



Driver LC 25W 350–1050mA flexC SC EXC

EXCITE series

Product description

- Constant current LED Driver
- Dimmable via ready2mains™ Gateway
- Dimming range 15 – 100 % (Depending on load.
For details refer to chapter 4.7 Dimming in data sheet.)
- Can be either used build-in or independent with clip-on strain-relief (see accessory)
- Adjustable output current between 350 and 1,050 mA via ready2mains™ Programmer or I-select 2 plugs
- Max. output power 25 W
- Up to 86 % efficiency
- Nominal life-time up to 100,000 h
- 5-year guarantee

Housing properties

- Casing: polycarbonate, white
- Type of protection IP20

Interfaces

- ready2mains™ (configuration and dimming via mains)
- Terminal blocks: 45° push terminals

Functions

- Adjustable output current in 1 mA steps (ready2mains™, I-select 2)
- Dimmable via ready2mains™ interface
- Protective features (overtemperature, short-circuit, overload, no-load, input voltage range)
- Suitable for emergency escape lighting systems acc. to EN 50172

Benefits

- Application-oriented operating window for maximum compatibility
- Best energy savings due to high efficiency and dimming via ready2mains™
- Flexible configuration via ready2mains™ and I-select 2
- Reliability proven by life-time up to 100,000 h and 5-year guarantee

Typical applications

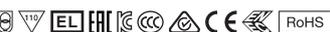
- For downlight, spotlight and decorative applications



With strain-relief



Standards, page 4

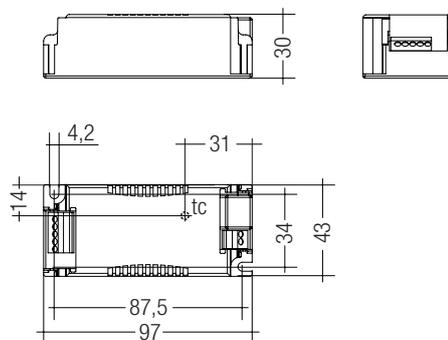
IP20 SELV 

Driver LC 25W 350-1050mA flexC SC EXC

EXCITE series

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. current (at 230 V, 50 Hz, full load) ^① [Ⓜ] | 140 mA |
| Typ. current (220 V, 0 Hz, full load, 50 % dimming level) [Ⓜ] 70 mA | |
| Leakage current (at 230 V, 50 Hz, full load) ^① [Ⓜ] | < 250 µA |
| Max. input power | 29 W |
| Typ. efficiency (at 230 V / 50 Hz / full load) [Ⓜ] | 86 % |
| λ (at 230 V, 50 Hz, full load) ^① | 0.95 |
| Typ. input current in no-load operation | 17 mA |
| Typ. input power in no-load operation | 0.6 W |
| In-rush current (peak / duration) | 28 A / 139 µs |
| THD (at 230 V, 50 Hz, full load) ^① | < 10 % |
| Time to light (at 230 V, 50 Hz, full load) ^① | < 500 ms |
| Time to light (DC mode) | < 500 ms |
| Switchover time (AC/DC) | < 0.2 s |
| Turn off time (at 230 V, 50 Hz, full load) | < 50 ms |
| Output current tolerance ^① [Ⓜ] | ± 5 % |
| Max. output current peak (non-repetitive) | ≤ output current + 35 % |
| Output LF current ripple (< 120 Hz) | ± 5 % |
| Max. output voltage (no-load voltage) | 60 V |
| Dimming range [Ⓜ] | 15 – 100 % |
| Mains surge capability (between L - N) | 1 kV |
| Mains surge capability (between L/N - PE) | 2 kV |
| Surge voltage at output side (against PE) | < 500 V |
| Dimensions L x W x H | 97 x 43 x 30 mm |



Ordering data

| Type | Article number | Packaging carton | Packaging pallet | Weight per pc. |
|--------------------------------|----------------|------------------|------------------|----------------|
| LC 25W 350-1050mA flexC SC EXC | 28000706 | 10 pc(s). | 1,400 pc(s). | 0.09 kg |

