

Driver LCO 12V DC 40W 200–1050mA 50V pD+ NF C PRE3

Premium D4i NFC Outdoor

**Product description**

- _ DC Driver for 12V input applications
- _ Uses standard zhaga interfaces for sensor connection allowing further battery/ energy savings
- _ Suitable for DALI-2 sensors and communication nodes
- _ Dimmable independent constant current LED driver
- _ Max. output power 40 W
- _ Adjustable output current between 200 and 1050 mA
- _ Power input on stand-by < 0.35 W
- _ Up to 88.1 % efficiency
- _ Dimming range 1 to 100 % (min. 10 mA)
- _ For luminaires of protection class III
- _ 8 years guarantee (conditions at <https://www.tridonic.com/en/int/services/manufacturer-guarantee-conditions>)

Interfaces

- _ Near field communication (NFC)
- _ Powered DALI-2
- _ Interface for zhaga book 18 compliant socket

Housing properties

- _ Type of protection IP67

Functions

- _ Adjustable output current in 1-mA-steps (NFC, DALI)
- _ Enhanced constant light output function (eCLO)
- _ Protective features (overtemperature, short-circuit, overload, no-load, input voltage range)
- _ Fulfills DALI-2 parts: 105 (DALI firmware update), 250 (Integrated bus power supply), 251 (Luminaire data), 252 (Energy reporting) and 253 (Diagnostics & Maintenance)
- _ Intelligent Temperature Guard (ITG)
- _ 24 V, 3 W power supply
- _ DiiA/Zhaga connectivity extensions DT49, DT50, DT51, DT52
- _ deviceKEY against unauthorized change of parameters

Benefits

- _ Flexible configuration via companionSUITE (NFC, DALI)
- _ Low standby losses for further autonomy
- _ Protection against battery deep discharge
- _ In-field programming possible after installation with NFC interface
- _ Suitable for supplies with 12V systems
- _ Designed for usage in combination with MPPT charge controllers for independent SOLAR street light applications

Typical applications

- _ Solar street lights
- _ Low voltage DC applications
- _ Off grid applications
- _ Other 12V battery applications (boats, camping, traffic signs...)

Website
<http://www.tridonic.com/87501216>


Linear



High bay



Decorative



Downlights



Spotlights



Free-standing



Area



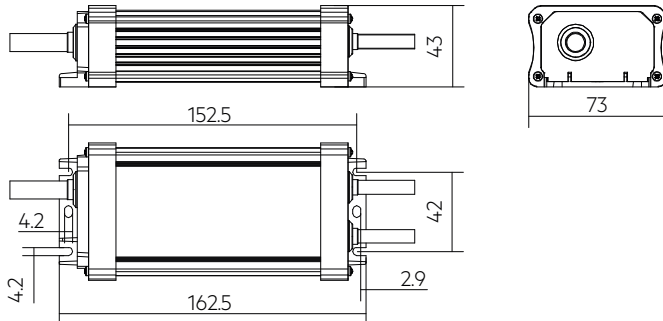
Floor | Wall



Street

Driver LCO 12V DC 40W 200–1050mA 50V pD+ NF C PRE3

Premium D4i NFC Outdoor

**Ordering data**

Type	Article number	Packaging, carton	Packaging, pallet	Weight per pc.
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	5 pc(s).	60 pc(s).	0.725 kg

Technical data

Supply voltage DC	12.8 V
DC voltage range ^①	11.6 – 18 V
Typ. rated current (at 12.8 V, 0 Hz, full load)	3,630 mA
Output power range (P _{rated})	3.6 – 40 W
Typ. efficiency (at 12.8 V, 0 Hz, full load)	88 %
Typ. power consumption (at 12.8 V, 0 Hz, full load)	46.1 W
In-rush current (peak / duration)	46 A / 300 µs
Starting time (DC mode)	850 ms
Turn off time at full load	30 ms
Starting time (stand-by)	0.5 s
Output current tolerance ^{②③}	± 3 %
Max. output current peak (non-repetitive)	≤ output current + 15 %
Output LF current ripple (< 120 Hz)	± 3.3 %
Max. output voltage (U-OUT)	60 V
Dimming range	1 – 100 %
DALI burst capability	1 kV
Type of protection	IP67
Lifetime	up to 50,000 h
Guarantee (conditions at www.tridonic.com)	8 Year(s)
Dimensions L x W x H	162.5 x 73 x 43 mm

