LL80HE-CC-200-800-IND

80 W **On/Off Industrial** LED driver

Product code: 5752

80 W 220 – 240 V 0 / 50 – 60 Hz

- High-power built-in LED driver for industrial applications
- Heavy-duty design, high surge and temperature withstand up to t_a 70 °C
- Superior efficiency up to 93 %
- Very low current ripple complying with IEEE 1789 recommendations
- NFC technology for wireless programming
- CLO feature for long-term energy-saving
- Suitable for emergency lighting applications with central battery systems (e.g. Eaton-CEAG, Inotec), AC/DC input recognition

CONSTANT LIGHT OUTPUT (CLO) NFC EL PENDING CE UK CA EAC

Functional Description

- Adjustable constant current output: 200 to 800 mA
- Output current setting programmable via NFC
- High surge protection up to 4 kV
- High ambient temperature range
- Flicker-free light output suitable for camera recording applications
- Constant Light Output (CLO), adjustable up to 100 000 h (default disabled)
- Extended warranty period of 8 years (96 months), see page 5 for details

Mains Characteristics

Nominal rated voltage range	220 V – 240 V, 0 / 50 – 60 Hz
AC voltage range	198 VAC – 264 VAC
	Withstands max. 280 VAC (max. 1 hour)
DC voltage range	176 VDC – 280 VDC
DC starting voltage	> 186 VDC
Mains current at full load	0.36 – 0.41 A
Frequency	0 / 50 Hz – 60 Hz
THD at full power	< 10 %
Leakage current to earth	< 0.5 mA
Tested surge protection	4 kV L-N, 4 kV L/N-GND (IEC 61000-4-5)
Tested fast transient protection	2 kV (IEC 61000-4-4)

Insulation between circuits & driver case

Mains circuit - Output	Non-isolated
Mains and output - Driver case	Basic insulation

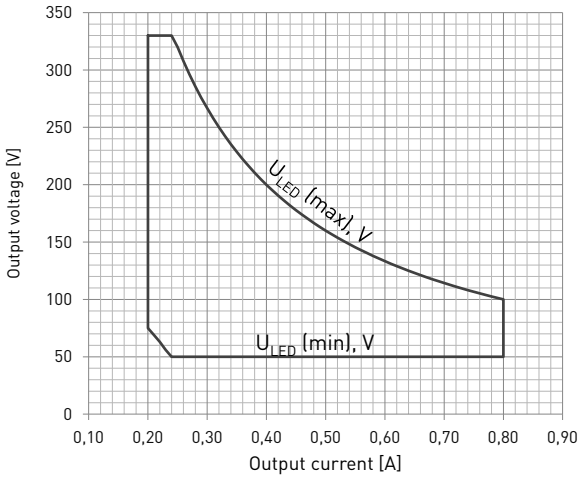
Load Output (non-isolated)

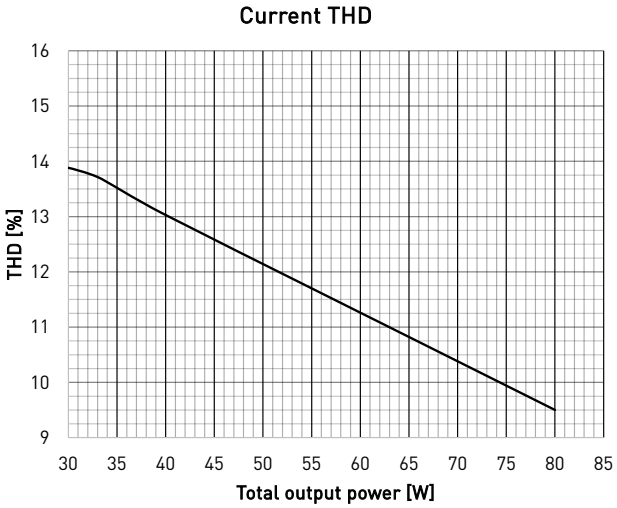
Output current		
Accuracy	± 5 %	
Ripple	< 1 %* at ⩽ 120 Hz	*) Low frequency, LED load: Cree XP-G LEDs
PstLM	< 0.02*	
SVM	< 0.02*	*) At full power, LED load: Cree XP-G LEDs
U_{OUT} (max) (abnormal)	350 V	
EOF_I (EL use)	> 0.98 x output current with AC supply	

