Driver LCI 10W 150mA–400mA TOP SR

TOP series

Product description

- Independent fixed output LED Driver
- Constant current LED Driver
- Output current settable 150 – 400 mA
- Max. output power 10 W
- Nominal life-time up to 100,000 h
- For luminaires of protection class I and protection class II
- Temperature protection as per EN 61347-2-13 C5e
- 5-year guarantee

Properties

- Casing: polycarbonate, white
- Type of protection IP20

Functions

- Intelligent Temperature Guard (overtemperature protection)
- Short-circuit proof
- Overload protection
- Suitable for emergency escapge lighting systems acc. to EN 50172

Standards, page 4

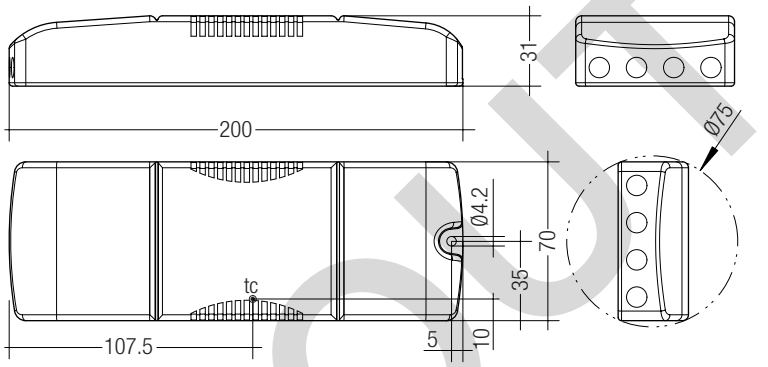
IP20 SELV
RoHS

Driver LCI 10W 150mA–400mA TOP SR

TOP series

Technical data

Rated supply voltage	220 – 240 V
AC voltage range	198 – 264 V
DC voltage range	176 – 280 V (start ≥ 198 V DC)
Mains frequency	0 / 50 / 60 Hz
Overvoltage protection	320 V AC, 48 h
Leakage current (PE)	< 0.5 mA
Max. input power	12.2 W
Efficiency (at 230 V, 50 Hz, full load)	80 – 84 %
THD (at 230 V, 50 Hz, full load)	< 15 %
Output current tolerance	± 5 %
Output LF current ripple (< 120 Hz)	< 2 %
Max. peak output current	Output current + 20 %
Max. output voltage	60 V
Time to light (at 230 V, 50 Hz, full load)	< 0.5 s
Time to light (DC mode)	< 0.5 s
Hold on time at power failure or switch-off	< 0.5 s
Switchover time (AC/DC)	< 0.5 s
Burst / surge peaks output side against PE	2 kV
Dimensions L x W x H	200 x 70 x 31 mm



Ordering data

Type	Article number	Packaging carton	Packaging pallet	Weight per pc.
LCI 10W 150mA-400mA TOP SR	**28000814**	10 pc(s).	400 pc(s).	0.181 kg

Specific technical data

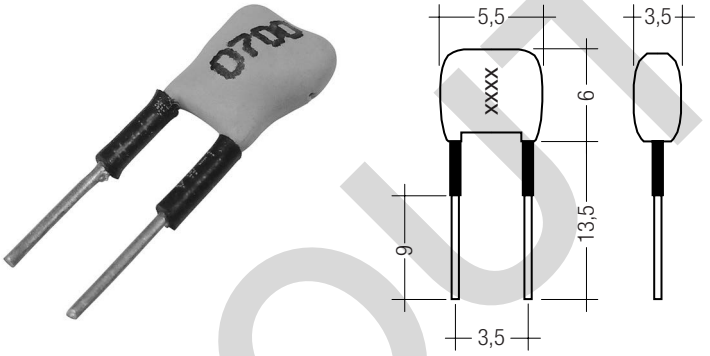
Type	Output current	Min. forward voltage	Max. forward voltage	Max. output power	Input power (at 230 V, 50 Hz, full load)	Input current (at 230 V, 50 Hz, full load)	λ (at 230 V, 50 Hz, full load)	tc point	Ambient temperature ta	tc/ta for ≥ 50.000 h	I sel resistor value
	150 mA	21.6 V	48.0 V	7.2 W	9.0 W	47 mA	0.83	75 °C	-25 … +65 °C	75 / 65 °C	open circuit
	175 mA	21.6 V	48.0 V	8.4 W	10.2 W	52 mA	0.86	75 °C	-25 … +65 °C	75 / 65 °C	63.40 kΩ
	200 mA	21.6 V	48.0 V	9.6 W	11.4 W	56 mA	0.89	75 °C	-25 … +65 °C	75 / 65 °C	54.90 kΩ
	225 mA	20.0 V	44.4 V	10.0 W	11.9 W	57 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	47.50 kΩ
	250 mA	18.0 V	40.0 V	10.0 W	12.1 W	58 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	40.20 kΩ
LCI 10W 150mA-400mA TOP SR	275 mA	16.4 V	36.4 V	10.0 W	12.1 W	58 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	34.00 kΩ
	300 mA	15.0 V	33.3 V	10.0 W	12.2 W	59 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	27.40 kΩ
	325 mA	13.8 V	30.8 V	10.0 W	12.2 W	59 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	22.00 kΩ
	350 mA	12.9 V	28.6 V	10.0 W	12.2 W	59 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	12.00 kΩ
	375 mA	12.0 V	26.7 V	10.0 W	12.2 W	59 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	6.19 kΩ
	400 mA	11.3 V	25.0 V	10.0 W	12.2 W	59 mA	0.90	75 °C	-25 … +65 °C	75 / 65 °C	short circuit

