



### Driver LCI 35W 350mA–900mA TOP Ip

TOP series

#### Product description

- Fixed output built-in LED Driver
- Constant current LED Driver
- Output current settable 350 – 900 mA
- Max. output power 35 W
- Nominal life-time up to 100,000 h
- For luminaires of protection class I and protection class II
- 5-year guarantee

#### Properties

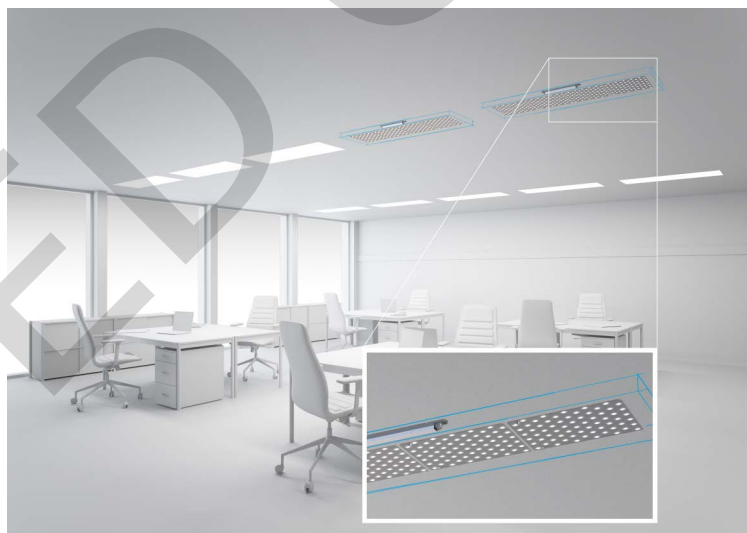
- Low-profile metal casing with white cover
- Type of protection IP20

#### Functions

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



Standards, page 4



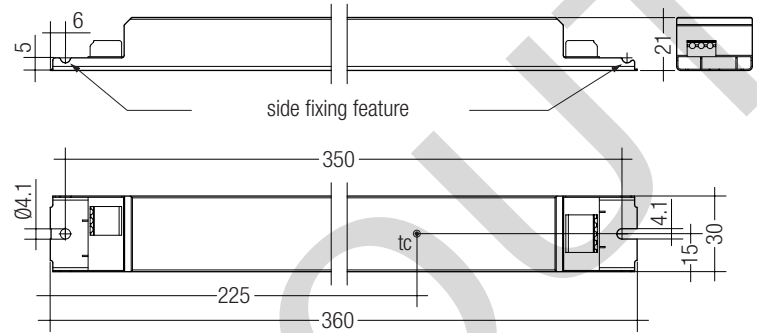
IP20 SELV 

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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	40.3 W
Efficiency (at 230 V, 50 Hz, full load)	86 – 88 %
THD (at 230 V, 50 Hz, full load)	< 17 %
Output current tolerance <sup>®</sup>	± 5 %
Output LF current ripple (< 120 Hz)	< 2 %
Max. peak output current	Output current + 20 %
Max. output voltage (no-load voltage)	60 V
Time to light	< 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	360 x 30 x 21 mm



#### Ordering data

Type	Article number	Packaging carton	Packaging pallet	Weight per pc.
LCI 35W 350mA-900mA TOP Ip	28000439	10 pc(s).	760 pc(s).	0.238 kg

