



Driver LC 165W 400-700mA flexC Ip ADV advanced series

Product description

- Built-in constant current LED driver
- For luminaires of protection class I and protection class II
- Temperature protection as per EN 61347-2-13 C5e
- Adjustable output current between 400 and 700 mA
- Max. output power 165 W
- Up to 94 % efficiency
- Nominal lifetime up to 100,000 h
- 5 years guarantee (conditions at www.tridonic.com)

Housing properties

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

Interfaces

- Terminal blocks: 45° push terminals

Functions

- Overtemperature protection
- Overload protection
- Short-circuit protection
- No-load protection
- Burst protection voltage 1 kV
- Surge protection voltage 1 kV (L to N)
- Surge protection voltage 2 kV (L/N to earth)

Typical applications

- For linear/area lighting in office applications



Standards, page 4

Wiring diagrams and installation examples, page 4

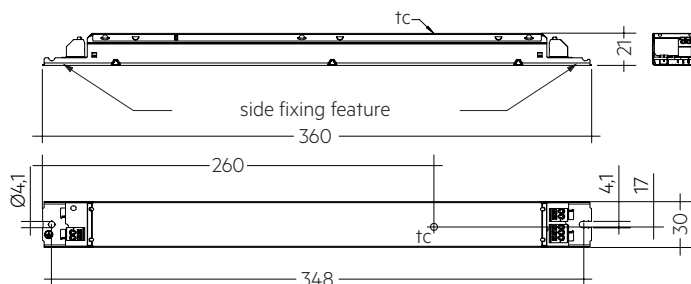
IP20                                       

Driver LC 165W 400-700mA flexC Ip ADV

advanced series

Technical data

Rated supply voltage	220 – 240 V
AC voltage range	198 – 264 V
Max. input current (at 230 V, 50 Hz, full load)	0.8 A
Leakage current (at 230 V, 50 Hz, full load)	< 450 µA
Mains frequency	50 / 60 Hz
Overvoltage protection	320 V AC, 48 h
Max. input power	175.6 W
Typ. power consumption (at 230 V, 50 Hz, full load)	175.2 W
Min. output power	57.2 W
Max. output power	165 W
Typ. efficiency (at 230 V / 50 Hz / full load) ^①	94 %
λ (at 230 V, 50 Hz, full load) ^①	0.95
Output current tolerance ^②	± 7.5 %
Max. output current peak ^③	≤ output current + 10 %
Max. output voltage	330 V
THD (at 230 V, 50 Hz, full load)	< 20 %
Output LF current ripple (< 120 Hz)	± 5 %
Starting time (at 230 V, 50 Hz, full load)	≤ 0.5 s
Turn off time (at 230 V, 50 Hz, full load)	≤ 0.5 s
Hold on time at power failure (output)	0 s
Ambient temperature ta (at lifetime 100,000 h)	40 °C
Storage temperature ts	-40 ... +80 °C
Lifetime	up to 100,000 h
Guarantee (conditions at www.tridonic.com)	5 years
Dimensions L x W x H	360 x 30 x 21 mm
Hole spacing D	348 mm



Ordering data

Type	Article number	Packaging, carton	Packaging, pallet	Weight per pc.
LC 165W 400-700mA flexC Ip ADV	28002470	50 pc(s).	650 pc(s).	0.254 kg

Specific technical data

Type	Output current ^②	Min. forward voltage	Max. forward voltage	Max. output power	Typ. power consumption (at 230 V, 50 Hz, full load)	Typ. current consumption (at 230 V, 50 Hz, full load)	Max. casing temperature tc	Ambient temperature ta max.	I-out select	Resistor ^④
LC 165W 400-700mA flexC Ip ADV	400 mA	143 V	320.0 V	128 W	134.5 W	599 mA	80 °C	-20 ... +50 °C	0-2	ADV Type A
	450 mA	143 V	320.0 V	144 W	152.8 W	679 mA	80 °C	-20 ... +50 °C	0-2	ADV Type B
	500 mA	143 V	320.0 V	160 W	168.7 W	748 mA	80 °C	-20 ... +50 °C	0-1	ADV Type A
	600 mA	143 V	275.0 V	165 W	174.5 W	772 mA	85 °C	-20 ... +50 °C	0-2	ADV Type C
	700 mA	143 V	235.7 V	165 W	175.2 W	775 mA	85 °C	-20 ... +50 °C	open	–

^① Test result at 700 mA.