ACCES-SORIES

I-SELECT PLUG TOP / ECO

Product description

- Ready-for-use resistor to set output current value
- Compatible with LED Driver series TOP and ECO
- Resistor is base isolated
- Resistor power 0.25 W
- Resistor value tolerance ± 1 %



Ordering data

Type	Article number	Colour	Marking	Resistor value	Packaging bag	Weight per pc.
I-SELECT PLUG 175mA BL	**28000446**	Blue	0175	63.40 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 200mA BL	**28000447**	Blue	0200	54.90 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 225mA BL	**28000448**	Blue	0225	47.50 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 250mA BL	**28000368**	Blue	0250	40.20 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 275mA BL	**28000369**	Blue	0275	34.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 300mA BL	**28000275**	Blue	0300	27.40 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 325mA BL	**28000449**	Blue	0325	22.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 350mA BL	**28000276**	Blue	0350	12.00 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG 375mA BL	**28000450**	Blue	0375	6.19 kΩ	10 pc(s).	0.001 kg
I-SELECT PLUG MAX GR	**28000274**	Grey	MAX	0 Ω	10 pc(s).	0.001 kg

1. Standards

EN 55015
EN 61000-3-2
EN 61000-3-3
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 960 °C passed.

1.2 Isolation 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 isolation 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 isolation 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.

2. Thermal details

2.1 Temperature range

The LED Driver life duration is related to the ambient temperature ta.
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. or higher, ta temperature should be checked and eventually critical components (e.g. ELCAP) measured.
Detailed information on request.

2.2 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 within the specified temperature range (ta) before they can be operated.

2.3 Overtemperature protection

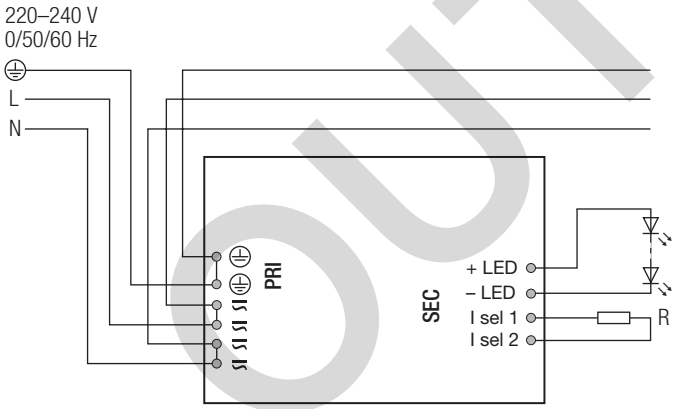
The LED Driver will reduce output current at temporary thermal over-heating (exceeding max. tc point).
On DC operation this function is deactivated to fulfill emergency requirements.

3. Installation / wiring

3.1 Hot plug-in

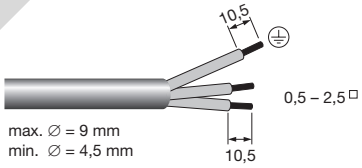
Hot plug-in is not recommend within 5 s after shutdown due to output voltage of
> 0 V. Mains reset is required to restart the LED Driver if LED module is connected to the LED Driver after these 5 s.

3.2 Circuit diagram



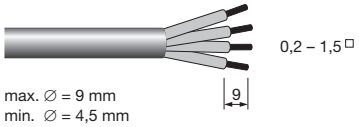
3.3 Mains supply wires

Wiring type and cross section
Stranded wire or solid wire up to 2.5 mm² may be used for wiring. 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.



