LL1x10-42-E-DA

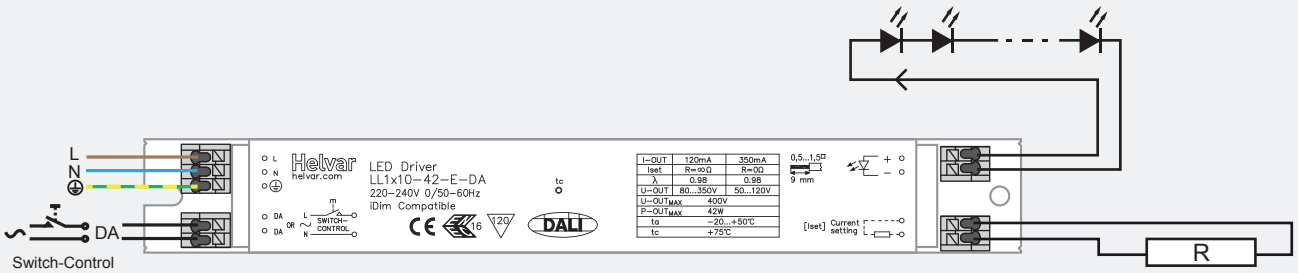
1x10-42 W **Dimmable DALI** LED driver

Helvar
freedom in lighting

42 W 220-240 VAC 50-60 Hz

- Dali control input 1 %-100 % dimming range (DALI revision 2.0)
- Hybrid dimming technique for high quality light
- Overload, Open & short circuit protection
- Adjustable constant current output: 120 (default) to 350 mA
- Maximum 42 W load
- Low stand-by power < 0.5 W
- High efficiency 0.93
- Suitable for Class I luminaires
- Suitable for emergency lighting purposes
- Helvar DALI Driver Configurator support

Connections



Current setting (p.2)	
Resistor R	output I_{fv}
open	120 mA
0 Ω	350 mA

Note:

- *Not suitable for load side switching operation.*

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	± 5 %
- Ripple	< ± 5 % high frequency
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
λ	0.96	0.96
Efficiency (η) @ max	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	60 000h, at TC max (90 % survival rate)

Connections and Mechanical Data

Wire size	0.5 - 1.5 mm²
Wire type	solid core and fine-stranded
Maximum driver to LED wire length	5m
Weight	190 g
IP rating	IP20

Functional Description (more information from User Guide)

- DALI memory bank functionality
- Adaptive over load protection up to 52W
- Limited outrush current (600mA) during load change
- Programmable output current
- Multipurpose terminal; I[set],
- Constant Light Output CLO, up to 100k h, maximum 75% reduction (default disabled)
- Full Load recognition, automatic recovery

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

Load Output

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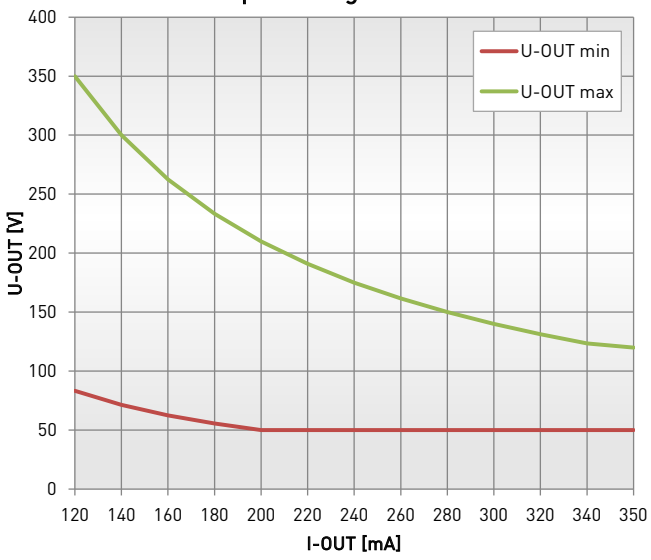
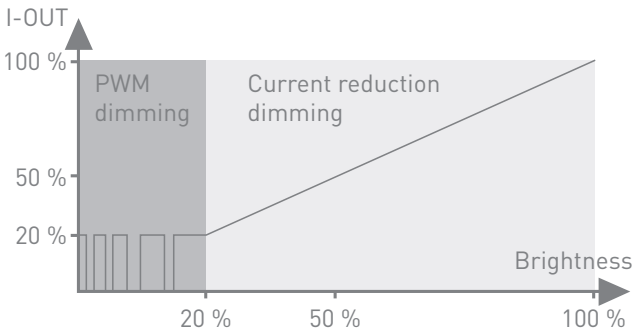
Output voltage U-OUT



Hybrid dimming technique



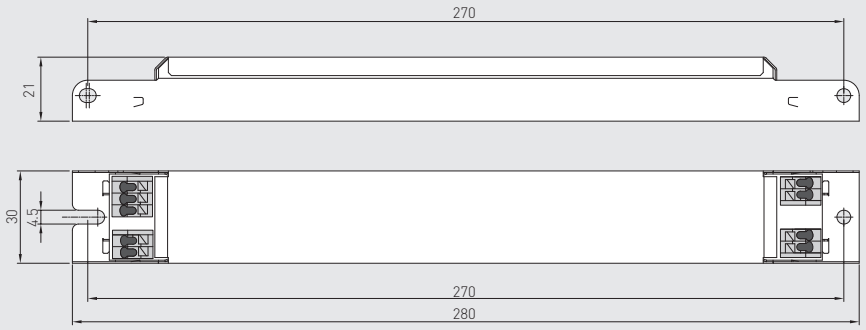
Dimming range	Dimming technique
1-20 %	Pulse Width Modulation (PWM)*
20-100 %	Linear current reduction

* PWM dimming frequency 1 kHz

Current setting resistor values (Nominal I_{out} (±5 % tol.)

R (Ω)	0	47	120	180	270	330	470	560	680	820	1k	1k2	1k5	1k8	2k2	2k7	3k3	3k9	4k7	5k6	8k2	12k	22k	∞
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} (pcs.)	Based on I_{peak} (pcs.)	Typ.inrush current I_{peak} (A)	1/2 value time Δt (µs)	Calculated energy $I_{peak}^2 \Delta t$ (A^2s)
53	56	25	177	0.08

LL1x10-42-E-DA 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. Specifications of the LED drivers may never exceed the operating conditions as per the product datasheets.

Wiring considerations

Wire type and cross section

- Please refer to datasheets connections & mechanical data

Wiring insulation

- According to recommendations in EN 60598

Maximum wire lengths

- Please refer to datasheets connections & mechanical data

Wire connections

- Please refer to datasheets connections diagram

Miniature Circuit Breakers (MCB)

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

LED driver earthing

- LED drivers are designed to support different luminaire classifications, like Class I or Class II fittings (no earth required). Please check the individual LED driver type for its exact safety class rating.
- For Helvar LED drivers to have a reliable operation and EMC performance, the luminaires are expected to have an earth connection.

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-E-DA 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 safety regulations.

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	EN61347, 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
Digital addressing lighting interface (DALI Standard Rev 2)	EN62386-207
Compliant with relevant EU directives ENEC and CE marked	