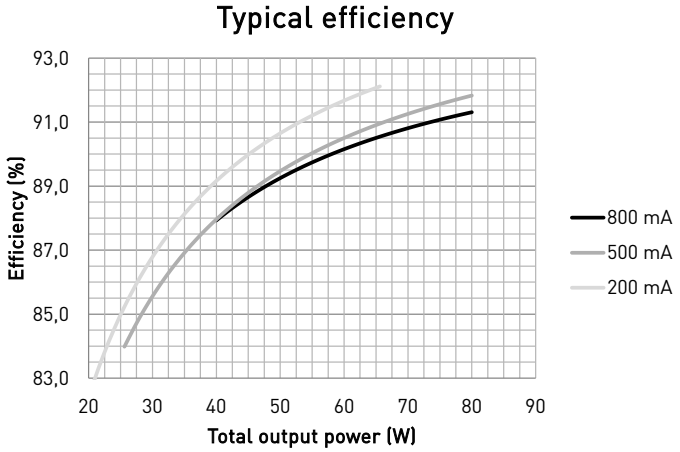
I_{LED}	200 mA	350 mA (default)	500 mA	700 mA	800 mA
P_{Rated}	15...66 W	17.5...80 W	25...80 W	35...80 W	40...80 W
U_{LED}	75 – 330 V	50 – 228 V	50 – 160 V	50 – 114 V	50 – 100 V
PF (λ) at full load	0.98	0.98	0.98	0.98	0.98
Efficiency (η) at full load	92 %	93 %	92 %	92 %	91 %
t_c max. temperature	90 °C	90 °C	90 °C	90 °C	90 °C
t_a range	–40...+70 °C**	–40...+70 °C**	–40...+70 °C**	–40...+70 °C**	–40...+70 °C**

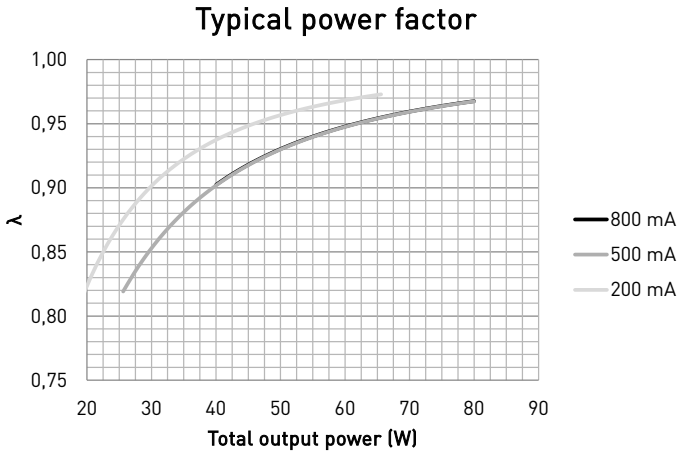
*** In built-in use, higher t_a of the controlgear possible as long as highest allowed t_c point temperature is not exceeded. Please see the table found on the next page for guidance on lifetimes and temperature values in reference conditions.*

Operating window & driver performance









Operating Conditions and Lifetime

Absolute highest allowed t_c point temperature	90 °C
Maximum ambient temperature range	–40 °C … +70 °C*
Storage temperature range	–40 °C … +80 °C
Maximum relative humidity	No condensation

**) Below -35 °C mains switching is not allowed.*

For reference of an indicative t_a vs. t_c relation please see the table below.

In built-in use, higher t_a of the controlgear possible as long as highest allowed t_c point temperature is not exceeded.

Lifetime table (90 % survival rate)

Output current	t_a	≤ 60 °C	65 °C	70 °C	75 °C	80 °C
500 mA	**t_c at full load**	68 °C	73 °C	78 °C	83 °C	88 °C
	Lifetime	> 100 000 h	> 100 000 h	> 100 000 h	81 000 h	57 000 h
700 mA	**t_c at full load**	68 °C	73 °C	78 °C	83 °C	88 °C
	Lifetime	> 100 000 h	> 100 000 h	> 100 000 h	76 000 h	53 000 h
800 mA	**t_c at full load**	69 °C	74 °C	79 °C	84 °C	89 °C
	Lifetime	> 100 000 h	> 100 000 h	90 000 h	60 000 h	40 000 h

