

Driver LC 13W 50-300mA flexC NF SR EXC4

excite series

**Product description**

- _ Independent constant current LED driver
- _ Max. output power 12.5 W
- _ Nominal lifetime up to 100,000 h
- _ 5 years guarantee (conditions at <https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions>)

Housing properties

- _ Casing: makrolon, white
- _ Type of protection IP20
- _ Strain relief with loop through function

Interfaces

- _ Near field communication (NFC)
- _ Terminal blocks: 0° / 45° push terminals (input / output)

Functions

- _ Adjustable output current in 1-mA-steps (NFC)
- _ Support NFC multiple programming (full carton box)
- _ Constant light output function (CLO)
- _ Protective features (overtemperature, short-circuit, overload, no-load)
- _ Suitable for emergency escape lighting systems acc. to EN 50172
- _ For cable cross-sections up to 2.5 mm²

Benefits

- _ Application-oriented operating window for maximum compatibility
- _ No tools required for installation

Typical applications

- _ For downlight, spotlight and decorative applications

Website

<http://www.tridonic.com/28005645>



Linear



High bay



Decorative



Downlights



Spotlights



Free-standing



Area



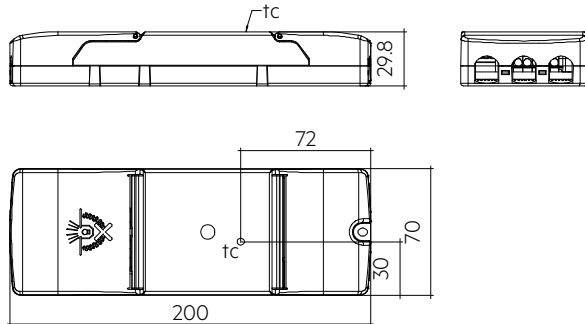
Floor | Wall



Street

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Ordering data

Type	Article number	Packaging, carton	Packaging, pallet	Weight per pc.
LC 13/50-300/54 flexC NF SR EXC4	28005645	10 pc(s).	600 pc(s).	0.16 kg

Technical data

Rated supply voltage	220 – 240 V
AC voltage range	198 – 264 V
DC voltage range	176 – 280 V
Mains frequency	0 / 50 / 60 Hz
Overvoltage protection	320 V AC, 48 h
Typ. rated current (at 230 V, 50 Hz, full load) ^①	69 mA
Typ. current (220 V, 0 Hz, full load, EOFx dimlevel) ^②	69 mA
Max. input power	14.5 W
Output power range (P _{rated})	0.75 – 12.5 W
Typ. efficiency (at 230 V, 50 Hz, full load) ^③	85 %
λ over full operating range (max.)	0.94C
λ over full operating range (min.)	0.25C
Typ. input current in no-load operation	17.4 mA
Typ. input power in no-load operation	0.37 W
In-rush current (peak / duration)	9 A / 280 μs
THD (at 230 V, 50 Hz, full load)	< 10 %
Starting time (AC mode)	< 0.5 s
Starting time (DC mode)	< 0.5 s
Switchover time (AC/DC) ^④	< 0.5 s
Turn off time (at 230 V, 50 Hz, full load)	< 200 ms
Output current tolerance ^{⑤⑥}	± 5 %
Max. output current peak (non-repetitive)	346 mA
Output LF current ripple (< 120 Hz)	± 5 %
Output P _{ST_LM} (at full load)	≤ 1
Output SVM (at full load)	≤ 0.4
Max. output voltage (U-OUT)	60 V
Mains surge capability (between L - N)	1 kV
Mains surge capability (between L/N - PE)	2 kV
Type of protection	IP20
Lifetime	up to 100,000 h
Guarantee (conditions at www.tridonic.com)	5 Year(s)
Dimensions L x W x H	200 x 70 x 30 mm

Approval marks



Standards

EN 55015, EN 60598-1, EN 61000-3-2, EN 61000-3-3, EN 61000-4-4, EN 61000-4-5, EN 61347-1, EN 61347-2-13, EN 61547, EN 62384, according to EN 50172, according to EN 60598-2-22