Specific technical data

| Type | Output current [Ⓜ] [Ⓜ] | 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 t_c | Ambient temperature t_a max. | I-select 2 resistor value [Ⓜ] |
|---------------------------------------|--|----------------------|----------------------|-------------------|---|---|-------------------------------|--------------------------------|--|
| | 350 mA | 20 V | 50 V | 17.5 W | 21 W | 97 mA | 75 °C | -25 ... +55 °C | open |
| | 400 mA | 20 V | 50 V | 20.0 W | 23 W | 106 mA | 75 °C | -25 ... +55 °C | 12.50 kΩ |
| | 450 mA | 20 V | 50 V | 22.5 W | 26 W | 118 mA | 75 °C | -25 ... +55 °C | 1111 kΩ |
| | 500 mA | 20 V | 50 V | 25.0 W | 29 W | 133 mA | 75 °C | -25 ... +50 °C | 10.00 kΩ |
| | 550 mA | 20 V | 45 V | 25.0 W | 29 W | 133 mA | 75 °C | -25 ... +50 °C | 9.09 kΩ |
| | 600 mA | 20 V | 42 V | 25.0 W | 29 W | 133 mA | 75 °C | -25 ... +50 °C | 8.33 kΩ |
| | 650 mA | 20 V | 38 V | 25.0 W | 29 W | 133 mA | 75 °C | -25 ... +50 °C | 7.67 kΩ |
| LC 25W 350-1050mA flexC SC EXC | 700 mA | 20 V | 36 V | 25.0 W | 29 W | 133 mA | 75 °C | -25 ... +50 °C | 7.14 kΩ |
| | 750 mA | 20 V | 33 V | 25.0 W | 29 W | 132 mA | 75 °C | -25 ... +50 °C | 6.67 kΩ |
| | 800 mA | 20 V | 31 V | 25.0 W | 29 W | 132 mA | 75 °C | -25 ... +50 °C | 6.25 kΩ |
| | 850 mA | 20 V | 29 V | 25.0 W | 29 W | 132 mA | 75 °C | -25 ... +50 °C | 5.88 kΩ |
| | 900 mA | 20 V | 28 V | 25.0 W | 29 W | 132 mA | 75 °C | -25 ... +50 °C | 5.56 kΩ |
| | 950 mA | 20 V | 26 V | 25.0 W | 29 W | 130 mA | 75 °C | -25 ... +50 °C | 5.26 kΩ |
| | 1,000 mA | 20 V | 25 V | 25.0 W | 29 W | 130 mA | 75 °C | -25 ... +50 °C | 5.00 kΩ |
| | 1,050 mA | 20 V | 24 V | 25.0 W | 29 W | 130 mA | 75 °C | -25 ... +50 °C | short circuit (0 Ω) |

^① Valid at 100 % dimming level.

[Ⓜ] Depending on the selected output current.

[Ⓜ] The min. achievable dimming level depends on the connected load. For details refer to chapter 4.7 Dimming in data sheet.

[Ⓜ] 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.

[Ⓜ] Not compatible with I-select (generation 1).

[Ⓜ] Output current is mean value.



Strain-relief set 43x30mm

Product description

- Optional strain-relief set for independent applications
- Transforms the LED Driver into a fully class II compatible LED Driver (e.g. ceiling installation)
- Easy and tool-free mounting to the LED Driver, screwless cable-clamp channels for long strain-relief (30 x 43 x 30 mm)
- With screws for short strain-relief (15 x 34 x 30 mm)
- Overall length = length L (LED Driver) + 2 x 30 mm (long strain-relief set), 2 x 15 mm (short strain-relief) or long and short strain-relief any combination
- Standard SC (L = 30 mm) available as non-pre-assembled and pre-assembled
- Short SC (L = 15 mm) only pre-assembled available

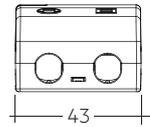
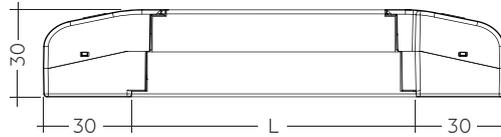