Approval marks**Standards**

EN 55015, EN 61347-1, EN 61347-2-13, EN 61547, EN 62384, EN 62386-101, EN 62386-102, EN 62386-207 (DALI-2), EN 62386-250, EN 62386-251, EN 62386-252, EN 62386-253, according to EN 50172, according to EN 60598-2-22

Specific technical data

Type	Article number	Output current ^③	Min. output voltage	Max. output voltage	Max. output power	Typ. power consumption n (at 12.8 V, 0 Hz, full load)	Typ. current consumption n (at 12.8 V, 0 Hz, full load)	t _c point max.	Ambient temperature t _a
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	200 mA	18 V	50.0 V	10.0 W	11.8 W	925 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	250 mA	18 V	50.0 V	12.5 W	14.5 W	1,136 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	300 mA	18 V	50.0 V	15.0 W	17.2 W	1,348 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	350 mA	18 V	50.0 V	17.5 W	20.0 W	1,561 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	400 mA	18 V	50.0 V	20.0 W	22.7 W	1,776 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	450 mA	18 V	50.0 V	22.5 W	25.5 W	1,994 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	500 mA	18 V	50.0 V	25.0 W	28.2 W	2,212 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	550 mA	18 V	50.0 V	27.5 W	31.1 W	2,433 mA	78 °C	-40 ... +70 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	600 mA	18 V	50.0 V	30.0 W	33.9 W	2,655 mA	78 °C	-40 ... +65 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	650 mA	18 V	50.0 V	32.5 W	36.7 W	2,879 mA	78 °C	-40 ... +65 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	700 mA	18 V	50.0 V	35.0 W	39.6 W	3,105 mA	78 °C	-40 ... +65 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	750 mA	18 V	50.0 V	37.5 W	42.5 W	3,334 mA	78 °C	-40 ... +65 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	800 mA	18 V	50.0 V	40.0 W	45.4 W	3,560 mA	78 °C	-40 ... +65 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	850 mA	18 V	47.1 V	40.0 W	45.5 W	3,572 mA	78 °C	-40 ... +60 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	900 mA	18 V	44.4 V	40.0 W	45.6 W	3,582 mA	78 °C	-40 ... +60 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	950 mA	18 V	42.1 V	40.0 W	45.8 W	3,596 mA	78 °C	-40 ... +60 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	1,000 mA	18 V	40.0 V	40.0 W	46.0 W	3,609 mA	78 °C	-40 ... +60 °C
LCO 12V DC 40/200-1050/50 pD+ NF C PRE3	87501216	1,050 mA	18 V	38.1 V	40.0 W	46.1 W	3,622 mA	78 °C	-40 ... +60 °C

① Power derating will occur within the voltage range of 10.5 - 11.5 V. Maximum achievable dim-level is restricted. Please refer to chapter "Intelligent Voltage Guard+ Low Voltage DC (IVG+ LV DC)" for shutdown and restart thresholds.

② Valid at 100 % dimming level.

③ Output current is mean value.

1. Standards

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

EN 62386-101 (DALI-2)
EN 62386-102 (DALI-2)
EN 62386-207 (DALI-2)
EN 62386-250 (DALI-2)
EN 62386-251 (DALI-2)
EN 62386-252 (DALI-2)
EN 62386-253 (DALI-2)

According to EN 50172 for use in central battery systems

According to EN 60598-2-22 suitable for emergency luminaire

1.1 Glow wire test

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

2. Thermal details and lifetime

2.1 Expected lifetime

Expected lifetime							
Type	Output current	ta	50 °C	55 °C	60 °C	65 °C	70 °C
LCO 12V DC 40/200-1050/50 pDplus NF C PRE3	200 – 550 mA	tc	58 °C	63 °C	68 °C	73 °C	78 °C
		Lifetime	100,000 h	100,000 h	100,000 h	100,000 h	60,000 h
	>550 – 800 mA	tc	63 °C	68 °C	73 °C	78 °C	–
		Lifetime	100,000 h	100,000 h	100,000 h	60,000 h	–
	>800 – 1,050 mA	tc	68 °C	73 °C	78 °C	–	–
		Lifetime	100,000 h	100,000 h	60,000 h	–	–