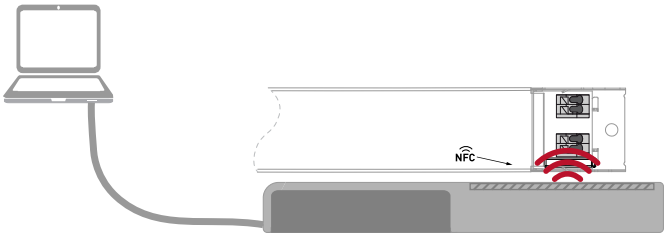
Lifetime at reference conditions with full load at absolute highest allowed temperature situation at Tc 90 °C is 38 000 hours.

The shown t_c temperatures for each t_a environment in built-in use and reference conditions in the table above are for guidance only, as the real relation between t_a and t_c depends always on the luminaire design. Please refer to the used output current and t_c for the most accurate lifetime estimation.

Never exceed the t_c maximum of the driver stated in the datasheet!

Wireless configuration

LL80HE-CC-200-800-IND LED driver is equipped with NFC wireless technology for effortless configuration of the driver via Helvar Driver Configurator Support. Helvar Driver Configurator enables easy-to-use automatic configuration of the driver parameters via NFC, without mains or DALI connection to the driver. The most popular MD-SIG qualified NFC readers are supported giving flexibility for the operator. For further information about the usage with Helvar Driver Configurator, please see the user guide at www.helvarcomponents.com



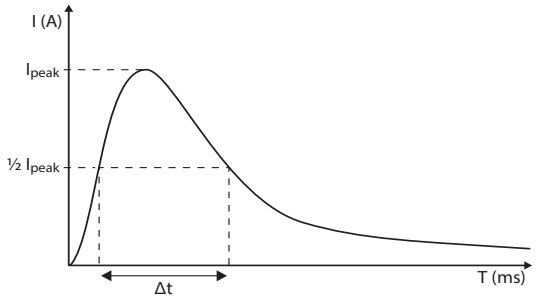
Feig NFC reader

Quantity of drivers per miniature circuit breaker 16 A Type C

Based on inrush current I_{peak}	Typ. peak inrush current I_{peak}	1/2 value time, Δt	Calculated energy, $I_{peak}^2 \Delta t$
45 pcs	4 A	1300 µs	0.0150 A^2s

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 %



CONTINOUS CURRENT

Total continous current of the drivers and installation environment must always be considered and taken into calculations when installing drivers behind miniature circuit breaker. Example calculation of total drivers amount limited by continous current: $n(I_{cont}) = (16\ A\ (I_{nom,Ta}) / \text{"nominal mains current with full load"}) \times 0.76)$. This calculation is an example according to recommended precautions due to multiple adjacent circuit breakers (> 9 MCBs) and installation environment (T_a 30 degrees); variables may vary according to the use case. Both inrush current and continous current calculations are based on ABB S200 series circuit breakers. More specific information in ABB series S200 circuit breaker documentation.

NOTE! 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

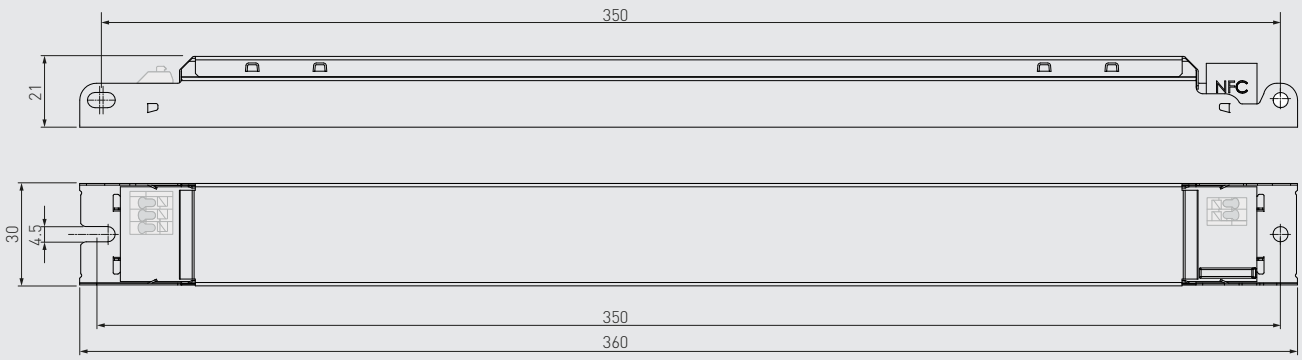
Wire size	0.5 mm² – 1.5 mm²
Wire type	Solid core and fine-stranded
Wire insulation	According to EN 60598
Maximum driver to LED wire length	1.5 m
Weight	254 g
IP rating	IP20

