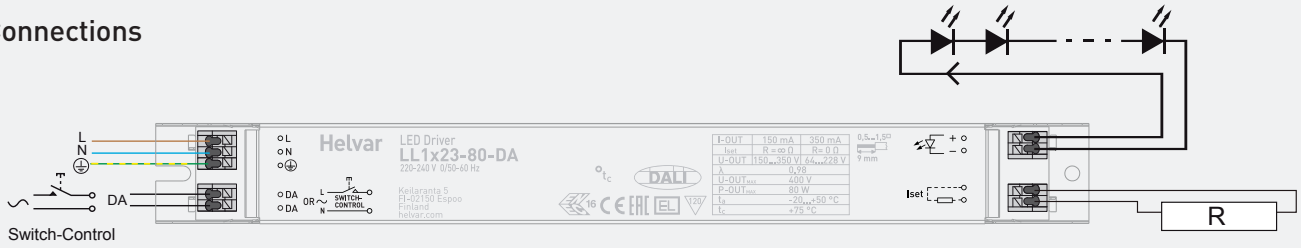
1x23-80 W **Dimmable DALI** LED driver

- DALI control input 1 % – 100 % dimming range
- Enhanced Hybrid dimming, with varying PWM frequency
- Current setting by software, Constant Light Output (CLO) and load recognition
- Suitable for use in emergency lighting
- Ideal solution for closed luminaires where protection done with luminaire construction
- Highest efficiency up to 0.95
- Long lifetime, up to 100 000 h
- Wide operation range, linear output current setting with an external resistor

80 W
220 VAC – 240 VAC
50 Hz – 60 Hz

Connections



Current setting (p. 2)	
Resistor R	output I_{fv}
open	150 mA
0 Ω	350 mA

Note:

- *Not suitable for load side switching operation.*

Mains Characteristics

Voltage range	198 VAC – 264 VAC
DC range	176 VDC – 280 VDC, starting voltage > 190 VDC
Max mains current at full load	0.22 A – 0.42 A
Frequency	0 / 50 Hz – 60 Hz
Stand-by power	0.30 W

Load Output (non-isolated)

Output current (I_{out})	150 mA (default) – 350 mA
- Accuracy	± 5 %
- Ripple	< 2 %* at ⩽ 120 Hz
	*Low frequency, LED load: Cree MX3 LEDs
U_{out} (max) (abnormal)	400 V
EOFx (EL use)	> 0.98

I_{out}	150 mA	350 mA
P_{out} (max)	52.5 W	80 W
U_{out}	150 V – 350 V	64 V – 228 V
λ	0.96	0.98
Efficiency (η), max load	0.95	0.94

Operating Conditions and Characteristics

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

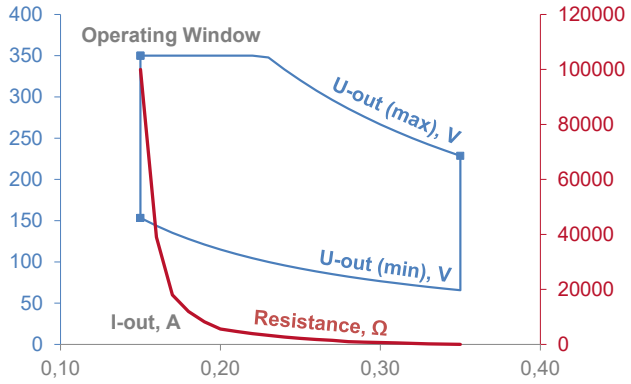
Connections and Mechanical Data

Wire size	0.5 mm² – 1.5 mm²
Wire type	solid core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	5 m
Weight	220 g
IP rating	IP20

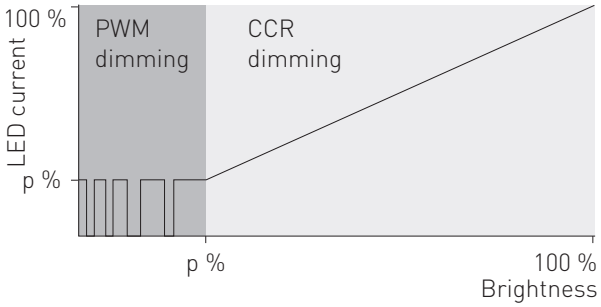
Functional Description

- DALI memory bank functionality
- Adaptive overload protection up to 85 W
- Limited outrush current (600 mA) during load change
- Programmable output current
- Multipurpose terminal; I[set]
- Constant Light Output CLO, up to 100 000 h, maximum 75 % reduction (default disabled)
- Full load recognition, automatic recovery

Load output



Hybrid dimming technique



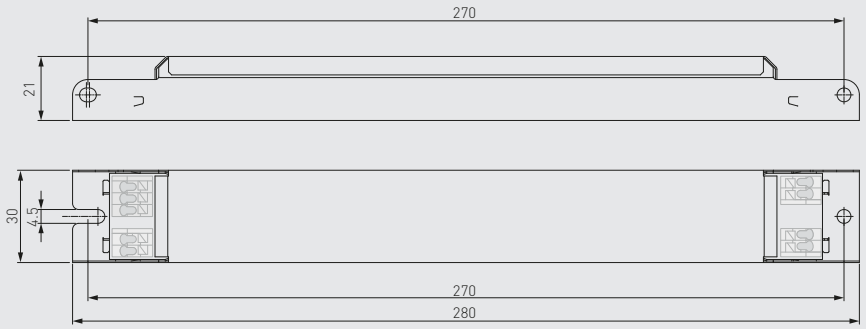
Dimming range	Dimming technique
1 % – 20 %	Pulse Width Modulation (PWM)*
20 % – 100 %	Constant Current Reduction (CCR)

* PWM dimming frequency 1 – 8 kHz

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

R (Ω)	0	100	220	390	560	680	820	1k	1k5	1k8	2k2	2k7	3k3	3k9	4k7	5k6	8k2	12k	18k	39k	Open
I_{out} (mA)	350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	200	190	180	170	160	150

Dimensions



Quantity of drivers per miniature circuit breaker 16 A Type C

Based on I_{cont}	Based on I_{peak}	Typ.inrush current	1/2 value time, Δt	Calculated energy, I_{peak}^2Δt
31 pcs.	31 pcs.	41 A	187 µs	0.24 A^2s

LL1x23-80-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. Operating conditions of the LED drivers may never exceed the specifications as per the product datasheets.

Installation & operation

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, such as Class I or Class II fittings (no earth required). 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.

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

LL1x23-80-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, refer to the table on page 2.
- 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
Additional safety requirements for AC/ DC supplied electronic controlgear for emergency lighting	EN 61347-2-13 Annex J
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
Digital addressing lighting interface (DALI Standard Rev 2)	EN 62386-207
Compliant with relevant EU directives	
ENEC and CE marked	