^② Output current is mean value.

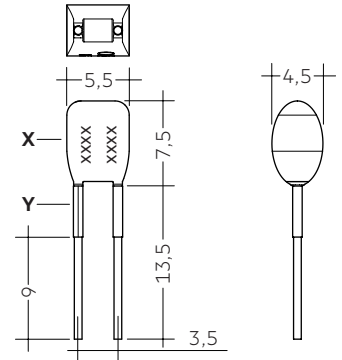
^③ Test result at 25 °C.

^④ Type A is a short circuit plug (0 Ω).

ADV Plug for output current select

Product description

- Ready-for-use resistor to set output current value
- Compatible with LED driver serie LC flexC ADV; not compatible with I-SELECT (generation 1) and I-SELECT 2 (generation 2)
- Resistor is base insulated
- When using your own resistors, make sure the resistor must be insulated
- Resistor power 0.25 W
- Current tolerance $\pm 2\%$ additional to output current tolerance
- Hot plug of the resistor is not permitted
- For detailed current setting see table "Specific technical data" of the respective LED driver and chapter 3.8 Current setting



Ordering data

Type	Article number	Colour of X area	Colour of Y area	Marking	Resistor value	Packaging bag	Weight per pc.
ADV Plug Type A YL	28001771	Yellow	Yellow	A	0.0 Ω	10 pc(s).	0.001 kg
ADV Plug Type B YL	28001772	Yellow	Black	B	3.16 k Ω	10 pc(s).	0.001 kg
ADV Plug Type C YL	28001773	Yellow	Purple	C	28.7 k Ω	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

2. Thermal details and lifetime

2.1 Expected lifetime

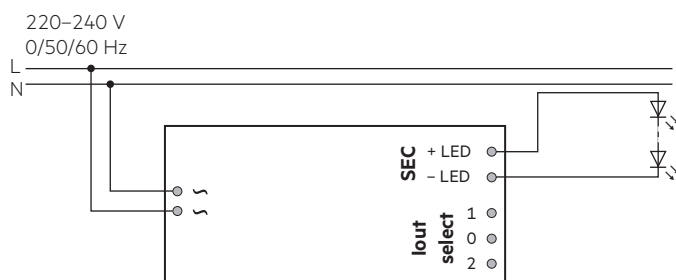
Expected lifetime				
Type	t_a	40 °C	50 °C	60 °C
LC 165W 400-700mA flexC Ip ADV	t_c	75 °C	85 °C	x
	Lifetime	100,000 h	50,000 h	x

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 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., t_a temperature should be checked and eventually critical components (e.g. ELCAP) measured. Detailed information on request.

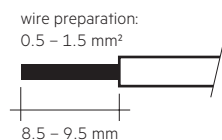
3. Installation / wiring

3.1 Circuit diagram



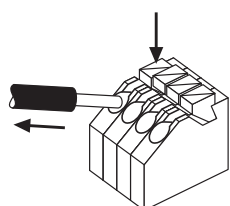
3.2 Wiring type and cross section

For wiring use 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.



3.3 Release of the wiring

Press down the "push button" and remove the cable from front.



3.4 Installation instructions

The LED module and all contact points within the wiring must be sufficiently insulated against 3 kV surge voltage. Air and creepage distance must be maintained.

3.5 Wiring guidelines

- All connections must be kept as short as possible to ensure good EMI behaviour.
- Mains leads should be kept apart from LED driver and other leads (ideally 5 – 10 cm distance)
- Max. length of output wires is 2 m.
- Incorrect wiring can damage LED modules.
- To avoid the damage of the Driver, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).
- The current selection has to be installed in the accordance to the requirement of low voltage installation.

3.6 Replace LED module

1. Mains off
2. Remove LED module
3. Wait for 20 seconds
4. Connect LED module again

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

3.7 Earth connection

The earth connection is conducted as protection earth (PE). The LED driver can be earthed via 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.

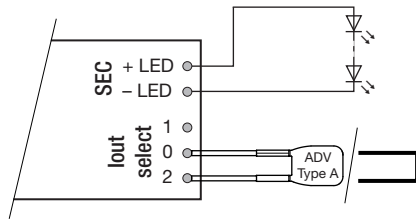
For Class I application, protection earth need to connected with the metal housing (bottom part).