Connections

Note:

- *Not suitable for load side switching operation*

Dimensions (mm)



Extended warranty period

LL80HE-CC-200-800-IND LED driver offers superior build quality and it is provided with extended warranty period up to 8 years / 96 months off-the-shelf, when certain requirements are met. These requirements include:

- LED driver t_c temperature must not exceed t_c max. - 10 °C (= 80 °C) in use
- Specified lifetime for this period is assumed to be maximum of 50 000 hours (approx. 17 h on-time / day)

More detailed information can be found in the Helvar Components General Terms and Conditions of Sale available in www.helvarcomponents.com.

LL80HE-CC-200-800-IND LED driver is suited for built-in usage in luminaires. 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 ambient and t_c temperature:

- For built-in components inside luminaires, 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, 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

- LL80HE-CC-200-800-IND LED driver is a protective Class I device and designed for Class I luminaires.
- If used inside **Class I** luminaires, this LED driver must always have the protective earth cable connected for safety reasons.
- The driver is designed to be used inside Class I luminaires. For usage inside **Class II** luminaires, the safety of the luminaire shall be ensured through double/reinforced insulation of live parts and through supplementary insulation of conductive parts of the casing, or any conductive parts connected to the casing, as the casing is only basic insulated from the live parts. The earth connector of the driver shall be left unconnected and there shall be no protective earth terminals in the luminaire terminal block to fulfill the requirements of IEC/EN 60598-1 for Class II luminaires. The EMC performance of the driver change when left unearthed, so it is always the responsibility of the integrator to take measures and necessary actions, for example by luminaire design to ensure the assembled luminaire complies with latest EMC standard.

Miniature Circuit Breakers (MCB)

- Type-C MCB's with trip characteristics in according to EN 60898 are recommended.
- Please see more details in "MCB information" document in each driver product page in "downloads & links" section.

Helvar Driver Configurator -support

LL80HE-CC-200-800-IND LED driver is supported by Helvar Driver Configurator software. With the LL80HE-CC-200-800-IND the output current of the driver can be programmed using the HDC software, as well as the parameters for the CLO feature. Programming the driver with Helvar Driver Configurator shall be done wirelessly via NFC technology.

Functionality in abnormal conditions

No load
The driver can withstand no load situation.

Short circuit
When short circuit is detected, the driver shuts down the output. After resolving the fault, normal operation can be resumed by switching the supply voltage off and then back on.

Overload
When overload is detected, the driver shuts down the output. After resolving the fault, normal operation can be resumed by switching the supply voltage off and then back on.

Underload
When underload is detected, the driver shuts down the output. After resolving the fault, normal operation can be resumed by switching the supply voltage off and then back on.

AC to DC input change
When AC supply is switched to DC, the driver will continue its normal operation. The driver will continue normally also when the supply is switched back to AC.

Information and conformity

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 or DC supplied electronic controlgear for emergency lighting	EN 61347-2-13, Annex J
Thermal protection class	EN 61347, C5e
Mains current harmonics	EN IEC 61000-3-2
Limits for voltage fluctuations and flicker	EN 61000-3-3
Radio frequency interference	EN IEC 55015
Immunity standard	EN 61547
Performance requirements	EN IEC 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	
ENEC (pending) and CE / UKCA marked	

Suitable for emergency luminaires complying with the standard EN 60598-2-22.

Label symbols

Thermally controlled control gear, incorporating means of protection against overheating to prevent the case temperature under any conditions of use from exceeding 120 °C.

Driver equipped with NFC wireless technology for effortless configuration.

AC/DC supplied electronic control gear for emergency lighting purposes intended for connection to a centralized emergency power supply.