ACU SC 30x43x30mm CLIP-ON SR SET ACU SC 30x43x30mm CLIP-ON SR SET 300
(28001168, non-pre-assembled) (28001351, non-pre-assembled, 300 pcs. packaging)



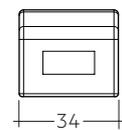
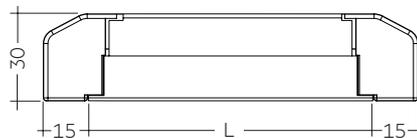
ACU SC 30x43x30mm CLIP-ON SR PA
(28001699, pre-assembled)

ACU SC 15x43x30mm CLIP-ON SR PA
(28001574, pre-assembled)



Permissible
cable jacket
diameter:
2.2 – 9 mm

ACU SC 30x43x30mm CLIP-ON SR SET / PA



Permissible
cable jacket
diameter:
3 – 9 mm

ACU SC 15x43x30mm CLIP-ON SR PA

Ordering data

| Type | Article number | Packaging carton ^① | Packaging outer box | Weight per pc. |
|--|-----------------|-------------------------------|---------------------|----------------|
| ACU SC 43x30mm CLIP-ON SR SET | 28001168 | 10 pc(s). | 500 pc(s). | 0.021 kg |
| ACU SC 43x30mm CLIP-ON SR SET 300 | 28001351 | 300 pc(s). | 300 pc(s). | 0.021 kg |
| ACU SC 30x43x30mm CLIP-ON SR PA | 28001699 | 10 pc(s). | 500 pc(s). | 0.021 kg |
| ACU SC 15x43x30mm CLIP-ON SR PA | 28001574 | 10 pc(s). | 1,200 pc(s). | 0.010 kg |

^① 28001168: A carton of 10 pcs. is equal to 10 sets, each with 2 strain-reliefs parts.

28001351: A carton of 300 pcs. is equal to 300 sets, each with 2 strain-reliefs parts.

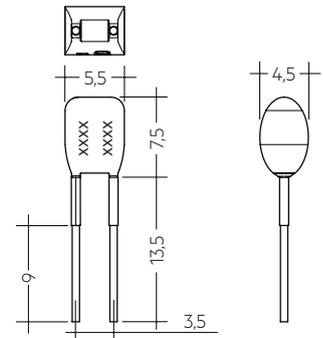
28001699 + 28001574: A carton contains exactly 10 pcs. strain-reliefs (no sets).

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 isolated
- Resistor power 0.25 W
- Current tolerance $\pm 2\%$ additional to output current tolerance
- Compatible with LED Driver series PRE and EXC

Example of calculation

- $R [k\Omega] = 5 V / I_{out} [mA] \times 1000$
- Resistor value tolerance $\leq 1\%$; resistor power $\geq 0.1 W$; base isolation 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)



Ordering data

| Type | Article number | Colour | Marking | Current | Resistor value | Packaging bag | Weight per pc. |
|---------------------------|----------------|--------|---------|---------|------------------|---------------|----------------|
| I-SELECT 2 PLUG 350MA BL | 28001110 | Blue | 0350 mA | 350 mA | 14.29 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 375MA BL | 28001111 | Blue | 0375 mA | 375 mA | 13.33 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 400MA BL | 28001112 | Blue | 0400 mA | 400 mA | 12.50 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 425MA BL | 28001251 | Blue | 0425 mA | 425 mA | 11.76 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 450MA BL | 28001113 | Blue | 0450 mA | 450 mA | 11.11 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 475MA BL | 28001252 | Blue | 0475 mA | 475 mA | 10.53 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 500MA BL | 28001114 | Blue | 0500 mA | 500 mA | 10.00 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 525MA BL | 28001960 | Blue | 0525 mA | 525 mA | 9.52 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 550MA BL | 28001115 | Blue | 0550 mA | 550 mA | 9.09 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 600MA BL | 28001116 | Blue | 0600 mA | 600 mA | 8.33 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 650MA BL | 28001117 | Blue | 0650 mA | 650 mA | 7.69 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 700MA BL | 28001118 | Blue | 0700 mA | 700 mA | 7.14 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 750MA BL | 28001119 | Blue | 0750 mA | 750 mA | 6.67 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 800MA BL | 28001120 | Blue | 0800 mA | 800 mA | 6.25 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 850MA BL | 28001121 | Blue | 0850 mA | 850 mA | 5.88 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 900MA BL | 28001122 | Blue | 0900 mA | 900 mA | 5.56 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 950MA BL | 28001123 | Blue | 0950 mA | 950 mA | 5.26 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 1000MA BL | 28001124 | Blue | 1000 mA | 1000 mA | 5.00 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG 1050MA BL | 28001125 | Blue | 1050 mA | 1050 mA | 4.76 k Ω | 10 pc(s). | 0.001 kg |
| I-SELECT 2 PLUG MAX BL | 28001099 | Blue | MAX | MAX | 0.00 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 62384
EN 61547

