LIGHTING CONTROL

DALI-2 D4i LED Driver

Linear Series

LCA 50W/350-1050mA/27-51V pD+ UNV lm

Features

- Dimmable built-in and independent constant current LED driver
- Dimming range 1~100 % (min. 9 mA)
- Max. output power 50 W
- Operates on AC or DC power input
- AUX power output, 24V 125mA
- Built-in DALI PSU, 15V 55mA
- Low standby power, < 0.5W
- Flicker free
- DiiA/Zhaga connectivity extensions DT49, DT50, DT51, DT52
- Output current programmable between 350 ~ 1050 mA via DALI
- Programmable light output level and dimming enable on DC power input operation
- For luminaires of protection class I and protection class Ⅱ
- IP20 protection rating
- Nominal life-time is more than 50,000 hours

Class P Class 2

Intertek 5018360

CAN ICES-5(B)/NMB-5(B)

DALI 2 D4i ledDATA

RoHS COMPLIANT SELV IP24

Advantages

- One SKU supports multiple fixture types
- Large operating window for maximum compatibility
- Constant current output available for a variety of popular LED engines
- Linear design can be used for a variety of lighting fixture and troffers
- Operated on AC or DC power input, possible to operate on DC emergency power source

Dimming Interface

pD+: DALI + D4i + AUX

D+: DALI + Part 251-253

pD: DALI + Part 250-251

DA: DALI + Part 251

DALI-2 D4i LED driver Series List

Type	Output current (mA)	Output voltage range (V)	Output power (W)	Input voltage (V_{ac})	Built-in bus PSU AUX 24V	Energy consumption data	Size (mm)
pD+: DALI + D4i + AUX **DT6**							
LCA 35W/350-900mA/27-51V pD+ UNV lm	350–900	27-51	35	100~277	yes	yes	243 × 30 × 21
LCA 50W/350-1050mA/27-51V pD+ UNV lm	350–1050	27-51	50	100~277	yes	yes	280 × 30 × 21
LCA 75W/900-1800mA/27-51V pD+ UNV lm	900–1800	27-51	75	100~277	yes	yes	355 × 30 × 21
LCA 85W/1200-2200mA/27-51V pD+ UNV lm	1200–2200	27-51	85	100~277	yes	yes	355× 30 × 21

Electrical Specifications

All parameters NOT specially mentioned are typical and measured at 230Vac input, rated current and at 25°C of ambient temperature.

Ordering Information	
Full Product Code	LCA 50W/350-1050mA/27-51V pD+ UNV lm
Full Product Name	DALI-2 LED driver
Input Information	
Line Voltage	100~277Vac or 140-390Vdc
Line Current	0.75A Max. / 0.45A Max.
Line Frequency	0 / 50 / 60 Hz
Min. Mains Voltage Operational	90Vac / 127Vdc
Max. Mains Voltage Operational	300Vac / 424Vdc
Start Time	≤ 0.6s
THD (Total)	≤ 14% (100~277Vac, Full load)
Power Factor (PF)	≥ 0.90 (100~277Vac, Full load)
Inrush Current	Cold start ≤ 17A at 230Vac and ≤ 21A at 277Vac (twidth = 200us measured at 10% Ipeak), per NEMA 410
Output Information	
Output Voltage Range	27-51Vdc
Max. Open Circuit Voltage	60Vdc
Output Current Range	350-1050mA (please refer to the LED current settings)
Output Current Ripple	≤ 5% @ Max. output current
Protections	Short circuit, no load, overload and over temperature protected
DALI PSU and AUX Information	
DALI Output Voltage Range	15V-18Vdc
DALI Max. Output Voltage	18Vdc
DALI Typ. Output Voltage	16Vdc
DALI Min. Output Voltage	15Vdc
DALI Guaranteed Output Current	55mA
DALI Max. Output Current	62mA
DALI Max. Output Power	1W
DALI Output Voltage Ripple	≤ 5% @ guaranteed output current
AUX Output Voltage Range	24Vdc ±10%
AUX Max. Output Voltage	26.4V
AUX Typ. Output Voltage	24V
AUX Min. Output Voltage	21.6V
AUX Average Output Current	125mA
AUX Output Voltage Ripple	≤ 5% @ average output current
Protections	Short circuit and overload protected

Environment & Approbation

Ingress Protection Rating	IP20
Ambient Temp. Range	-25℃ to +55℃
Max. Case Temperature (Tcase)	85℃ for life expectancy & 90℃ for UL / CE safety
Environmental Protection Rating	UL dry & damp
Safety Standards	UL8750, CSA C22.2 No.250.13, EN61347-1, EN61347-2-13
EMC Emission	Meets to FCC 47 Part 15, CAN ICES-5/NMB-5, EN55015, EN61000-3-2, EN61000-3-3
EMC Immunity	Meets to EN61000-4-2,3,4,5,6,8,11, EN61547, Surge immunity Line-Line 1KV, Line-PE 2KV
Insulation	Refer to table
Audible Noise	< 24dB Class A

