



### Driver LCU 48V 150W DC-STR FO Ip Fixed output

#### Product description

- Fixed output DC-String constant voltage built-in LED Driver
- Compatible with other DC-String components
- Max. output power 150 W
- Up to 93 % efficiency
- Nominal lifetime up to 50,000 h
- For luminaires of protection class I and protection class II
- Temperature protection as per EN 61347-2-13 C5e
- 5 years guarantee (conditions at [www.tridonic.com](http://www.tridonic.com))



#### Housing properties

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

#### Functions

- DC-String compatible
- Intelligent Temperature Guard (overtemperature protection)
- Short-circuit protection
- Overload protection



**Standards**, page 3



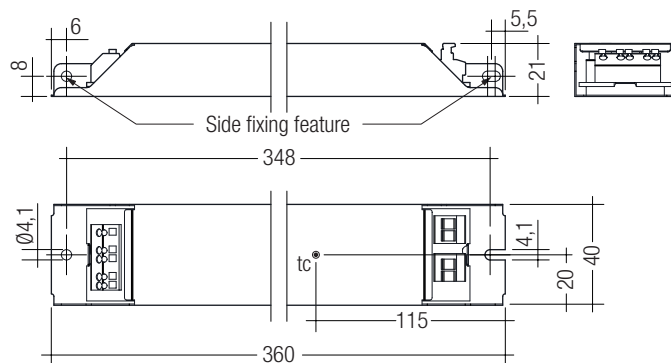
IP20 SELV          RoHS

### Driver LCU 48V 150W DC-STR FO Ip

Fixed output

#### 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   |
| Typ. current (at 230 V, 50 Hz, full load)      | 708 mA           |
| Typ. current (220 V, 0 Hz, full load)          | 735 mA           |
| Leakage current (at 230 V, 50 Hz, full load)   | < 500 µA         |
| Max. input power                               | 162 W            |
| Typ. efficiency (at 230 V / 50 Hz / full load) | 93 %             |
| λ (at 230 V, 50 Hz, full load)                 | 0.99             |
| Typ. input current in no-load operation        | 56 mA            |
| Typ. input power in no-load operation          | 2.4 W            |
| In-rush current (peak / duration)              | 57.7 A / 202 µs  |
| THD (at 230 V, 50 Hz, full load)               | < 5 %            |
| Output voltage tolerance                       | -1 / +8 %        |
| Output LF current ripple (< 120 Hz)            | ± 2 %            |
| Max. output voltage (no-load voltage)          | 51.8 V           |
| Max. cable length secondary                    | See section 3.5  |
| Mains surge capability (between L - N)         | 1 kV             |
| Mains surge capability (between L/N - PE)      | 2 kV             |
| Surge voltage at output side (against PE)      | < 450 V          |
| Ambient temperature ta                         | -25 ... +50 °C   |
| Max. casing temperature tc                     | 80 °C            |
| Lifetime                                       | up to 50,000 h   |
| Guarantee (conditions at www.tridonic.com)     | 5 years          |
| Dimensions L x W x H                           | 360 x 40 x 21 mm |



#### Ordering data

| Type                      | Article number | Packaging carton | Packaging pallet | Weight per pc. |
|---------------------------|----------------|------------------|------------------|----------------|
| LCU 48V 150W DC-STR FO Ip | 28001234       | 20 pc(s).        | 600 pc(s).       | 0.34 kg        |

We recommended using following LMI LED Drivers together with this LCU DC power supply:

| Type                                | Article number | Packaging box | Packaging carton (contains 10 boxes) | Packaging pallet | Weight per pc. |
|-------------------------------------|----------------|---------------|--------------------------------------|------------------|----------------|
| LMI G2 48V 350-700mA 3-20V FO Slim  | 28000730       | 5 pc(s).      | 50 pc(s).                            | 3,000 pc(s).     | 0.013 kg       |
| LMI G2 48V 700-1050mA 3-20V FO Slim | 28001582       | 5 pc(s).      | 50 pc(s).                            | 3,000 pc(s).     | 0.016 kg       |
| LMI 48V 350-700mA 20-42V FO Regular | 28000728       | 5 pc(s).      | 50 pc(s).                            | 3,000 pc(s).     | 0.016 kg       |
| LMI 48V 350-700mA 20-42V FO Slim    | 28000947       | 5 pc(s).      | 50 pc(s).                            | 3,000 pc(s).     | 0.016 kg       |

