TRIDONIC

Driver LCI 105W 250-1050mA 300V flexC NF lp EXC3 (INDUSTRY)

excite series non-SELV

Product description

_ Constant current built-in LED driver, particularly suitable for industrial applications in tough environments with elevated ambient temperatures such as cold warehouses or factories
_ Output current adjustable between 250 – 1,050 mA
_ Max. output power 105 W
_ Suitable for mains voltage peaks (burst/surge) up to 4 kV
_ Expanded temperature range of -40 … +80 °C
_ Nominal lifetime up to 120,000 h (at ta 60 °C)
_ 8 years guarantee (conditions at https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions)

Housing properties

_ White slim metal casing
_ Type of protection IP20

Interfaces

_ Near field communication (NFC)
_ Terminal blocks: 45° push terminals

Functions

_ Adjustable output current in 1-mA-steps (I-SELECT 2 resistor or NFC)
_ Intelligent Temperature Guard (overtemperature protection)
_ Intelligent Voltage Guard (overvoltage and undervoltage monitoring)
_ Protective features (overtemperature, short-circuit, overload, no-load, input voltage range)
_ Suitable for emergency escape lighting systems acc. to EN 50172

Benefits

_ Flexible configuration via companionSUITE (NFC) or I-SELECT 2
_ Application-oriented operating window for maximum compatibility
_ Extended vibration damping
_ Increased safety through robust design and advanced testing under extreme test conditions
_ High reliability through the selection of exclusive components

Typical applications

_ For linear/area lighting in industry applications

Website

http://www.tridonic.com/87500920

Spotlights | Downlights | **Linear** | **Area** | Floor | Wall | Free-standing | Street | Decorative | **High bay**

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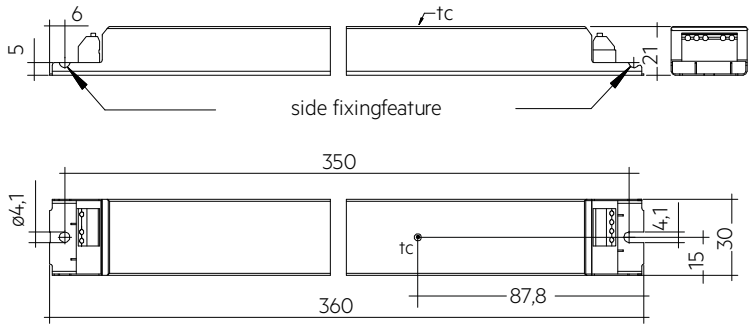


Ordering data

Type	Article number	Packaging, carton	Packaging, pallet	Packaging, high volume	Weight per pc.
LCI 105/250-1050/300 flexC NF lp EXC3	**87500920**	10 pc(s).	180 pc(s).	1,260 pc(s).	0.304 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) ①②	495 mA
Typ. current (220 V, 0 Hz, full load, EOFx dimlevel) ①②	520 mA
Leakage current (at 230 V, 50 Hz, full load) ①②	< 500 µA
Max. input power	114 W
Typ. efficiency (at 230 V, 50 Hz, full load) ②	94 %
λ (at 230 V, 50 Hz, full load) ①	0.95
Typ. input current in no-load operation	50 mA
Typ. input power in no-load operation	0.7 W
In-rush current (peak / duration)	5 A / 1,000 µs
THD (at 230 V, 50 Hz, full load) ①	< 10 %
Starting time (at 230 V, 50 Hz, full load) ①	< 0.5 s
Starting time (DC mode)	< 0.5 s
Switchover time (AC/DC) ③	< 0.5 s
Turn off time (at 230 V, 50 Hz, full load)	< 30 ms
Output current tolerance ①④	± 3 %
Max. output current peak (non-repetitive)	1,500 mA
Output LF current ripple (< 120 Hz) ①	± 2 %
Output P_ST_LM (at full load)	≤ 1
Output SVM (at full load)	≤ 0.4
Max. output voltage (U-OUT)	350 V
Mains surge capability (between L - N)	4 kV
Mains surge capability (between L/N - PE)	4 kV
Surge voltage at output side (against PE)	4 kV
Type of protection	IP20
Lifetime	up to 100,000 h
Guarantee (conditions at www.tridonic.com)	8 Year(s)
Dimensions L x W x H	360 x 30 x 21 mm