Specific technical data

Type	Output current ^①	Min. output voltage	Max. output voltage	Max. output power	Typ. power consumption (at 230 V, 50 Hz, full load)	Typ. current consumption (at 230 V, 50 Hz, full load)	t _c point max.	Ambient temperature t _a
LC 13/50-300/54 flexC NF SR EXC4	50 mA	15 V	54.0 V	2.7 W	3.8 W	28 mA	70 °C	-20 ... +65 °C
LC 13/50-300/54 flexC NF SR EXC4	100 mA	15 V	54.0 V	5.4 W	6.9 W	39 mA	70 °C	-20 ... +65 °C
LC 13/50-300/54 flexC NF SR EXC4	200 mA	15 V	54.0 V	10.8 W	12.7 W	61 mA	70 °C	-20 ... +60 °C
LC 13/50-300/54 flexC NF SR EXC4	300 mA	15 V	41.7 V	12.5 W	14.5 W	68 mA	70 °C	-20 ... +60 °C

① Depending on the selected output current.

② Valid for immediate change of power supply type otherwise the starting time is valid.

③ Output current is mean value.

④ Output current tolerance min. ± 5 mA.

⑤ The table only lists a number of possible operating points but does not cover each single point. The output current can be set within the total value range in 1-mA-steps. Output current is mean value.

1. Standards

EN 55015
 EN 60598-1
 EN 61000-3-2
 EN 61000-3-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61347-1
 EN 61347-2-13
 EN 62384
 EN 61547

According to EN 50172 for use in central battery systems

According to EN 60598-2-22 suitable for emergency lighting installations

1.1 Glow wire test

according to EN 61347-1 with increased temperature of 850 °C passed.

2. Thermal details and lifetime

2.1 Expected lifetime

Expected lifetime						
Type	Output current	ta	50 °C	55 °C	60 °C	65 °C
LC 13/50-300/54 flexC NF SR EXC4	100 – 150 mA	tc	55 °C	60 °C	65 °C	70 °C
		Lifetime	> 100,000 h	> 100,000 h	75,000 h	50,000 h
	> 150 – 300 mA	tc	60 °C	65 °C	70 °C	–
		Lifetime	> 100,000 h	75,000 h	50,000 h	–

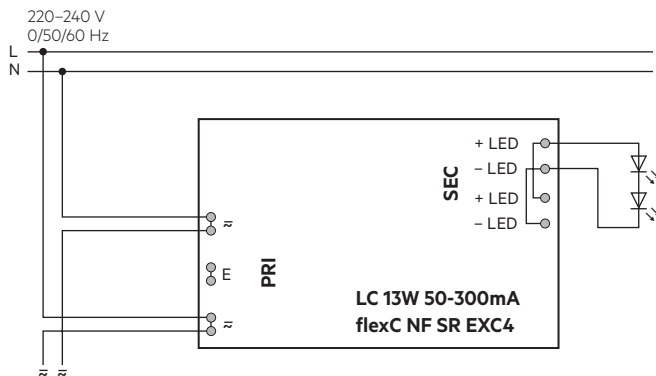
The LED driver is designed for a lifetime stated above under reference conditions and with a failure probability of less than 10 %.

The relation of tc to ta temperature depends also on the luminaire design.

If the measured tc temperature is approx. 5 K below tc max., ta temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

3. Installation / wiring

3.1 Circuit diagram

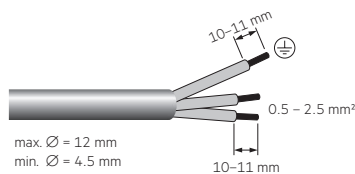


The terminal E is not connected to the driver.
Only for loop-through wiring of protective earth.
The earthing terminal of this device is not intended to protect against electric shock.

3.2 Wiring type and cross section

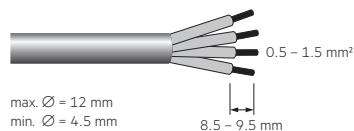
Mains supply wires

For wiring use stranded wire with ferrules or solid wire from 0.5–2.5 mm². Strip 10–11 mm of insulation from the cables to ensure perfect operation of the push terminals.
Use one wire for each terminal connector only.
Use each strain relief channel for one cable only.