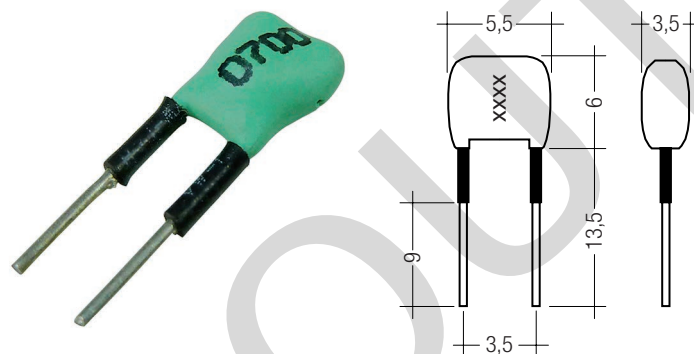
#### Specific technical data

Type	Output current <sup>®</sup>	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)	$\lambda$ (at 230 V, 50 Hz, full load)	tc point	Ambient temperature ta	tc/ta for ≥ 50.000 h	I sel resistor value
LCI 35W 350-900mA TOP Ip	350 mA	21.6 V	48.0 V	16.8 W	19.5 W	98 mA	0.86	80 °C	-25 ... +70 °C	80 / 70 °C	open circuit
	400 mA	21.6 V	48.0 V	19.2 W	22.2 W	109 mA	0.88	80 °C	-25 ... +70 °C	80 / 70 °C	66.50 kΩ
	450 mA	21.6 V	48.0 V	21.6 W	24.9 W	121 mA	0.90	80 °C	-25 ... +70 °C	80 / 70 °C	57.60 kΩ
	500 mA	21.6 V	48.0 V	24.0 W	27.6 W	132 mA	0.91	80 °C	-25 ... +70 °C	80 / 70 °C	49.90 kΩ
	550 mA	21.6 V	48.0 V	26.4 W	30.2 W	143 mA	0.92	80 °C	-25 ... +70 °C	80 / 70 °C	42.20 kΩ
	600 mA	21.6 V	48.0 V	28.8 W	32.7 W	154 mA	0.93	80 °C	-25 ... +70 °C	80 / 70 °C	35.70 kΩ
	650 mA	21.6 V	48.0 V	31.2 W	35.5 W	164 mA	0.94	85 °C	-25 ... +70 °C	80 / 65 °C	28.70 kΩ
	700 mA	21.6 V	48.0 V	33.6 W	38.2 W	174 mA	0.95	85 °C	-25 ... +70 °C	80 / 65 °C	22.00 kΩ
	750 mA	21.0 V	46.7 V	35.0 W	39.8 W	181 mA	0.96	85 °C	-25 ... +70 °C	80 / 65 °C	15.00 kΩ
	800 mA	19.7 V	43.8 V	35.0 W	39.9 W	181 mA	0.96	85 °C	-25 ... +70 °C	80 / 65 °C	10.00 kΩ
	850 mA	18.5 V	41.2 V	35.0 W	40.2 W	183 mA	0.96	85 °C	-25 ... +70 °C	80 / 65 °C	5.36 kΩ
	900 mA	17.5 V	38.9 V	35.0 W	40.3 W	183 mA	0.96	85 °C	-25 ... +70 °C	80 / 65 °C	short circuit

<sup>®</sup> Output current is mean value.

**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  $\pm 1\%$

**Ordering data**

Type	Article number	Colour	Marking	Resistor value	Packaging bag	Weight per pc.
I-SELECT PLUG 400mA GN	28000451	Green	0400	66.50 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 450mA GN	28000452	Green	0450	57.60 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 500mA GN	28000277	Green	0500	49.90 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 550mA GN	28000453	Green	0550	42.20 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 600mA GN	28000454	Green	0600	35.70 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 650mA GN	28000455	Green	0650	28.70 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 700mA GN	28000278	Green	0700	22.00 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 750mA GN	28000456	Green	0750	15.00 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 800mA GN	28000457	Green	0800	10.00 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG 850mA GN	28000458	Green	0850	5.36 k $\Omega$	10 pc(s).	0.001 kg
I-SELECT PLUG MAX GR	28000274	Grey	MAX	0 $\Omega$	10 pc(s).	0.001 kg

**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

**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  $\leq 1\%$ .

Resistor power has to be  $\geq 0.1\text{ W}$ .

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).

**DC emergency operation**

The LED Driver is designed for operation on DC voltage and pulsed DC voltage.

Light output level in DC operation: 100 % (EOFx).

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

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

AC:  $< 25\text{ mA}$

DC:  $< 8\text{ mA}$

**Overload protection**

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

**Underload operation**

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

**Overtemperature protection**

The LED Driver will reduce output current at temporary thermal over-heating (exceeding max.  $t_c$  point).

On DC operation this function is deactivated to fulfill emergency requirements.

**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.

**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.

**Hot plug-in**

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

**Conditions of use and storage**

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

Storage temperature:  $-40\text{ }^{\circ}\text{C}$  up to max.  $+80\text{ }^{\circ}\text{C}$

The devices have to be within the specified temperature range ( $t_a$ ) before they can be operated.

**Temperature range**

The LED Driver life duration is related to the ambient temperature  $t_a$ .

The relation of  $t_c$  to  $t_a$  temperature depends also on the luminaire design. If the measured  $t_c$  temperature is approx. 5 K below  $t_c$  max. or higher,  $t_a$  temperature should be checked and eventually critical components (e.g. ELCAP) measured.