## 1. Standards

EN 55015  
EN 61000-3-2  
EN 61000-3-3  
EN 61347-1  
EN 61347-2-13  
EN 62384  
EN 61547

## 2. Thermal details and lifetime

### 2.1 Expected lifetime

| Expected lifetime         |          |            |            |            |            |
|---------------------------|----------|------------|------------|------------|------------|
| ta                        |          | 40 °C      | 45 °C      | 50 °C      |            |
| Type                      | tc       | 70 °C      | 75 °C      | 80 °C      | Load       |
| LCU 48V 150W DC-STR FO Ip | Lifetime | 90,000 h   | 75,000 h   | 55,000 h   | 75 – 100 % |
|                           |          | >100,000 h | 90,000 h   | 65,000 h   | 50 – 74 %  |
|                           |          | >100,000 h | >100,000 h | 85,000 h   | 25 – 49 %  |
|                           |          | >100,000 h | >100,000 h | >100,000 h | 0 – 24 %   |

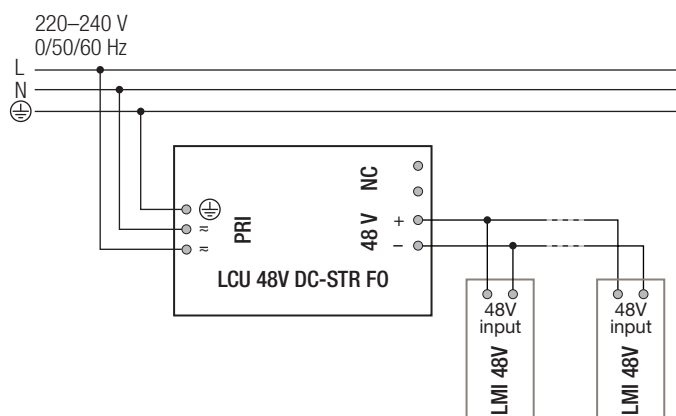
The DC power supply is designed for a lifetime stated above under reference conditions and with a failure probability of less than 10 %.

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



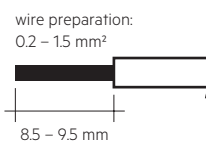
To the LCU 48V DC-STR FO there can be connected eighter LMI 48V fixed output version or LMI 48V dimmable version.

By using LCU 48V DC-STR FO together with LMI 48V dimmable version dimming is not possible.

### 3.2 Mains supply wiring

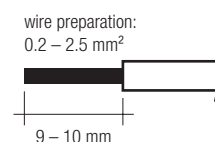
The wiring can be in stranded wires with ferrules or solid from 0.2 – 1.5 mm<sup>2</sup>. For perfect function of the push-wire terminals (WAGO 250) the strip length should be 8.5 – 9.5 mm.

DC power supply



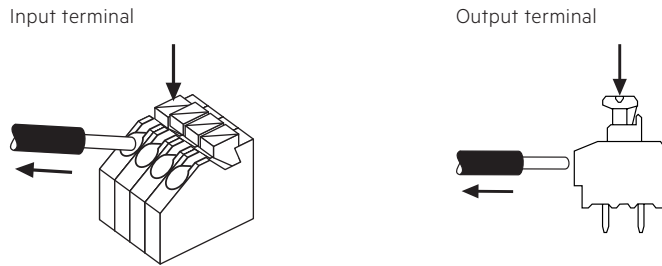
### 3.3 Output wiring (48 V bus)

The output wiring can be done with a cross section of 0.2 – 2.5 mm<sup>2</sup>. Strip 9 – 10 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.