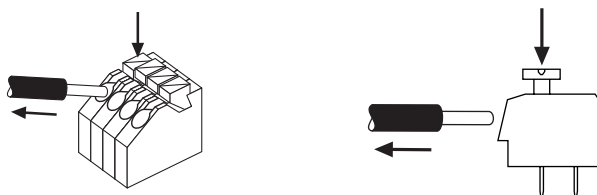
Secondary wires (LED module)

For wiring use stranded wire with ferrules or solid wire from 0.5–1.5 mm². Strip 8.5–9.5 mm of insulation from the cables to ensure perfect operation of the push-wire terminals.
Use one wire for each terminal connector only.
Use each strain relief channel for one cable only.



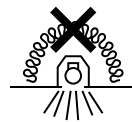
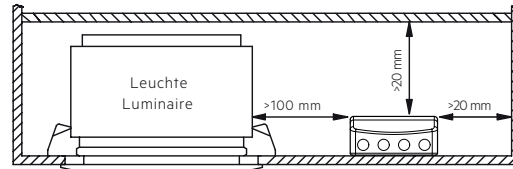
3.3 Loose wiring

Press down the “push button” and remove the cable from front.



3.4 Fixing conditions

Dry, acidfree, oilfree, fatfree. It is not allowed to exceed the maximum ambient temperature (t_a) stated on the device. Minimum distances stated below are recommendations and depend on the actual luminaire.
Is not suitable for fixing in corner.



Device not suitable for covering with thermally insulating material according to IEC 60598-1 Ed. 9.

3.5 Wiring guidelines

- Run the secondary lines separately from the mains connections and lines to achieve good EMC performance.
- The max. secondary cable (LED module) length is 2 m (4 m circuit).
- For good EMC performance, keep the LED wiring as short as possible.
- To comply with the EMC regulations run the secondary wires (LED module) in parallel.
- Secondary switching is not permitted.
- The LED driver has no inverse-polarity protection on the secondary side. Wrong polarity can damage LED modules with no inverse-polarity protection.
- Wrong wiring of the LED driver can lead to malfunction or irreparable damage.
- Through wiring of mains is for connecting additional LED driver only. Max. permanent current of 16 A may not be exceeded.
- To avoid damage of the Driver, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).
- Recommendation to check glowing in stand-by in combination with class I luminaires
- The terminal (E) is not connected to the driver.
Only for loop-through wiring.

3.6 Hot plug-in



Hot plug-in is not supported due to residual output voltage of > 0 V up to mains voltage. Danger to life.

When connecting an LED load, restart the device to activate the LED output. This can be done via mains reset or via interface (DALI, DSI, switchDIM).

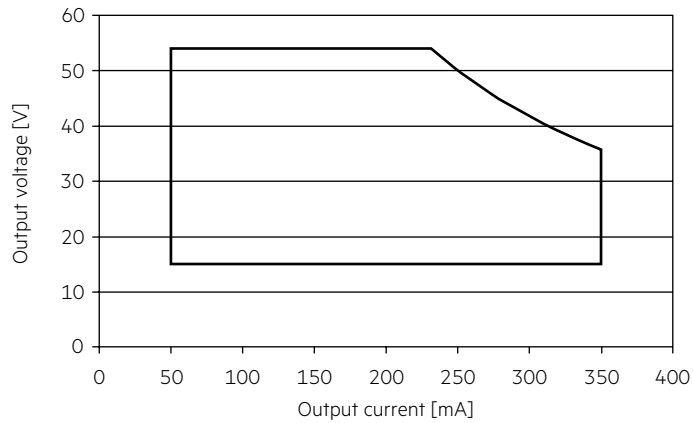
3.7 Independent control gear classification



“Do not cover”, “non-IC” and “IC” classified control gear are recommended to be installed according to the Fixing conditions in 3.4.