Approval marks

IP20 RoHS

Standards

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

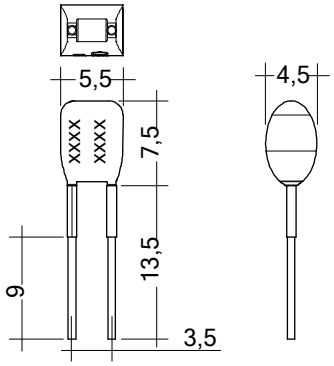
Specific technical data

Type	Output current[5][4]	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)	tc point max.	Ambient temperature ta	I-SELECT 2 resistor value[6]
LCI 105/250-1050/300 flexC NF lp EXC3	250 mA	40 V	300.0 V	75 W	80.0 W	350 mA	95 °C	-40 … +80 °C	–
LCI 105/250-1050/300 flexC NF lp EXC3	300 mA	40 V	300.0 V	90 W	95.5 W	420 mA	95 °C	-40 … +80 °C	16.67 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	350 mA	40 V	300.0 V	105 W	112.5 W	495 mA	95 °C	-40 … +80 °C	14.29 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	400 mA	40 V	262.5 V	105 W	112.5 W	495 mA	95 °C	-40 … +80 °C	12.50 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	450 mA	40 V	233.3 V	105 W	112.5 W	495 mA	95 °C	-40 … +80 °C	11.11 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	500 mA	40 V	210.0 V	105 W	112.5 W	495 mA	95 °C	-40 … +80 °C	10.00 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	550 mA	40 V	190.9 V	105 W	112.5 W	495 mA	95 °C	-40 … +80 °C	9.09 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	600 mA	40 V	175.0 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	8.33 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	650 mA	40 V	161.5 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	7.69 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	700 mA	40 V	150.0 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	7.14 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	750 mA	40 V	140.0 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	6.67 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	800 mA	40 V	131.3 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	6.25 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	850 mA	40 V	123.5 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	5.88 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	900 mA	40 V	116.7 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	5.56 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	950 mA	40 V	110.5 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	5.26 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	1,000 mA	40 V	105.0 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	5.00 kΩ
LCI 105/250-1050/300 flexC NF lp EXC3	1,050 mA	40 V	100.0 V	105 W	112.5 W	495 mA	100 °C	-40 … +80 °C	0.00 kΩ

① Valid at max. output current setting at ta = 25 °C.
② Depending on the selected output current.
③ Valid for immediate change of power supply type otherwise the starting time is valid.
④ Output current is mean value.
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.
⑥ Not compatible with I-SELECT (generation 1). Calculated resistor value.

I-SELECT 2 PLUG PRE / EXC

Accessory



Product description

_ Ready-for-use resistor to set output current value
_ Compatible with LED driver featuring I-select 2 interface; not compatible with I-SELECT (generation 1)
_ Resistor is base insulated
_ Resistor power 0.25 W
_ Current tolerance ± 2 % additional to output current tolerance
_ Compatible with LED driver series PRE and EXC

Example of calculation

_ R [kΩ] = 5 V / I_out [mA] x 1000
_ E96 resistor value used
_ Resistor value tolerance ≤ 1 %; resistor power ≥ 0.1 W; base insulation necessary
_ When using a resistor value beyond the specified range, the output current will automatically be set to the minimum value (resistor value too big), respectively to the maximum value (resistor value too small)