Detailed information on request.

**Expected life-time**

Type	Output current	$t_a$	40 °C	50 °C	55 °C	60 °C	65 °C	70 °C
LCI 35W 350mA-900mA TOP Ip	350 – 600 mA	$t_c$	50 °C	60 °C	65 °C	70 °C	75 °C	80 °C
		life-time	$> 100,000\text{ h}$	$> 100,000\text{ h}$	$> 100,000\text{ h}$	$> 100,000\text{ h}$	70,000 h	50,000 h
	650 – 900 mA	$t_c$	55 °C	65 °C	70 °C	75 °C	80 °C	85 °C
		life-time	$> 100,000\text{ h}$	$> 100,000\text{ h}$	$> 100,000\text{ h}$	85,000 h	60,000 h	45,000 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 %.

**Maximum loading of automatic circuit breakers**

Automatic circuit breaker type	C10	C13	C16	C20	B10	B13	B16	B20	Inrush current	
Installation Ø	1,5 mm <sup>2</sup>	1,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	1,5 mm <sup>2</sup>	1,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	2,5 mm <sup>2</sup>	$I_{max}$	time
<b>LCI 35W 350mA-900mA TOP Ip</b>	45	55	70	90	45	55	70	90	11,5 A	41 µs

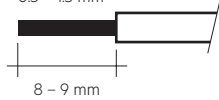
**Harmonic distortion in the mains supply (at 230 V / 50 Hz and full load) in %**

	Output current	THD	3.	5.	7.	9.	11.
<b>LCI 35W 350mA-900mA TOP Ip</b>	350 – 450 mA	< 17	< 12	< 8	< 6	< 4	< 3
	500 – 650 mA	< 15	< 11	< 7	< 5	< 4	< 3
	700 – 900 mA	< 10	< 9	< 5	< 4	< 3	< 3

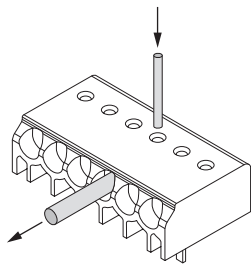
**Installation instructions****Wiring type and cross section**

Solid wire with a cross section of 0.5 – 1.5 mm<sup>2</sup>. Strip 8 – 9 mm of insulation from the cables to ensure perfect operation of terminals.

wire preparation:  
0.5 – 1.5 mm<sup>2</sup>

**Release of the wiring**

Loosen wire through twisting and pulling or using a Ø 1 mm release tool.

**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 for protection class I luminaires.
- If LCI TOP C 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 damage LED modules.
- The wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).

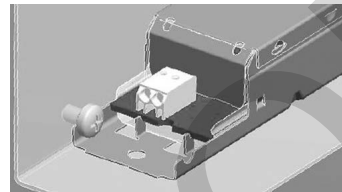
**Earth connection**

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.

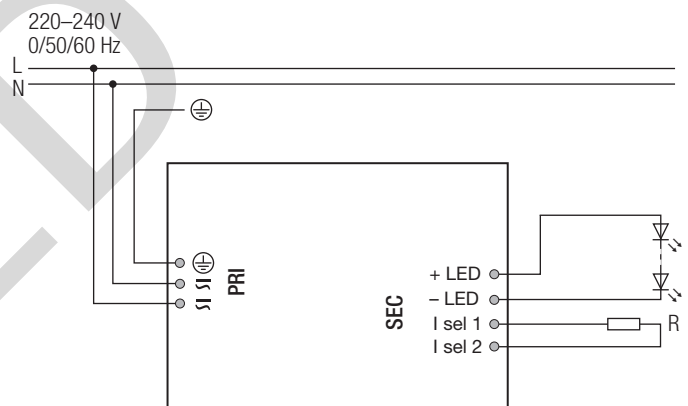
Earth connection is recommended to improve following behaviour.

- Electromagnetic interferences (EMI)
- 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.

**Side fixing feature**

Screw M4, screw head diameter 8–10 mm

**Circuit diagram****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<sub>DC</sub> 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<sub>AC</sub> (or 1.414 x 1500 V<sub>DC</sub>). To avoid damage to the electronic devices this test must not be conducted.

