# TRIDONIC

Driver LCU 48V 150W DC-STR DIM lp
Dimming

Product description

- Dimmable DC-String constant voltage built-in LED driver
- Compatible with other DC-String components
- DALI bridge with DC powerline communication (PLC)
- one4all interface (corridorFUNCTION, switchDIM, DALI, DSI)
- Max. output power 150 W
- Up to 92.5 % 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)
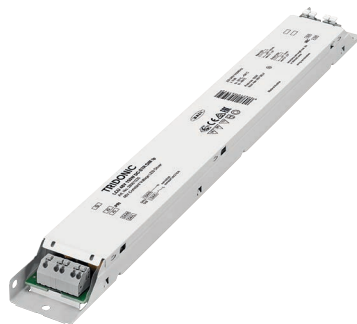
Housing properties

- 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

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IP20 SELV ⬚ ⬚ ⬚ ⬚ ⬚ CE UK CA ⬚ RoHS

Driver LCU 48V 150W DC-STR DIM lp
Dimming

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)	710 mA
Typ. current (220 V, 0 Hz, full load)	740 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)	92.5 %
λ (at 230 V, 50 Hz, full load)	0.99
Typ. input current in no-load operation	59.6 mA
Typ. input power in no-load operation	3.6 W
In-rush current (peak / duration)	57.7 A / 202 μs
THD (at 230 V, 50 Hz, full load)	< 5 %
Output voltage tolerance	-1 / +5 %
Output LF current ripple (< 120 Hz)	± 2 %
Max. output voltage (no-load voltage)	50.5 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

Side fixing feature
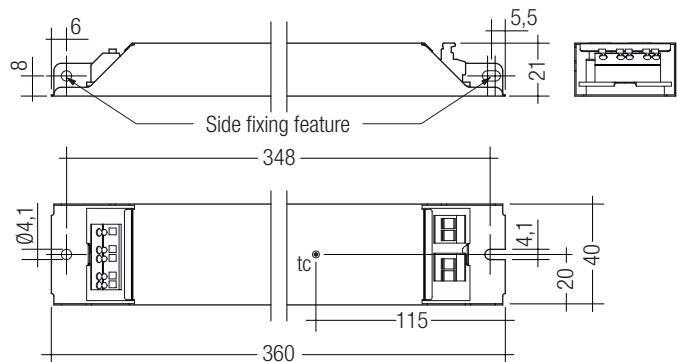
Ordering data

Type	Article number	Packaging carton	Packaging pallet	Weight per pc.
LCU 48V 150W DC-STR DIM lp	**28001235**	20 pc(s).	600 pc(s).	0.354 kg

Following LMI LED drivers are working 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 DIM slim	28000731	5 pc(s).	50 pc(s).	3,000 pc(s).	0.013 kg
LMI G2 48V 700-1050mA 3-20V DIM slim	28001583	5 pc(s).	50 pc(s).	3,000 pc(s).	0.016 kg
LMI G2 48V 350-700mA 20-42V DIM regular	28001584	5 pc(s).	50 pc(s).	3,000 pc(s).	0.012 kg
LMI G2 48V 350-700mA 20-42V DIM slim	28001585	5 pc(s).	50 pc(s).	3,000 pc(s).	0.013 kg

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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 DIM lp	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 LED control gear 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.
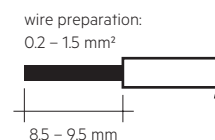
3. Installation / wiring