According to EN 50172 for use in central battery systems
According to EN 60598-2-22 suitable for emergency lighting installations

Housing fulfils requirements for reinforced insulation according to EN 60598-1.

2. Thermal details and life-time

2.1 Expected life-time

| Expected life-time | | | | | |
|--------------------------------|------------------|-----------|-------------|----------|----------|
| Type | Output current | ta | 40 °C | 50 °C | 55 °C |
| LC 25W 350-1050mA flexC SC EXC | 350 – 450 mA | tc | 60 °C | 70 °C | 75 °C |
| | | Life-time | > 100,000 h | 75,000 h | 50,000 h |
| | > 450 – 1,050 mA | tc | 65 °C | 75 °C | – |
| | | Life-time | > 100,000 h | 50,000 h | – |

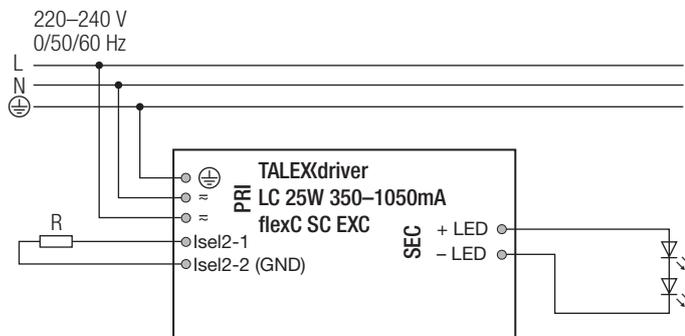
The LED Driver is designed for a life-time stated above under reference conditions and with a failure probability of less than 10 %.

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

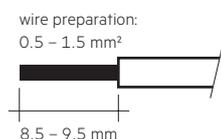


For wiring in dimming operation refer to the ready2mains Gateway data sheet.

3.2 Wiring type and cross section

The wiring can be in stranded wires with ferrules or solid with a cross section of 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.

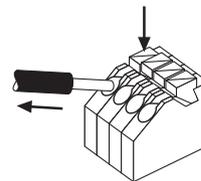
LED module/LED Driver/supply



1.1 Glow wire test

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

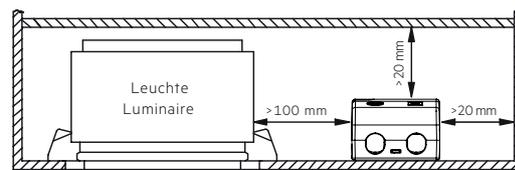
3.3 Loose wiring



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

3.4 Fixing conditions when using as independent Driver with Clip-On

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.



3.5 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.
- 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.
- 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.).

3.6 Hot plug-in

Hot plug-in is not supported due to residual output voltage of > 0 V. If a LED load is connected the device has to be restarted before the output will be activated again. This can be done via mains reset or via interface ready2mains.