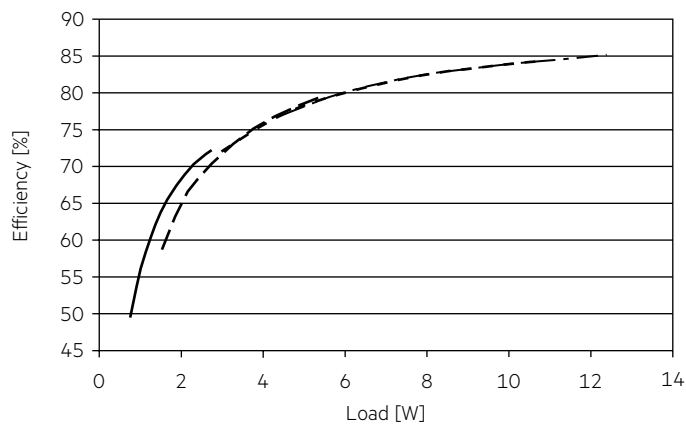
4. Electrical values

4.1 Operating window



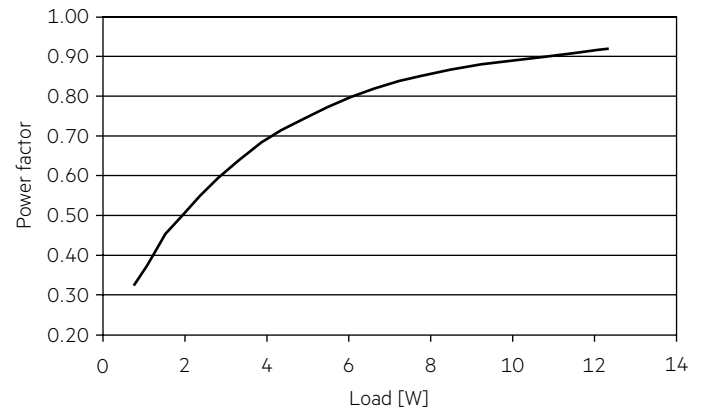
Make sure that the LED driver is operated within the given window under all operating conditions. Coming below the specified minimum output voltage of the LED driver may cause the device to shut-down. See chapter "6.2 DC operation" for more information.

4.2 Efficiency vs load



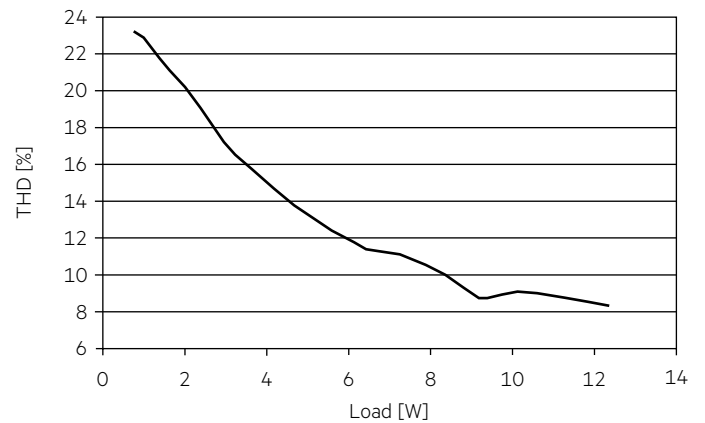
- 50 mA
- - - 100 mA
- - - - 200 mA
- · - · - 300 mA

4.3 Power factor vs load



4.4 THD vs load

THD without harmonic < 5 mA (0.6 %) of the input current:



100 % load corresponds to the max. output power (full load) according to the table on page 2.

4.5 Maximum loading of automatic circuit breakers in relation to inrush current

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation \emptyset	1.5 mm ²	1.5 mm ²	2.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	2.5 mm ²	I_{max}	time
LC 13/50-300/54 flexC NF SR EXC4	41	55	66	83	25	33	40	50	9 A	280 μ s

These are max. values calculated out of inrush current! Please consider not to exceed the maximum rated continuous current of the circuit breaker.

Calculation uses typical values from ABB series S200 as a reference.

Actual values may differ due to used circuit breaker types and installation environment.

4.6 Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %

	THD	3.	5.	7.	9.	11.
LC 13/50-300/54 flexC NF SR EXC4	< 10	< 7	< 3	< 3	< 3	< 3

5. Software / Programming / Interfaces

5.1 Software / programming

With appropriate software and interface different functions can be activated and various parameters can be configured in the LED driver. The Driver supports the following software and interfaces:

Software for configuration:

- companionSUITE (deviceGENERATOR, deviceCONFIGURATOR, deviceANALYSER, 4service NFC app)

Interfaces for data transfer:

- NFC

5.2 Nearfield communication (NFC)

The NFC Interface allows wireless communication with the LED driver.

This interface offers the option to write configuration and to read configuration, errors and events with the companionSUITE.

A correct communication between the LED driver and the NFC antenna can only be guaranteed if the antenna is placed directly on the Driver.

Any material placed between the LED driver and the NFC antenna can cause a deterioration of the communication quality.