### 3.1 Circuit diagram
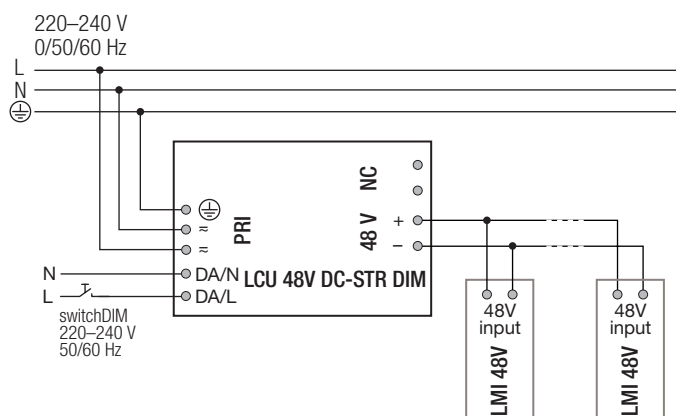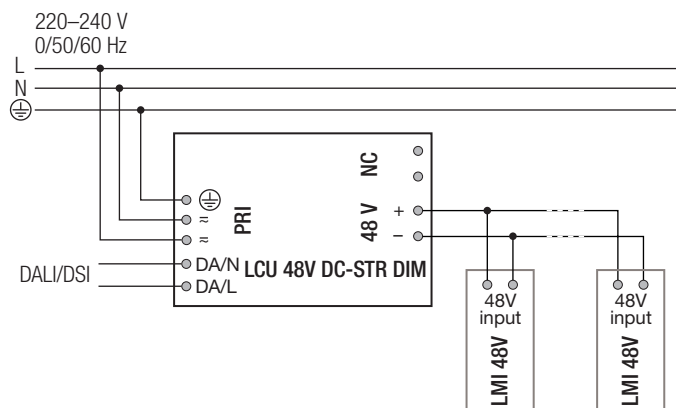
3.2 Mains supply wiring

For wiring use stranded wire with ferrules or solid wire from 0.2 – 1.5 mm². For perfect function of the push-wire terminals (WAGO 250) the strip length should be 8.5 – 9.5 mm.

DC power supply

wire preparation:
0.2 – 1.5 mm²

8.5 – 9.5 mm

3.3 Output wiring (48 V bus)

For wiring use stranded wire with ferrules or solid wire from 0.2 – 2.5 mm². Strip 9 – 10 mm of insulation from the cables to ensure perfect operation of the push-wire terminals.
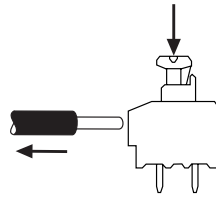

wire preparation:
0.2 – 2.5 mm²

9 – 10 mm
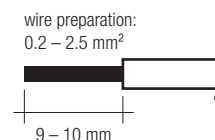
Use one wire for each terminal connector only.
Use each strain relief channel for one cable only.

3.4 Loose wiring

Input terminal
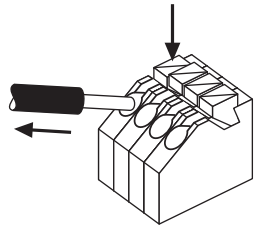
Output terminal

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.
  When using an unshielded standard cable:
    No additional measures are required for cable lengths of up to
    5 meters.
    The use of a ferrite is recommended for cable lengths between 5 and
    20 meters (e.g. Wuerth 742 727 33).
  When using a shielded cable with grounded shield:
    No additional measures are required for cable lengths of up to
    15 meters.
    The use of a ferrite is recommended for cables longer than 15 meters
    (e.g. Wuerth 742 727 33).
- 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 communi-
  cation 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