Website

http://www.tridonic.com/28001106

Ordering data

Type	Article number	Colour	Marking	Current	Resistor value	Packaging, bag	Weight per pc.
I-SELECT 2 PLUG 250MA BL	**28001106**	Blue	0250 mA	250 mA	20.00 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 275MA BL	**28001107**	Blue	0275 mA	275 mA	18.20 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 300MA BL	**28001108**	Blue	0300 mA	300 mA	16.50 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 325MA BL	**28001109**	Blue	0325 mA	325 mA	15.40 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 350MA BL	**28001110**	Blue	0350 mA	350 mA	14.30 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 375MA BL	**28001111**	Blue	0375 mA	375 mA	13.30 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 400MA BL	**28001112**	Blue	0400 mA	400 mA	12.40 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 425MA BL	**28001251**	Blue	0425 mA	425 mA	11.80 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 450MA BL	**28001113**	Blue	0450 mA	450 mA	11.00 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 475MA BL	**28001252**	Blue	0475 mA	475 mA	10.50 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 500MA BL	**28001114**	Blue	0500 mA	500 mA	10.00 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 525MA BL	**28001960**	Blue	0525 mA	525 mA	9.53 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 550MA BL	**28001115**	Blue	0550 mA	550 mA	9.09 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 600MA BL	**28001116**	Blue	0600 mA	600 mA	8.25 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 650MA BL	**28001117**	Blue	0650 mA	650 mA	7.68 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 700MA BL	**28001118**	Blue	0700 mA	700 mA	7.15 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 750MA BL	**28001119**	Blue	0750 mA	750 mA	6.65 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 800MA BL	**28001120**	Blue	0800 mA	800 mA	6.19 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 850MA BL	**28001121**	Blue	0850 mA	850 mA	5.90 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 900MA BL	**28001122**	Blue	0900 mA	900 mA	5.62 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 950MA BL	**28001123**	Blue	0950 mA	950 mA	5.23 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 1000MA BL	**28001124**	Blue	1000 mA	1,000 mA	4.99 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG 1050MA BL	**28001125**	Blue	1050 mA	1,050 mA	4.75 kΩ	10 pc(s).	0.001 kg
I-SELECT 2 PLUG MAX BL	**28001099**	Blue	MAX	MAX	0.00 kΩ	10 pc(s).	0.001 kg

1. Standards

EN 55015
EN 61000-3-2
EN 61000-3-3
EN 61347-1
EN 61347-2-13
EN 61547
EN 62384
According to EN 50172 for use in central battery systems
According to EN 60598-2-22 suitable for emergency lighting installations
EN 61000-4-4
EN 61000-4-5

2. Thermal details and lifetime

2.1 Expected lifetime

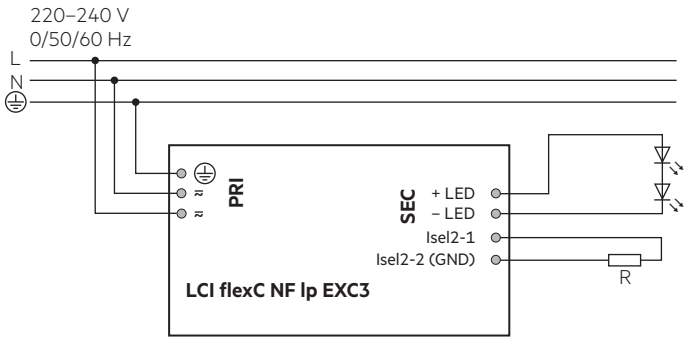
Type	Output current	ta	50 °C	55 °C	60 °C	65 °C	70 °C	75 °C	80 °C
LCI 105/250-1050/300 flexC NF lp EXC3	< 300 mA	tc	65 °C	70 °C	75 °C	80 °C	85 °C	90 °C	95 °C
		Lifetime	> 120,000 h	> 120,000 h	> 120,000 h	> 120,000 h	> 90,000 h	> 60,000 h	> 40,000 h
	300 – 600 mA	tc	65 °C	70 °C	75 °C	80 °C	85 °C	90 °C	95 °C
		Lifetime	> 120,000 h	> 120,000 h	> 120,000 h	> 100,000 h	> 70,000 h	> 50,000 h	> 30,000 h
	> 600 mA	tc	70 °C	75 °C	80 °C	85 °C	90 °C	95 °C	100 °C
		Lifetime	> 120,000 h	> 120,000 h	> 120,000 h	> 100,000 h	> 70,000 h	> 50,000 h	> 30,000 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

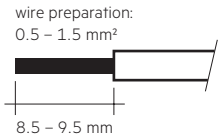
3.1 Circuit diagram



3.2 Wiring type and cross section

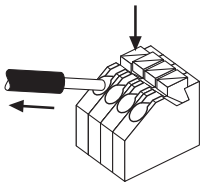
For wiring use solid wire from 0.5 – 1.5 mm².
Strip 8.5 – 9.5 mm of insulation from the cables to ensure perfect operation of terminals.

LED module/LED driver/supply



3.3 Loose wiring

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



3.4 Wiring guidelines

- The cables should be run separately from the mains connections and mains cables to ensure good EMC conditions.
- The LED wiring should be kept as short as possible to ensure good EMC. The max. secondary cable length is 2 m (4 m circuit), this applies for LED output as well as for I-SELECT 2.
- 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.
- With mains transients of 4 kV can voltage peaks up to 4 kV occur against PE at the output of the LED driver. This has to be considered concerning the dielectric strength of the LED module (insulation against PE).
- 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.).