**Additional information**

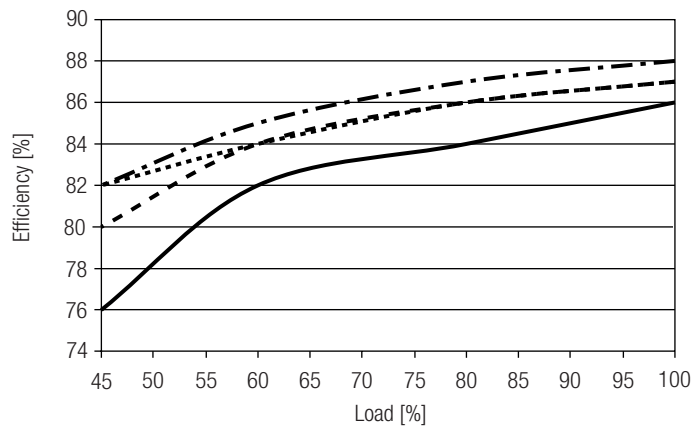
Additional technical information at [www.tridonic.com](http://www.tridonic.com) → Technical Data

Guarantee conditions at [www.tridonic.com](http://www.tridonic.com) → Services

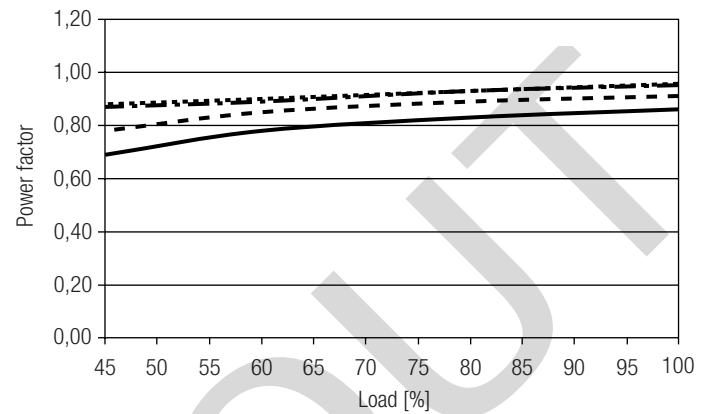
Life-time declarations are informative and represent no warranty claim. No warranty if device was opened.

## Diagrams LCI 35W 350mA-900mA TOP Ip

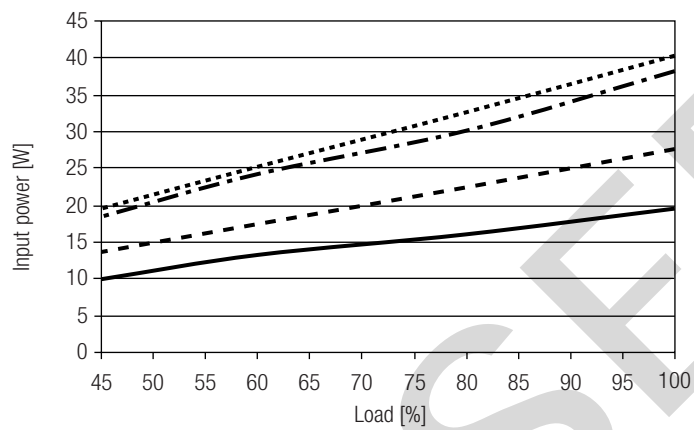
Efficiency vs load



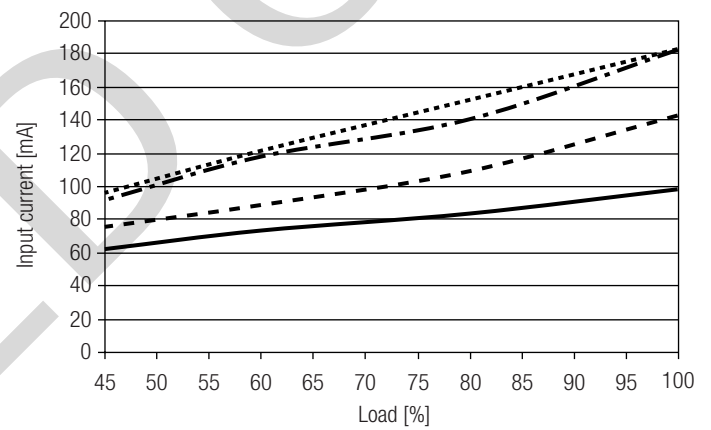
Power factor vs load



Input power vs load



Input current vs load



THD vs load