Configured parameters of DC/DC-LED driver (LMI DIM) are not saved if they are
unplugged.
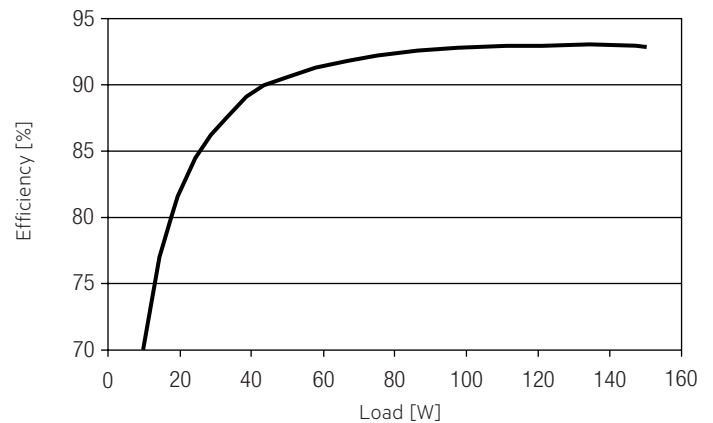For saving parameters a mains reset of the DC power supply is necessary.
Maximum number of LMI LED drivers is limited by 20.
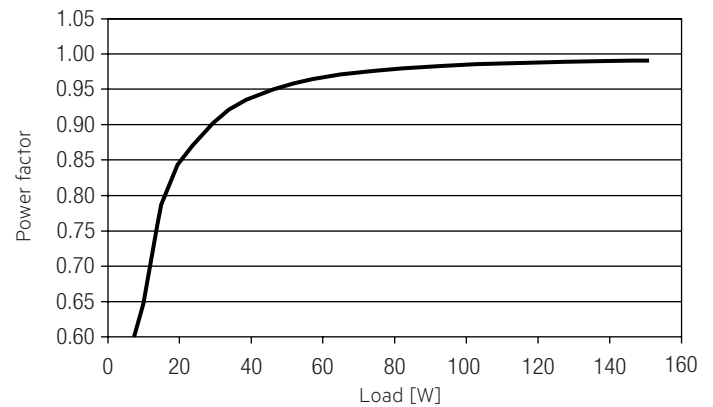
3.7 Function of the earth terminal ⏚

The device has to be earthed to fulfill EMI requirements.

4. Electrical values
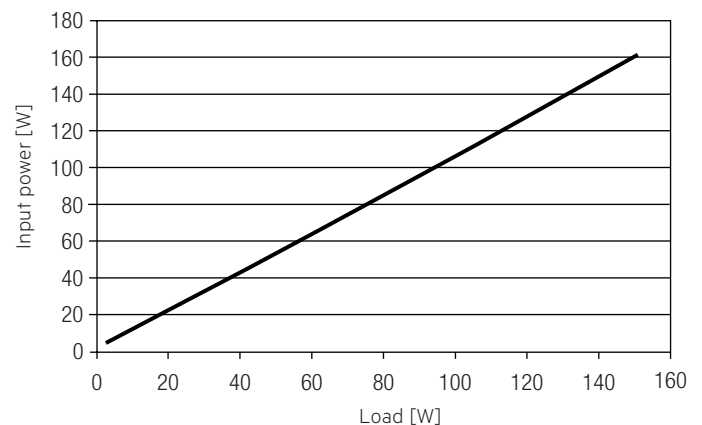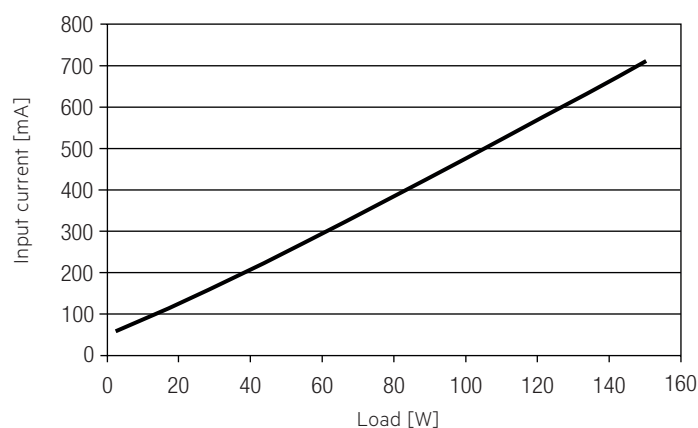
4.1 Efficiency vs. load

