 Active+ LED driver is suited for in-built 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 driver may never exceed the specifications as per the product datasheets.

## Installation & operational considerations

### Maximum tc temperature

- Reliable operation and lifetime is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.

### Installation site

- Ensure that the LED driver does not exceed temperature higher than specified on the product datasheets.
- The general preferred installation position of LED drivers for independent use is to have the top cover facing upwards.

### Current setting resistor

LL1x10-42 Active+ LED driver features an adjustable constant current output.

- An external resistor can be inserted in to the current setting terminal, allowing the user to adjust the LED driver output current.
- When no external resistor is connected, then the LED drivers will operate at their default lowest current level.
- 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.
- For the resistor / current value selection, please refer to the enclosed table below.
- For drivers not providing isolation (non-isolated) Current setting resistor must be insulated according to safety regulations of the luminaire.

### Miniature Circuit Breakers (MCB)

- Type-C MCB's with trip characteristics in according to EN 60898 are recommended.

### LED driver earthing

- The LL1x10-42 Active+ LED driver is suitable for use in safety Class I and Class II luminaires.
- For Helvar LED drivers to have a reliable operation and EMC performance, the luminaires are expected to have an earth connection.

## 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	EN 61347, 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
Compliant with relevant EU directives ENEC and CE marked	