For Class II application, protection earth is no need to be connected, below 2 scenarios should be considered:

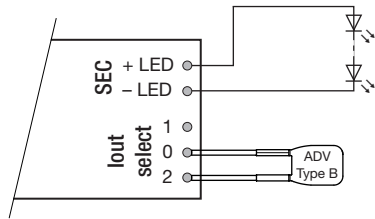
- If the LED driver housing is screw on a metal part inside the luminaires, both LED driver and LED module must be insulated.
- If the LED driver housing is screw on a plastic part inside the luminaires, the LED module need to be insulated.

3.8 Current setting

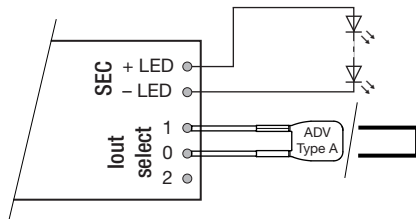
400 mA: Terminal 0 and 2 connected with 0 Ω wire (max. 6 cm length) or resistor ADV Plug Type A BR (article number: 28001771)



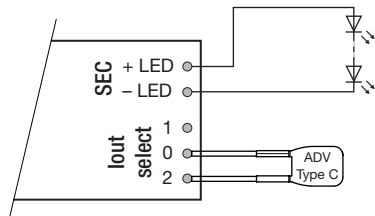
450 mA: Terminal 0 and 2 connected with resistor ADV Plug Type B BR (article number: 28001772)



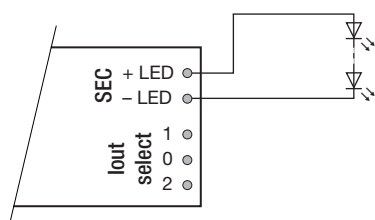
500 mA: Terminal 0 and 1 connected with 0 Ω wire (max. 6 cm length) or resistor ADV Plug Type A BR (article number: 28001771)



600 mA: Terminal 0 and 2 connected with resistor ADV Plug Type C BR (article number: 28001773)



700 mA: All terminals open



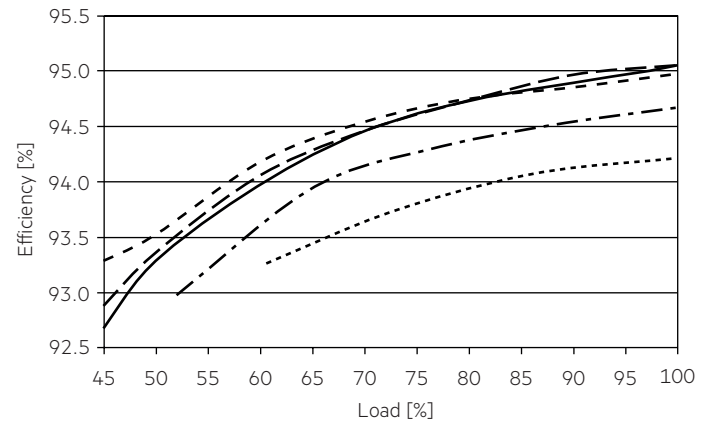
3.9 Mounting of device

Max. torque for fixing: 0.5 Nm/M4

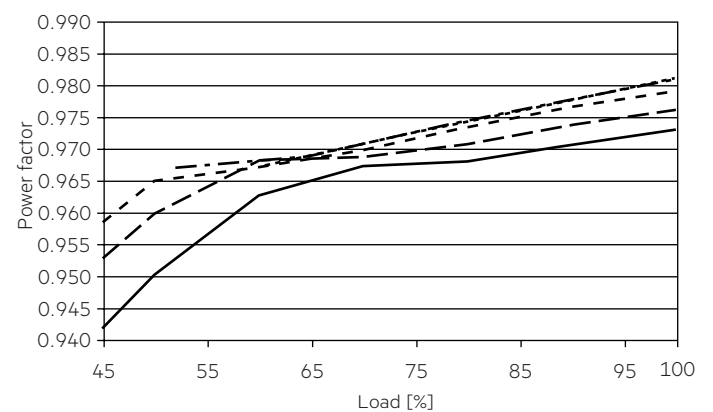
4. Electrical values

Test at 230 V 50 Hz.