4.2 Power factor vs. Load

4.3 Input power vs. Load

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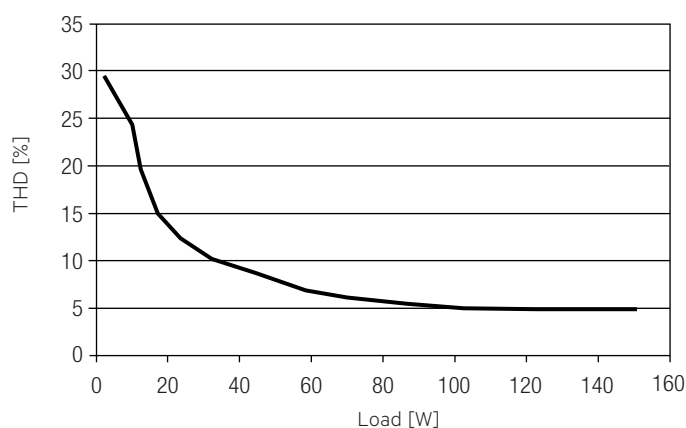
4.4 Input current vs. Load

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 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
LCU 48V 150W DC-STR DIM Ip	8	12	16	18	5	6	8	9	51 A	238 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.
LCU 48V 150W DC-STR DIM Ip	5	3	1	1	1	1

4.8 Dimming

Dimming range 70 mA to 100 % of nominal current
Digital control with:
    Programmable parameter:
    Minimum dimming level
    Maximum dimming level
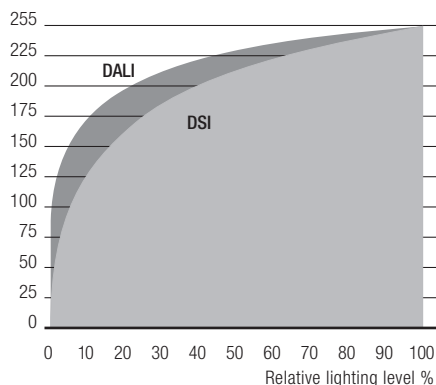   Default minimum = depending on nominal current level
    Default maximum = 100 %

Dimming curve is adapted to the eye sensitiveness.
Dimming is realized by amplitude dimming.

4.9 Dimming characteristics

Digital dimming value

Dimming characteristics as seen by the human eye

5. Interfaces / communication

5.1 Control input (DA/N, DA/L)

Digital DALI signal or switchDIM can be wired on the same terminals (DA/N and DA/L).

The control input is non-polar for digital control signals (DALI, DSI). The control signal is not SELV. Control cable has to be installed in accordance to the requirements of low voltage installations.
Different functions depending on each module.

5.2 switchDIM

Integrated switchDIM function allows a direct connection of a pushbutton for dimming and switching.
Brief push (< 0.6 s) switches LED control gear ON and OFF. The dimm level is saved at power-down and restored at power-up.
When the pushbutton is held, LED modules are dimmed. After repush the LED modules are dimmed in the opposite direction.
In installations with LED control gears with different dimming levels or opposite dimming directions (e.g. after a system extension), all LED control gears can be synchronized to 50 % dimming level by a 10 s push.
Use of pushbutton with indicator lamp is not permitted.

5.3 PowerLineCommunication (PLC)

The communication between the LED control gear and the LMI DC/DC-LED Driver is done over power line. The DALI signal will be modulated by the LED control gear and will be sent over the 48 V DC signal to the DC/DC-LED driver.

5.4 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. Functions

6.1 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.

6.2 No-load operation

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

6.3 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.

6.4 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.

6.5 corridorFUNCTION

Is set in the DC/DC-LED driver.

6.6 Light level in DC operation

Is set in the DC/DC-LED driver.

6.7 Software / programming

With appropriate software and a interface different functions can be activated and various parameters can be configured in the LED control gear. To do so, a DALI-USB programmer and the software (masterCONFIGURATOR) are required.

6.8 masterCONFIGURATOR

From version 2.8:
For programming functions (power-up fading, corridorFUNCTION) and device settings (fade time, ePowerOnLevel, DC level, etc.). For further information see masterCONFIGURATOR manual.

7. Miscellaneous

7.1 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.

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 (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).

7.3 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.

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