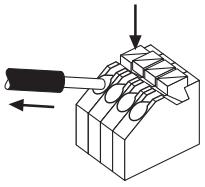
3.4 Secondary wires (LED module)

Wiring type and cross section
The wiring can be in stranded wires with ferrules or solid with a cross section of 0.2–1.5 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.



3.5 Release of the wiring

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

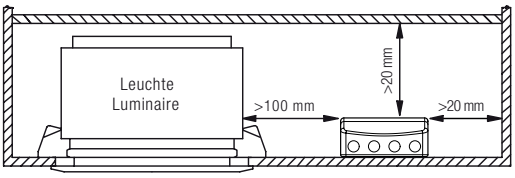


3.6 Wiring guidelines

- All connections must be kept as short as possible to ensure good EMI behaviour.
- Earthing is not required for the device to operate but will improve the EMI behaviour.
- If LCI TOP SR will be earthed protection earth (PE) has to be used.
- Mains leads should be kept apart from LED Driver and other leads (ideally 5 – 10 cm distance)
- Max. length of output and I sel wires is 2 m.
- Secondary switching is not permitted.
- Incorrect wiring can demage LED modules.
- Through wiring of mains is for connecting additional LED Driver only. Max. permanent current of 12 A may not be exceeded.
- The wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).

3.7 Fixing conditions

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



3.8 Earth connection

The earth connection is conducted as protection earth (PE). 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)
- 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.

4. Life-time

4.1 Expected life-time

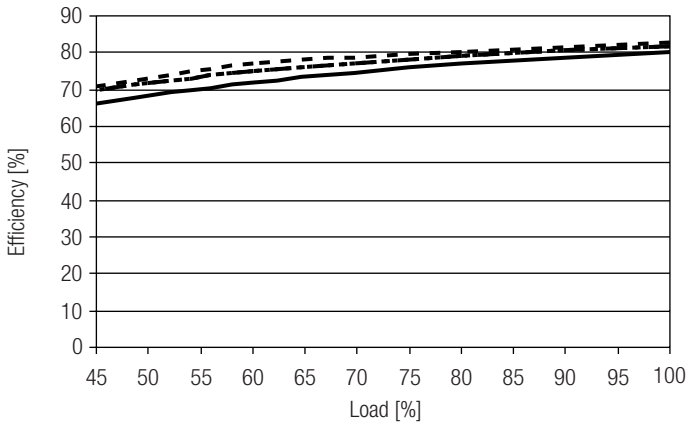
Type	Output current	**ta**	**40 °C**	**50 °C**	**60 °C**	**65 °C**
LCI 10W 150mA-400mA TOP SR	150 – 200 mA	tc	48 °C	58 °C	68 °C	75 °C
		Life-time	> 100,000 h	100,000 h	75,000 h	50,000 h
	225 – 300 mA	tc	49 °C	59 °C	69 °C	75 °C
		Life-time	> 100,000 h	100,000 h	75,000 h	50,000 h
	325 – 400 mA	tc	50 °C	60 °C	70 °C	75 °C
		Life-time	> 100,000 h	100,000 h	75,000 h	50,000 h

x = not permitted

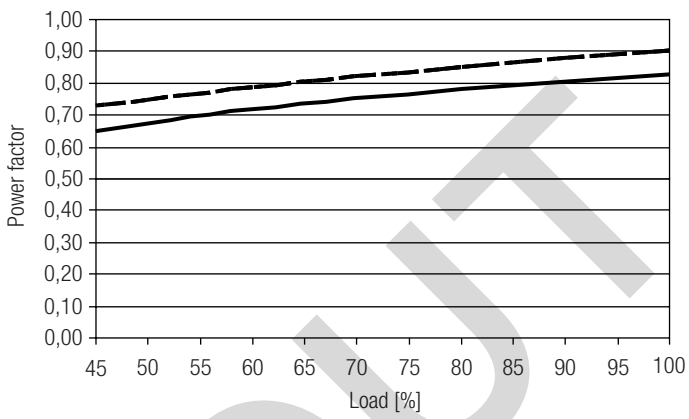
The LED Driver is designed for a life-time stated above under reference conditions and with a failure probability of less than 10 %.