After programming the device via NFC power up the device one time for one second till the deviceANALYSER can read out the parameters.

We recommend the use of following NFC antenna:

www.tridonic.com/nfc-readers

With a suitable NFC antenna several devices can be programmed at the same time (NFC multiprogramming).

NFC is complied with ISO/IEC 15963 standard.





6. Functions

☉ companionSUITE:

NFC

The companionSUITE with deviceGENERATOR, deviceCONFIGURATOR and deviceANALYSER is available via our WEB page:

<https://www.tridonic.com/com/en/products/companionsuite.asp>

Icon	Function	NFC
	Device reset command	☉
	Constant light output (CLO)	☉
	LED current	☉
	deviceKEY	☉

6.1 LED current



The LED output current must be adapted to the connected LED module. The value is limited by the current range of the respective device.

The current adjustment methods is NFC.

Minimum output current is default.

6.2 Light level in DC operation



The LED driver is designed to operate on DC voltage and pulsed DC voltage. For a reliable operation, make sure that also in DC emergency operation the LED driver is run within the specified conditions as stated in chapter "4.1 operating window".

Light output level in DC operation is fixed 100 %.
EOFi = 0.98.

The voltage-dependent input current of Driver incl. LED module is depending on the used load.

The voltage-dependent no-load current of Driver (without or defect LED module) is for:

AC: < 19.4 mA

DC: < 3.6 mA

6.3 Constant Light Output (CLO)



With this function the light output of the LED module can be kept equal over the lifetime.

The light output of an LED module reduces over the course of its lifetime. The Constant Light Output (CLO) function compensates for this natural decline by constantly increasing the output current of the LED driver throughout its lifetime.

CLO shall be achieved by limitation of the LED current at the commissioning of the LED driver and providing a linear interpolation of the current over the time, depending on the data points given by the user.

6.4 deviceKEY



With this function, individual device functions can be protected from unauthorized changes by a password.

7. Protective features

7.1 Overtemperature protection

The LED driver is protected against temporary thermal overheating. If the temperature limit is exceeded the output current of the LED module(s) is reduced. The temperature protection is activated above $t_{c\ max}$. The activation temperature differs depending on the LED load.

7.2 Short-circuit behaviour

In case of a short-circuit at the LED output the LED output is switched off. After restart of the LED driver the output will be activated again.

7.3 No-load operation

The LED driver will not be damaged in no-load operation. The output will be deactivated and is therefore free of voltage. If a LED load is connected the device has to be restarted before the output will be activated again.

7.4 Overload protection

If the maximum load is exceeded by a defined internal limit, the LED driver turns off the LED output. After restart of the LED driver the output will be activated again.

7.5 Insulation between terminals

Insulation	Mains	LED
Mains	–	double
LED	double	–

double ... represents double or reinforced insulation.

8. Miscellaneous

8.1 Insulation and electric strength testing of luminaires

Electronic devices can be damaged by high voltage. This has to be considered during the routine testing of the luminaires in production.

According to EN 60598-1 Annex Q (informative only!) or ENEC 303-Annex A, each luminaire should be submitted to an insulation test with 500 V_{DC} for 1 second. This test voltage should be connected between the interconnected phase and neutral terminals and the earth terminal. The insulation resistance must be at least 2 MΩ.

As an alternative, EN 60598-1 Annex Q describes a test of the electrical strength with 1500 V_{AC} (or 1.414 x 1500 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

8.2 Conditions of use and storage

Humidity: 5% up to max. 85%,
not condensed
(max. 56 days/year at 85%)

Storage temperature: -40 °C up to max. +80 °C

The devices have to be acclimatised to the specified temperature range (ta) before they can be operated.

The LED driver is declared as inbuilt LED controlgear, meaning it is intended to be used within a luminaire enclosure.

If the product is used outside a luminaire, the installation must provide suitable protection for people and environment (e.g. in illuminated ceilings).

8.3 Maximum number of switching cycles

All LED driver are tested with 50,000 switching cycles. The actually achieved number of switching cycles is significantly higher.

8.4 Additional information

Additional technical information at www.tridonic.com → Technical Data

Lifetime declarations are informative and represent no warranty claim. No warranty if device was opened.

8.5 Disposal



According to the WEEE directive return old equipment at appropriate collection facilities.