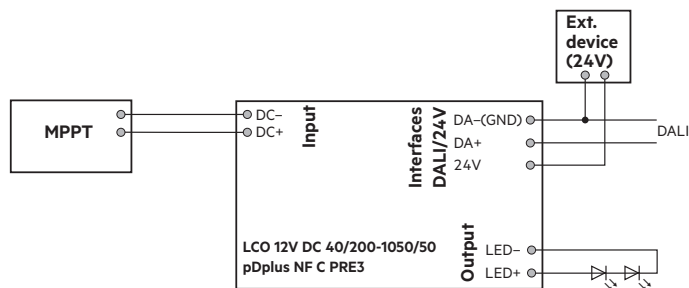
The LED driver is designed for a lifetime stated above under reference conditions and with a failure probability of less than 10 %.

The relation of 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



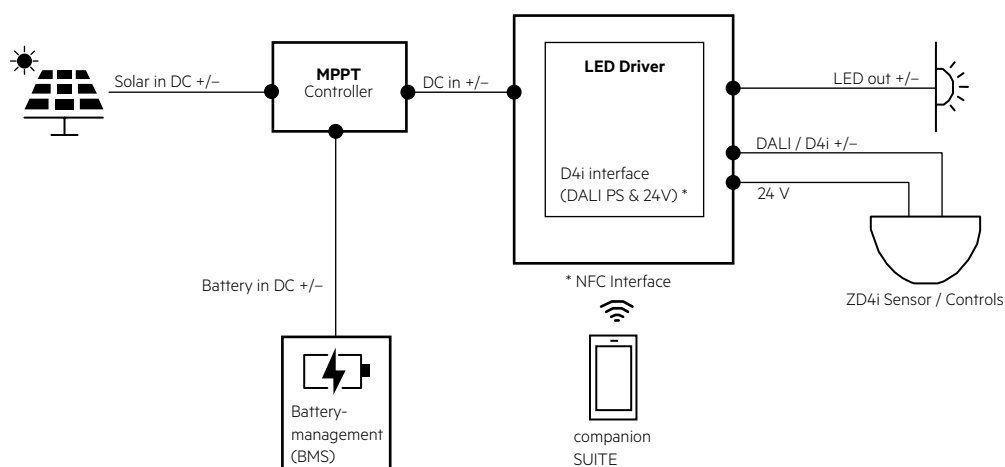
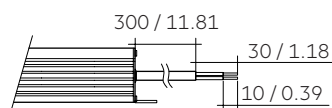
- The driver is allowed only for operation on battery. If a Safety Extra Low Voltage (SELV) power supply is used, additional Electromagnetic Compatibility (EMC) filter components must be added to comply with the BS EN/EN55015 standard.
- The output is SELV.

3.2 Connection

Input cable		Interfaces			Output cable	
DC+	DC-	DA+	DA-	24V	LED-	LED+
RED	BLACK	YELLOW	GREEN	ORANGE	BLUE	BROWN
1.5 mm ²	1.5 mm ²	0.75 mm ²	0.75 mm ²	0.75 mm ²	1.0 mm ²	1.0 mm ²

For connection of the device, only suitable spring terminals may be used. Screw terminals may only be used if the screw only touches unfinned parts of the lead.

For input cable only same or bigger cable diameter is recommended than stated above to keep voltage drop low.



3.3 Wiring guidelines

- The max. secondary cable length (24V, DALI, LED) is 2 m (4 m circuit).
- The max. primary cable length is 2 m (4 m circuit).
- Secondary switching is not permitted.
- Wrong wiring of the LED driver can lead to malfunction or irreparable damage. Avoid negative voltage.
- To enhance the capability against mechanical stress (vibration), it is recommended to apply washers for the screws in installation.
- To avoid damage of the Driver, the wiring must be protected against short circuits to earth (sharp edged metal parts, metal cable clips, louver, etc.).
- Due to the large input current, please pay attention to the voltage drop of the wiring, to ensure proper function of the device.

3.4 Hot plug-in

Hot plug-in is not supported due to residual output voltage of > 0 V. When connecting an LED load, restart the device to activate the LED output. This can be done via mains reset or via interface DALI.

3.5 IP Protection

IP67 and IP66 provides protection against dust and temporary water immersion. Due to environmental impacts (UV radiation, bird dropping, freezing...) the IP protection level may be impaired over time. To avoid this, it is required to apply means reducing these impacts to a minimum, e.g. mounting of the device in an additional enclosure.