3.5 Hot plug-in

Hot plug-in is not supported due to residual output voltage of > 0 V.
When connecting an LED load, restart the device to activate the LED output. This can be done via mains reset.

3.6 Earth connection

The earth connection is conducted as protection earth (PE). The LED driver can be earthed via earth terminal or metal housing. If the LED driver will be earthed, protection earth (PE) has to be used. There is no earth connection required for the functionality of the LED driver. Earth connection is recommended to improve following behaviour:

- Electromagnetic interferences (EMI)
- LED glowing at stand-by
- Transmission of mains transients to the LED output

In general it is recommended to earth the LED driver if the LED module is mounted on earthed luminaire parts respectively heat sinks and thereby representing a high capacity against earth.

3.7 I-SELECT 2 resistors connected via cable

For details see:
http://www.tridonic.com/com/en/download/technical/LCA_PRE_LC_EXC_ProductManual_en.pdf.

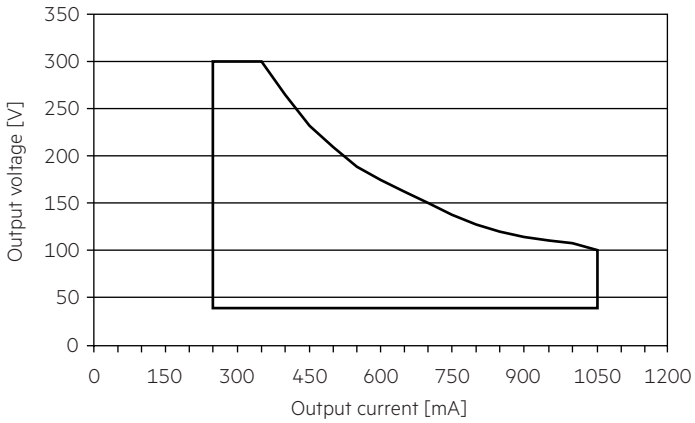
3.8 Replace LED module

1. Mains off
2. Remove LED module
3. Wait for 30 seconds
4. Connect LED module again

Hot plug-in or secondary switching of LEDs is not permitted and may cause a very high current to the LEDs.

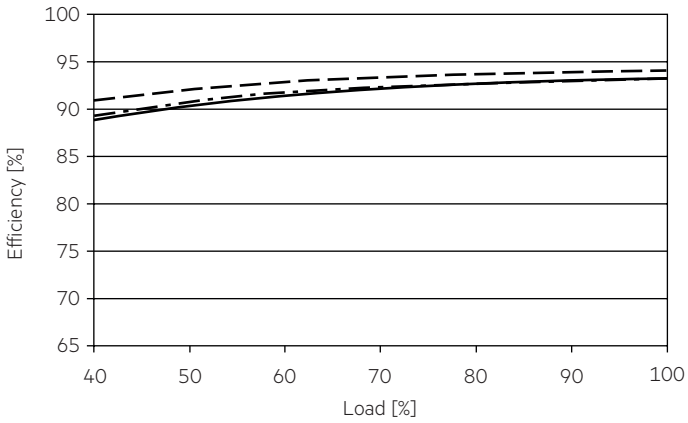
4. Electrical values

4.1 Operating window

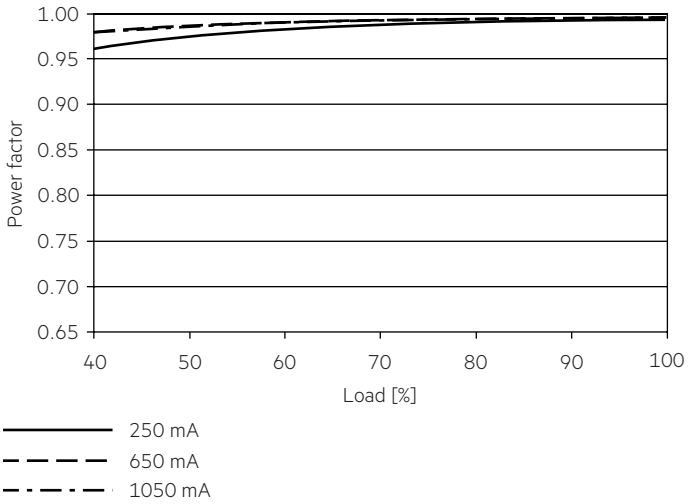


Make sure that the LED driver is operated within the given window under all operating conditions.