### 3.4 Loose wiring



#### Release of the wiring

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

### 3.5 Wiring guidelines

- The 48 V cables should be run separately from the mains connections and mains cables to ensure good EMC conditions.
- The 48 V DC output wiring should be kept as short as possible to ensure good EMC. The max. secondary cable length is 30 m (60 m circuit) till beginning of a grounded metal track light. If track light is not grounded or made of plastic, cable length including track light is 30 m. Inside the track light cable length is limited by voltage drop that last LMI 48V in the track light is still supplied with minimum 46 V.
- Secondary switching is not permitted.
- 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.).
- Additional systems or lines can compromise or disrupt the PLC communication in the DC string system. Therefore do not install any other systems or cables parallel to the DC string system cables.

### 3.6 Hot plug-in

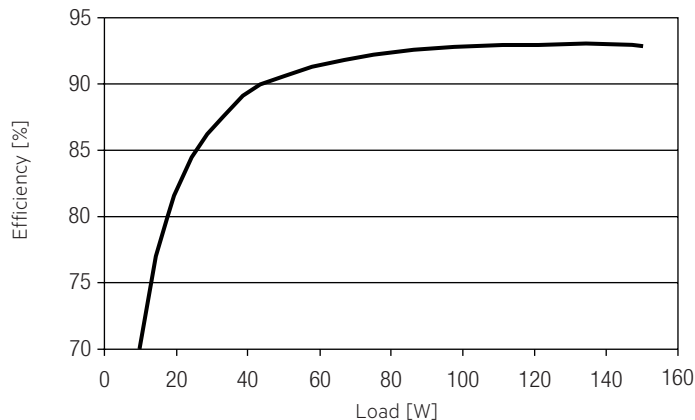
Hot plug-in during operation is supported for one DC/DC-LED Driver (LMI). It is only allowed to connect or disconnect one DC/DC-LED Driver (LMI) at the same moment onto the 48 V bus. Maximum number of LMI LED Drivers is limited by 20.

### 3.7 Function of the earth terminal ⊕

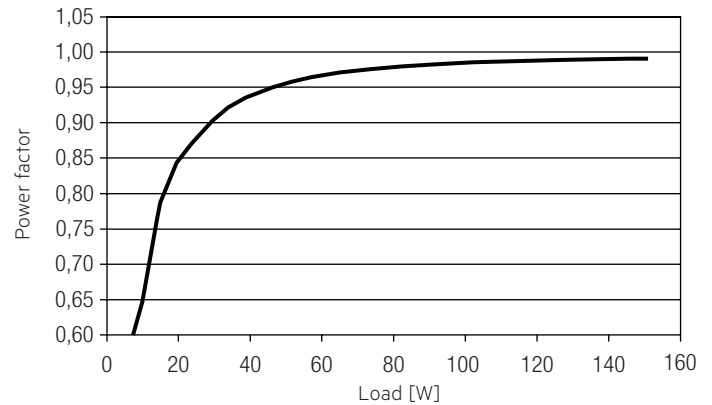
The device has to be earthed to fulfill EMI requirements.