Further details please see document "Protection classes and protective measures for Outdoor devices" in the general topics section in the download area of our homepage.

3.6 Recommended MPPT controller

Subject to be changed without notice.

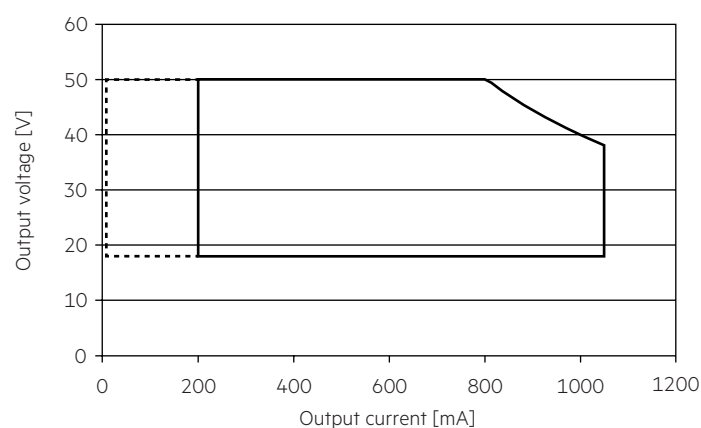
Article number	Manufacturer	Manufacturer type name	Date of testing
–	Farlight	SMR-MPPT1575	09-2025
–	Farlight	SMR-MPPT1575-BT	09-2025
–	Farlight	Remote Controller	09-2025
28006401	victron energy	SmartSolar MPPT 75/10 Retail	09-2025
28006535	victron energy	Smart Battery Sense	09-2025



Tridonic has no control or responsibility on any future or past possible changes made by different manufactures that could affect the compatibility between components.

4. Electrical values

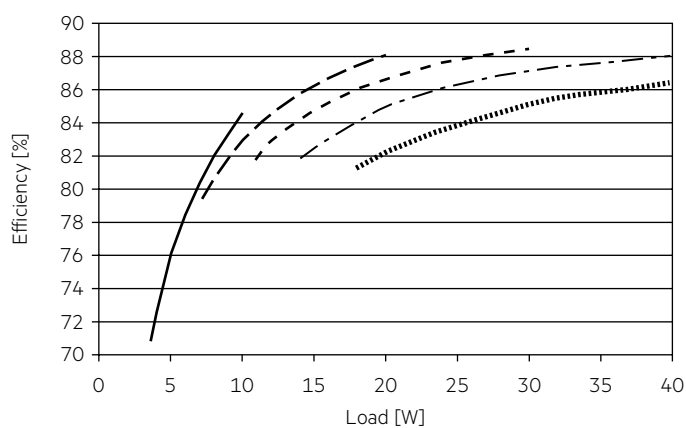
4.1 Operating window



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

Make sure that the LED driver is operated within the given window under all operating conditions. Coming below the specified minimum output voltage of the LED driver may cause the device to shut-down.

4.2 Efficiency vs load



DALI bus power supply deactivated. No-load on 24V power supply.

— 200 mA
 - - - 400 mA
 - . - . 600 mA
 - - - - 800 mA
 1050 mA

5. Software / Programming / Interfaces

5.1 Software / programming

With appropriate software and interface different functions can be activated and various parameters can be configured in the LED driver. The Driver supports the following software and interfaces:

Software / hardware for configuration:

- companionSUITE (deviceGENERATOR, deviceCONFIGURATOR, deviceANALYSER)
- masterCONFIGURATOR

Interfaces for data transfer:

- NFC
- Control input DALI

5.2 Nearfield communication (NFC)

The NFC Interface allows wireless communication with the LED driver. This interface offers the option to write configuration and to read configuration, errors and events with the companionSUITE. A correct communication between the LED driver and the NFC antenna can only be guaranteed if the antenna is placed directly on the Driver. Any material placed between the LED driver and the NFC antenna can cause a deterioration of the communication quality. After programming the device via NFC power up the device one time for one second till the deviceANALYSER can read out the parameters. We recommend the use of following NFC antenna:
www.tridonic.com/nfc-readers

NFC is complied with ISO/IEC 15963 standard.

Changing parameters via NFC shall be done by qualified engineers only.

5.3 Control input DALI

The control input is non-polar for digital control signals (DALI). The control signal is not SELV. The control cable has to be installed in accordance to the requirements of low voltage installations.