5. Electrical values

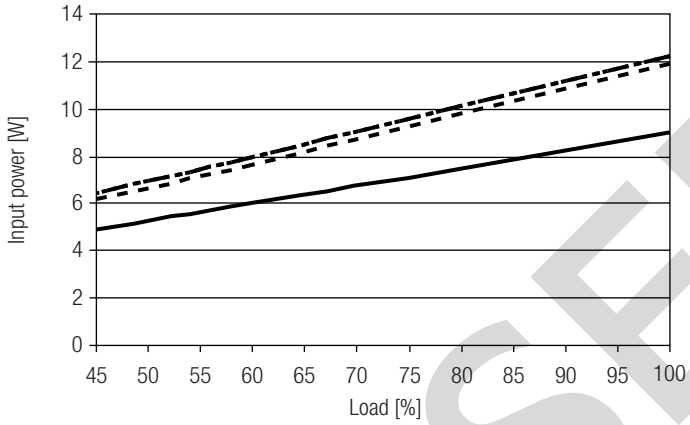
5.1 Efficiency vs load



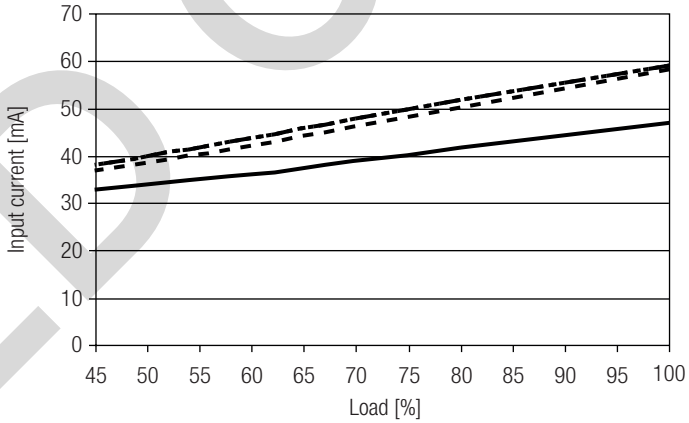
5.2 Power factor vs load



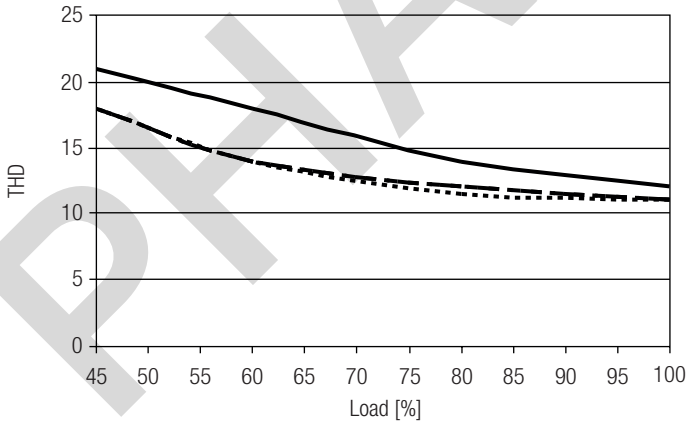
5.3 Input power vs load

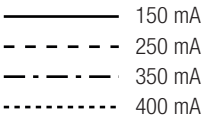


5.4 Input current vs load



5.5 THD vs load





5.6 Maximum loading of atuomatic 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	2,5 mm²	1,5 mm²	1,5 mm²	2,5 mm²	2,5 mm²	I_{max}	time
LCI 10W 150mA-400mA TOP SR	110	140	170	220	110	140	170	220	6 A	20 µs

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

	THD	3.	5.	7.	9.	11.
LCI 10W 150mA-400mA TOP SR	12	9	4	3	3	2

6. Functions

6.1 Short-circuit behaviour

LED Driver will switch off in case of short-circuit of LED output. Mains reset is required to restart the LED Driver.

6.2 No-load operation or load loss during operation

LED Driver will detect a load loss during operation. In this case and no-load operation the max. output voltage can apply at the LED output for max. 5 s before LED Driver shuts down. Mains reset is required to restart the LED Driver.

6.3 Output current setting

Output current can be set by connecting a resistor between the 2 "I sel" terminals. Relationship between output current and resistor value can be found at the table "Specific technical data". Resistor values specified from standardised resistor value
ranges.
Resistor value tolerance has to be ≤ 1 %.
Resistor power has to be ≥ 0.1 W.
If the resistor is connected with wires a max. wire length of 2 m may not be exceeded and possible interferences have to be avoided.
Resistor detection at each start.
Change of the resistor value during the operation will be not considered.
Resistors for the main output current values can be ordered from Tridonic (see accessories).

6.4 DC operation

The LED Driver is designed for operation on DC voltage and pulsed DC voltage.
Light output level in DC operation: 100 %

6.5 Overload protection

LED Driver will switch off at overload operation. Mains reset is required to restart the LED Driver.

6.6 Underload operation

LED Driver will switch off at underload operation. Mains reset is required to restart the LED Driver.

7. Additional information

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

Guarantee conditions at www.tridonic.com → Services

Life-time declarations are informative and represent no warranty claim.
No warranty if device was opened.