## 4. Electrical values

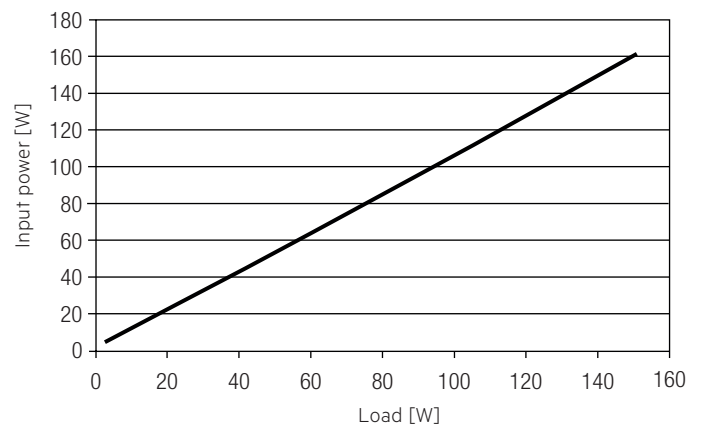
### 4.1 Efficiency vs. load



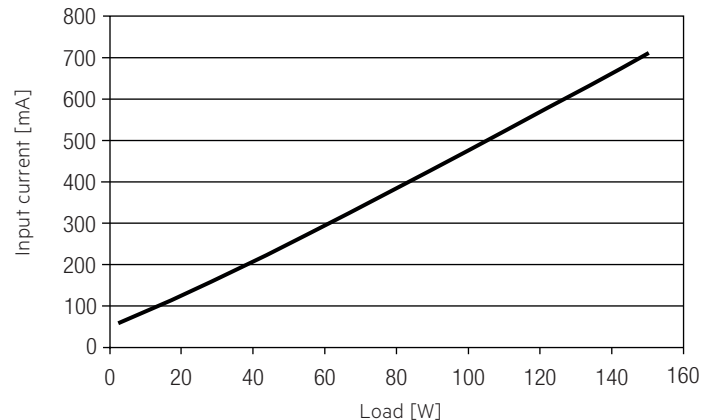
### 4.2 Power factor vs. Load



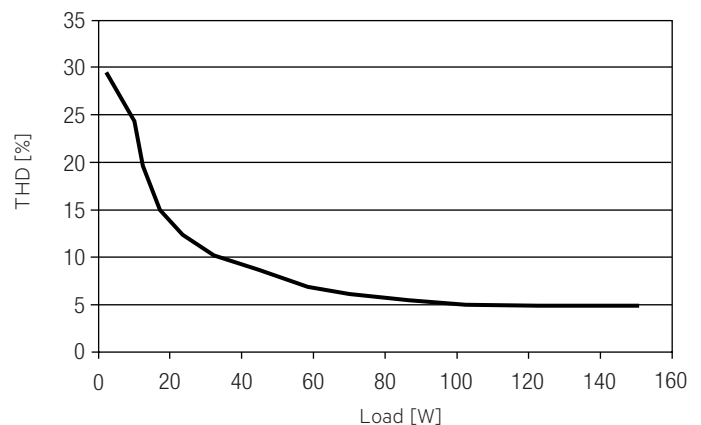
### 4.3 Input power vs. Load



### 4.4 Input current vs. Load



### 4.5 THD vs. Load



**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 <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 <sub>max</sub> | time   |
| <b>LCU 48V 150W DC-STR FO Ip</b> | 8                   | 12                  | 16                  | 18                  | 5                   | 6                   | 8                   | 9                   | 51 A             | 238 µs |

This 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. |
|----------------------------------|-----|----|----|----|----|-----|
| <b>LCU 48V 150W DC-STR FO Ip</b> | 5   | 3  | 1  | 1  | 1  | 1   |

**5. Functions****5.1 Short-circuit behaviour**

In case of a short-circuit at the output the output is switched off. After restart of the DC power supply the output will be activated again. The restart can be done via mains reset.

**5.2 No-load operation**

The DC power supply will not be damaged in no-load operation.

**5.3 Overload protection**

If the output power range is exceeded by a defined internal limit, the DC power supply will give a signal to the DC/DC-LED Driver, it will blink 5 times. After a break of 30 seconds, it will check again:

- If there is no overload anymore, the device will switch back to normal operation.
- If there is still overload, the device will blink again 5 times.

**5.4 Overtemperature protection**

The DC power supply will blink 3 times, after 30 s break, it checks again, if:

- there is no overtemperature, then the device will go in normal operation.
- there is still overtemperature, then the device will blink again 3 times.

**5.5 DC operation**

The DC power supply is designed for operation on DC voltage and pulsed DC voltage.

Behaviour in DC operation mode is the same as in AC operating mode.

**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<sub>DC</sub> 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<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.

**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 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).

**6.3 Additional information**

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

Lifetime declarations are informative and represent no warranty claim. No warranty if device was opened.