Digital control with:

- DALI signal: 16 bit

Dimming is realized by amplitude dimming.

6. Functions

companionSUITE:

DALI-USB, ready2mains Programmer (in DALI mode), NFC

The companionSUITE with deviceGENERATOR, deviceCONFIGURATOR and deviceANALYSER is available via our WEB page:

<https://www.tridonic.com/com/en/products/companionsuite.asp>

masterCONFIGURATOR:

DALI-USB, ready2mains Programmer (in DALI mode)

The masterCONFIGURATOR is available via our WEB page:

<https://www.tridonic.com/com/en/software-masterconfigurator.asp>

4service NFC app:

Smartphone with NFC

4service NFC app is available via the corresponding app store.

Additional information: https://www.tridonic.com/com/en/download/brochures/Leaflet_companionSUITE_EN.pdf

Icon	Function	NFC	DALI-2
	OEM Identification	 	 
	OEM GTIN	 	 
	Luminaire data	 	 
	Label information	 -	 
	LED current	 	 
	Device operating mode	 	 
	Factory reset	 -	 
	Enhanced constant light output (eCLO)	 	 
	Enhanced power on level (ePOL)	 -	 
	Addressing	 	 
	Intelligent temperature guard (ITG)	 -	 
	DALI default parameters	 -	 
	Scenes and groups	 -	 
	Energy reports	 	 
	Diagnostic and monitoring	 	 
	Integrated DALI power supply	 	 
	sensorMODE	 -	 
	deviceKEY	 -	 
	Power-up fading	 -	 
	Dimming curve	 -	 
	Intelligent Voltage Guard+ Low Voltage DC (IVG+ LV DC)	 -	 -

6.1 LED current



The LED output current must be adapted to the connected LED module. The value is limited by the current range of the respective device.

6.2 Enhanced Constant Light Output (eCLO)



With this function the light output of the LED module can be kept equal over the lifetime.

The light output of an LED module reduces over the course of its lifetime. The Constant Light Output (eCLO) function compensates for this natural decline by constantly increasing the output current of the LED driver throughout its lifetime.

Enhanced eCLO shall be achieved by limitation of the LED current at the commissioning of the LED driver and providing a linear interpolation of the current over the time, depending on the data points given by the user. The user has to insert up to eight pairs of data (time, level). The output curve is the result of connecting the user data points linear. Detailed description for eCLO see product manual.

6.3 Luminaire data



This function provides the asset management with accurate data about the luminaire.

DALI Part 251: Memory bank 1 extension.

DALI Part 253: Luminaire maintenance data.

6.4 Intelligent Temperature Guard (ITG)



The intelligent temperature guard protects the LED driver from thermal overheating by reducing the output power or switching off in case of operation above the thermal limits of the luminaire or ballast. Depending on the luminaire design, the ITG operates at about 5 to 10 °C above t_c temperature.

If temperature threshold values are exceeded, the LED output current is limited.

These limits can be adjusted using the programming software.

Even the current ITG temperature in the device can be read out. With this function, the sensitivity of the temperature control can be adjusted.

6.5 Power-up fading



The power-up function offers the opportunity to modify the on behavior. The time for fading on can be adjusted in a range of 0.2 to 16 seconds. According to this value, the device dims either from 0 % up to the power-on level.

By factory default no fading time is set (= 0 seconds).

6.6 Memory bank 1 extension



This function complies to DiiA specification DALI Part 251 - Memory bank 1 extension.

It provides an extension to memory bank 1 to enable asset management functionality. Several internal values from the driver could be read out from this memory bank. For example luminaire year, week and description.

Also power levels and light output can be read out.

6.7 Energy reporting



This function complies to DiiA specification DALI Part 252 - Energy reporting. It provides the information related to energy reporting accessible through memory banks in this driver. Several functions and values could be read out to gain access in Content management systems.

Report and values for Active power, Active Energy and many more can be read out.

6.8 Diagnostics and maintenance



This function complies to DiiA specification DALI Part 253 - Diagnostics and maintenance. It provides the information related to diagnostics and maintenance information accessible through memory banks. Several functions and values could be read out to gain access in Content management systems.

Report and values for failure behaviour, driver conditions and malfunctions trigger points can be read out.

6.9 Integrated DALI power supply



This function complies to DiiA specification DALI Part 250 - Integrated bus power supply.