3.7 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

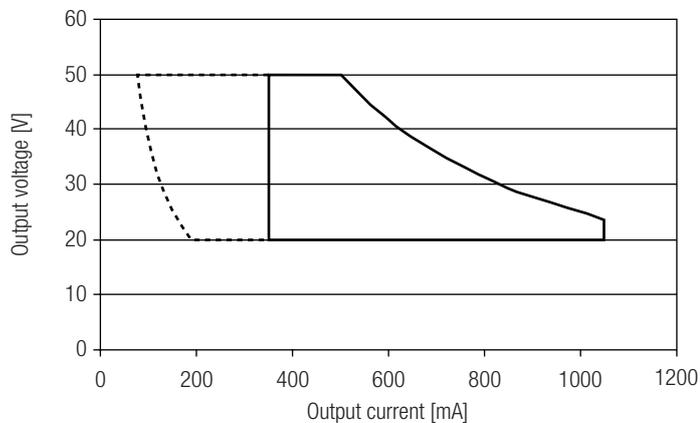
In general it is recommended to earth the LED Driver if the LED module is mounted on earthed luminaire parts respectively heat sinks and thereby representing a high capacity against earth.

3.8 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.

4. Electrical values

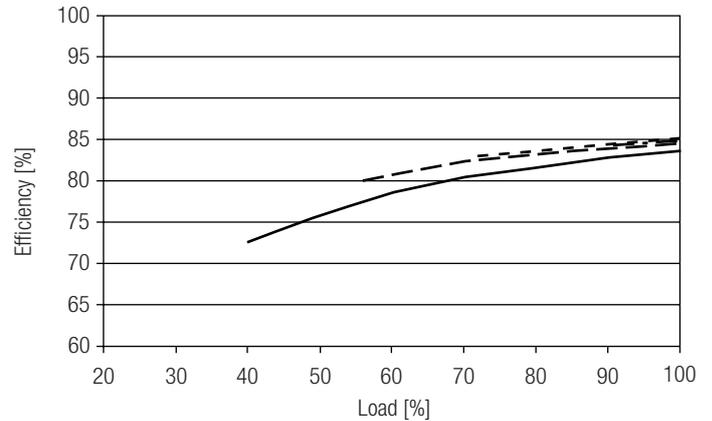
4.1 Operating window



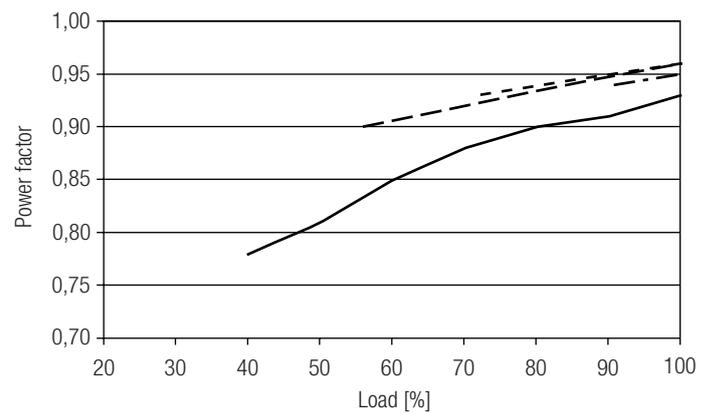
— Operating window 100 %
- - - - - Operating window dimmed

Make sure that the LED Driver is operated within the given window under all operating conditions. Special attention needs to be paid at dimming and DC emergency operation as the forward voltage of the connected LED modules varies with the dimming level, due to the implemented amplitude dimming technology. Coming below the specified minimum output voltage of the LED Driver may cause the device to shut-down. See chapter "6.8 DC emergency operation" for more information.