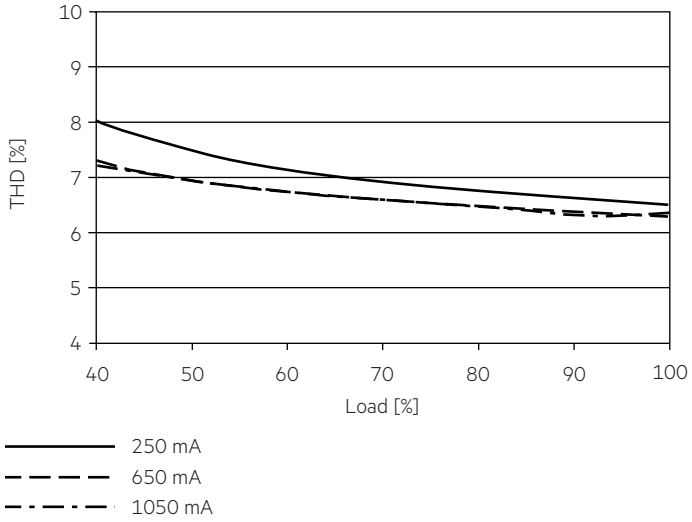
4.2 Efficiency vs load



4.3 Power factor vs load



4.4 THD vs load



100 % load corresponds to the max. output power (full load) according to the table on page 3.

4.5 Maximum loading of automatic circuit breakers

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1.5 mm²	1.5 mm²	2.5 mm²	4 mm²	1.5 mm²	1.5 mm²	2.5 mm²	4 mm²	I_{max}	time
LCI 105/250-1050/300 flexC NF lp EXC3	33	41	53	66	20	25	32	40	5 A	1,000 µs

These are max. values! Please consider not to exceed the maximum 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.
LCI 105/250-1050/300 flexC NF lp EXC3	< 10	< 10	< 5	< 5	< 3	< 3

4.7 Insulation matrix

	Mains	LED	one4all	Functional earth
Mains	–	–	–	•
LED	–	–	–	•
one4all	–	–	–	–
Functional earth	•	•	–	–

• Represents basic insulation

• • Represents double or reinforced insulation

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 / hardware for configuration:
- companionSUITE (deviceGENERATOR, deviceCONFIGURATOR, deviceANALYSER)

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

NFC is complied with ISO/IEC 15963 standard.

Changing parameters via NFC shall be done by qualified engineers only.

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
	OEM Identification	⊙
	OEM GTIN	⊙
	LED current	⊙
	DC level	⊙
	Intelligent temperature guard (ITG)	⊙
	IVG	⊙

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 priority for current adjustment methods is I-SELECT 2 (highest priority) and NFC (lowest priority).

6.2 DC operation

In emergency light systems with a central battery supply the DC recognition function uses the input voltage to detect if emergency mode is present.
The LED driver then automatically switches to DC mode.
Without DC recognition different and more complex solutions would have to be applied in order to detect emergency mode.
DC recognition is integrated in the device as standard.
No additional commissioning is necessary for activation.

The LED driver is designed to operate on DC voltage and pulsed DC voltage.

Light output level in DC operation: 100 %, EOF_i = 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: < 40 mA
DC: < 4 mA

6.3 Intelligent Temperature Guard (ITG)

The intelligent temperature guard protects the LED driver from thermal overheating by reducing the output power or switching off in case of operation above the thermal limits of the luminaire or ballast.
Depending on the luminaire design, the ITG operates at about 5 to 10 °C above tc temperature.

If temperature threshold values are exceeded, the LED output current is limited.
These limits can be adjusted using the programming software.
Even the current ITG temperature in the device can be read out. With this function, the sensitivity of the temperature control can be adjusted.

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 tc max.
The activation temperature differs depending on the LED load.
On DC operation this function is deactivated to fulfill emergency requirements.

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.
The restart can be done via mains reset.
The device will recover automatically.

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.
The restart can be done via mains reset.
The device will recover automatically.

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 IEC 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, IEC 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.