The output power of the integrated DALI Bus Power Supply (pDALI) has an output current of 50 mA (max. 62.5 mA).

It is activated by factory default.

Sensors and also external drivers could be directly connected to this power supply. The DALI power supply could be deactivated via software.



Power supplies can be combined up to 250 mA max in total. This maximum must not exceed. The polarity has to be considered.

If the DALI power supply is activated, the driver must not be integrated into an existing, already with 250 mA powered DALI network.

6.10 24 V power supply

The supply provides 24 V DC to power e.g. a controller, an occupancy sensor, a photo sensor or other device. It eliminates the need of an AC/DC supply and the associated need of surge suppression and an EMI filter in such devices.

Supply specification:

Average power of 3 W.

Average output voltage of 24 V $\pm 10\%$

Maximum voltage does not exceed 30 V under any load condition including open circuit.

Start-up time: 90 % of the nominal specified voltage level within 600 ms after applying mains power.

Start-up: After power-on, the load must limit the current consumption at the terminals to at most 160 mA until the specified voltage is reached.

6.11 sensorMODE



The sensorMODE combines the features chronoSTEP and corridorFUNCTION and adds the possibility to control them with a DALI input device directly connected to the LED driver.

There are different control modes supported by the sensorMODE function:

- Ambient light control
- Motion control
- Ambient light with motion control

6.12 deviceKEY



This function enables a password protection for device settings to prevent unauthorized access or changes.

6.13 Intelligent Voltage Guard+ Low Voltage DC (IVG+ LV DC)



Intelligent voltage guard plus is a protection feature.

With Intelligent voltage guard plus it is possible to configure the permissible input voltage range.

Although this is usually done in the MPPT, this function ensures protection against deep discharge of batteries in case no other protection functionality is available.

Intelligent voltage guard plus ensures that the driver is operated in a safe input voltage range.

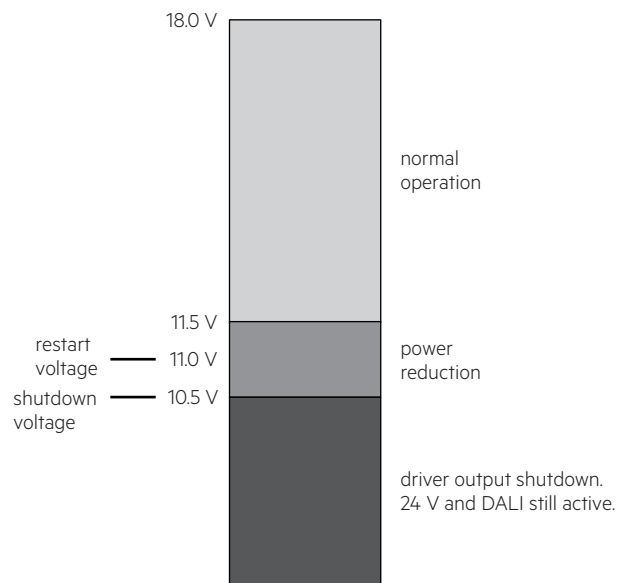
The shutdown voltage and restart voltage can be configured. If shutdown voltage is reached, DALI and 24 V are still working.

Default configuration is:

Shutdown voltage: 10.5 V

Restart voltage: 11 V

Example of different operating states depending on battery voltage:



7. Protective features

7.1 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 above $t_{c\max}$. The activation temperature differs depending on the LED load.

7.2 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 (DALI).

7.3 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.

7.4 Overload protection

If the maximum load is exceeded by a defined internal limit, 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 (DALI).

7.5 Insulation between terminals

Insulation	Input	LED	24V / DALI
Input	–	–	basic
LED	–	–	basic
24V / DALI	basic	basic	–

basic ... represents basic insulation.

double ... represents double or reinforced insulation.

7.6 ESD protection

The potential risk of electrostatic discharge (ESD) during certain weather conditions (like dry air and wind) and using the drivers in an installation on non-conductive poles is avoided.

8. Miscellaneous

8.1 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 550 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 1550 V_{AC} (or 1.414 x 1550 V_{DC}). To avoid damage to the electronic devices this test must not be conducted.

The equipotential wire is used to connect the heat sink and the LED driver to reduce transients.

8.2 Conditions of storage and use

Humidity: 5 % up to max. 95 %,
not condensed

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.

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).

8.3 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.