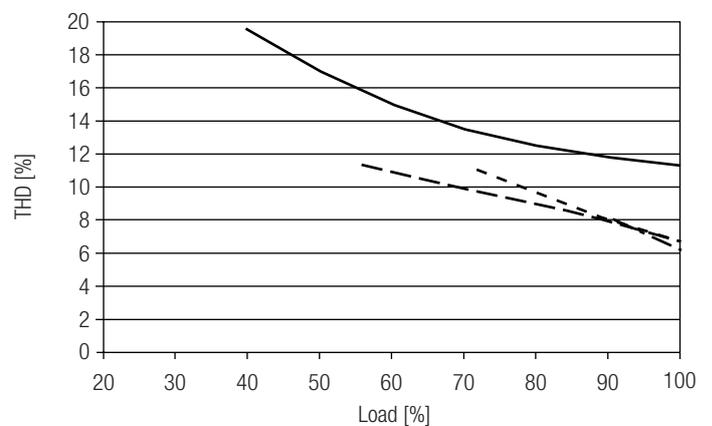
4.2 Efficiency vs load



4.3 Power factor vs load



4.4 THD vs load



— 350 mA
- - - 700 mA
- · - · 900 mA
· · · · 1050 mA

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

| Automatic circuit breaker type | C10 | C13 | C16 | C20 | B10 | B13 | B16 | B20 | Inrush current | |
|---------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|------------------|--------|
| Installation Ø | 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 25W 350-1050mA flexC SC EXC | 31 | 41 | 51 | 70 | 19 | 25 | 31 | 42 | 28 A | 139 µs |

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 25W 350-1050mA flexC SC EXC | < 10 | < 6 | < 5 | < 4 | < 4 | < 2 |

4.7 Dimming

Dimming range 15 to 100%.
The minimum achievable dimming level depends on the connected load.
The operating window shows the minimum reachable power in dimmed state.
The output power at minimum dimming level is 15 % of absolute the max. output power of the LED Driver for all loads within the entire operating window.
For loads below the max. output power, the minimum dimming level is higher.
To determine the minimum dimming level for a certain load carefully read the operating window.
For further information please refer to your Tridonic sales contact.

5. Interfaces / communication

5.1 Control input ready2mains (L, N)

The digital ready2mains protocol is modulated onto the mains signal which is wired to the mains terminal (L and N).

6. Functions

6.1 Function: adjustable current

The output current of the LED Driver can be adjusted in a certain range. For adjustment there are two options available.

Option 1: I-select 2
By inserting a suitable resistor or third party resistor into the I-select 2 interface, the current value can be adjusted. The relationship between output current and resistor value can be found in the chapter "Accessories I-SELECT 2 Plugs".



Please note that the resistor values for I-select 2 are not compatible with I-select (generation 1). Installation of an incorrect resistor may cause irreparable damage to the LED module(s).

Resistors for the main output current values can be ordered from Tridonic (see accessories).

Option 2: ready2mains
Adjustment is done by the ready2mains Programmer and the corresponding configuration software (see ready2mains documentation).



Current adjustment can only be done five times over ready2mains. To program the LED Driver a connected load is necessary that is within the operating window of the LED Driver.

The priority for current adjustment methods is I-select 2 followed by ready2mains (lowest priority).

6.2 ready2mains – configuration

The ready2mains interface can be used to configure the main parameters of LED Drivers via the mains wiring, such as LED output current. These parameters can be adjusted either via ready2mains-capable configuration software or directly via the ready2mains Programmer.

6.3 ready2mains – dimming

ready2mains allows for mains-based group dimming, controlled via the ready2mains protocol and appropriate dimming interfaces.

For details on the operation of ready2mains and its components see the relevant technical information.

6.4 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 either be done via mains reset or via interface ready2mains.

6.5 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.

6.6 Overload protection

If the output voltage range is exceeded the LED Driver turns off the LED output. After restart of the LED Driver the output will be activated again. The restart can either be done via mains reset or via interface ready2mains.

6.7 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 approx. +5 °C above t_c max (see page 2). On DC operation this function is deactivated to fulfill emergency requirements.

6.8 DC emergency 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 (EOF_p): 50 % (cannot be adjusted)

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: < 22,5 mA (at 230 V, 50 Hz)

DC: < 5 mA (at 275 – 186 V, 0 Hz)

7. Miscellaneous

7.1 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.

7.2 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 (t_a) before they can be operated.

7.3 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.