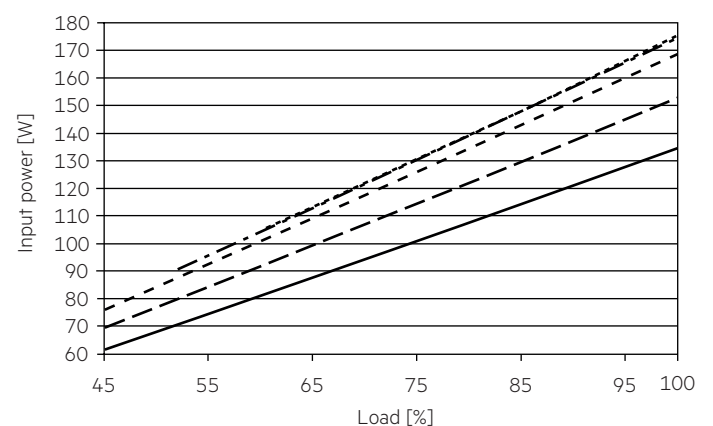
4.1 Efficiency vs load



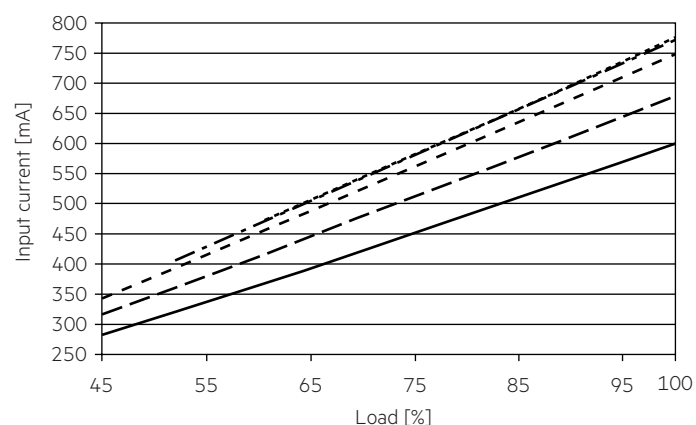
4.2 Power factor vs load



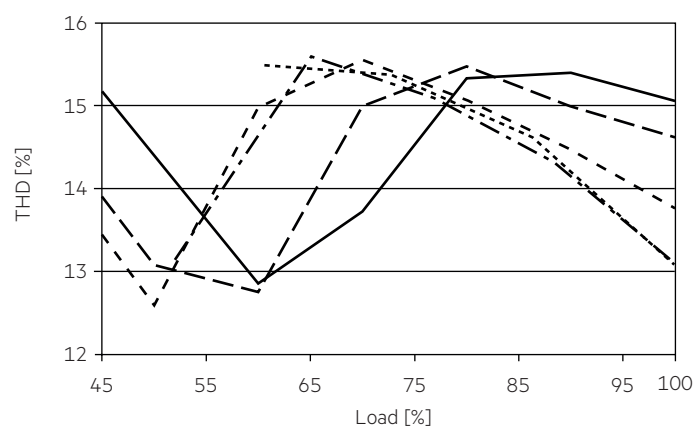
4.3 Input power vs load



4.4 Input current vs load



4.5 THD vs load



— 400 mA
 - - - 450 mA
 - - - 500 mA
 - - - 600 mA
 700 mA

4.6 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 Ø	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	1.5 mm ²	1.5 mm ²	1.5 mm ²	2.5 mm ²	I _{max}	Time
LC 165W 400-700mA flexC Ip ADV	11	15	18	23	7	9	11	14	50.5 A	176 µs

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.

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

	THD	3.	5.	7.	9.	11.
LC 165W 400-700mA flexC Ip ADV	< 18	< 15	< 5	< 4	< 3	< 2

5. Functions

5.1 Overtemperature protection

The LED driver will reduce the LED output current or it works in a pulsed light output mode if the temperature reaches a certain degree.

5.2 Short-circuit behaviour

In case of a short circuit on the output side (LED) the LED driver switches into hic-cup mode. After elimination of the short-circuit fault the LED driver will recover automatically.

5.3 No-load operation

The LED driver works in burst working mode to provide a constant output voltage regulation which allows the application to be able to work safely when LED string opens due to a failure.

5.4 Overload protection

If the maximum load is exceeded by a defined internal limit, the LED driver will protect itself and LED may flicker. After elimination of the overload, the nominal operation is restored automatically.

6. Miscellaneous

6.1 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.

6.2 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.

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).

6.3 Maximum number of switching cycles

All LED driver are tested with 50,000 switching cycles.

6.4 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.