Insulation

Insulation	Mains	LED	DALI / AUX	Enclosure (PE)
Mains	/	double	basic	basic
LED	double	/	double	basic
DALI / AUX	basic	double	/	basic
Enclosure (PE)	basic	basic	basic	/

basic...represents basic insulation
double...represents double or reinforced insulation

Protective Features

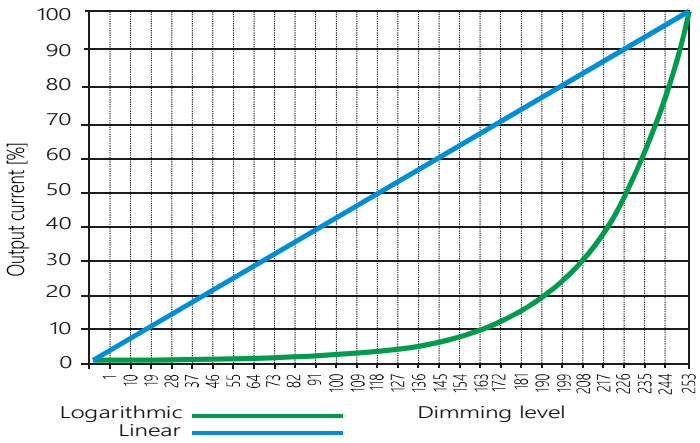
- Short-circuit behaviour
  In case of short-circuit at LED output, the output is working in hiccup mode.
  When the short-circuit is removed, the output will return to normal automatically.

- No-load operation
  The LED driver will not be damaged in no-load operation. The output will work in hiccup mode when no load connects.
  If a LED load is reconnected, the output will return to normal automatically.

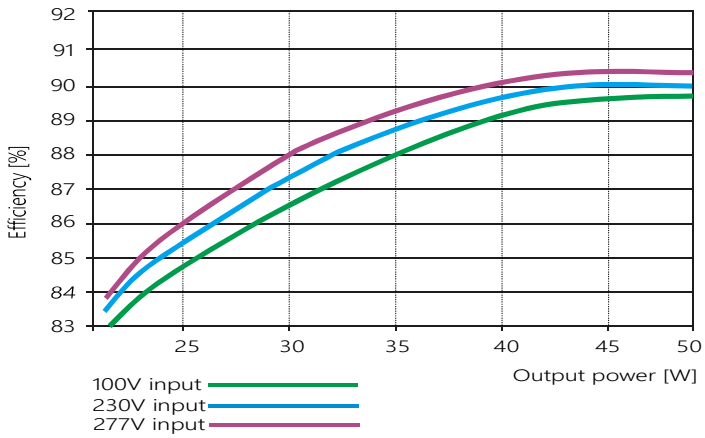
- Overload protection
  If the output power range is exceeded, the LED driver automatically decreases the LED output current.
  If the LED voltage decreases to relieve the output power limit, the maximum LED output current will restore.

- Intelligent temperature protection
  If the temperature threshold values are exceeded, the LED output current is limited.
  When the temperature of drive exceeds 80 ℃, the output current begins to derate.
  Then the temperature every rises 1 ℃, and the current drops 5%.
  The LED driver will turn off at 100 ℃, and recover at 75 ℃.

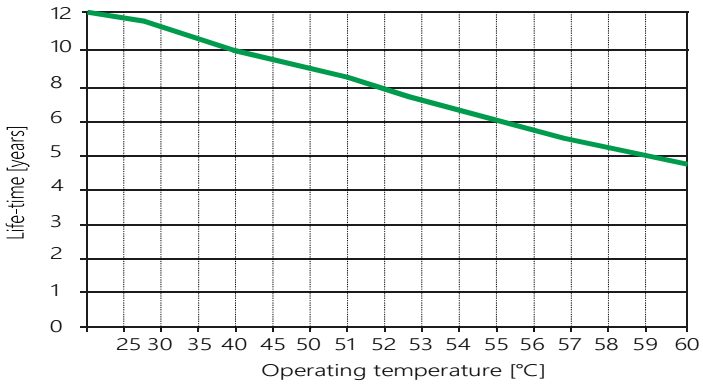
LUM dimming



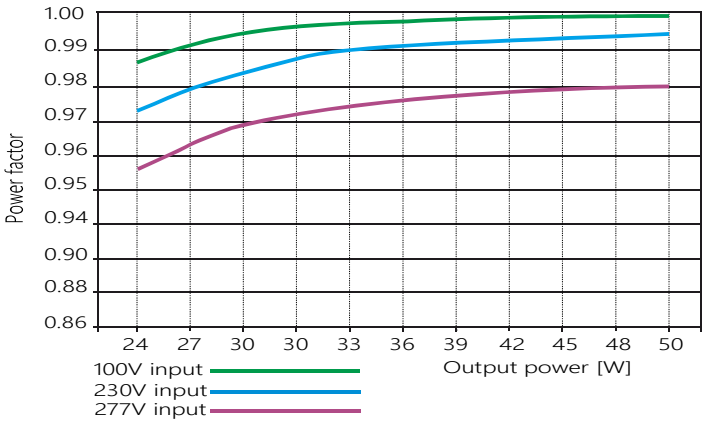
Efficiency vs load



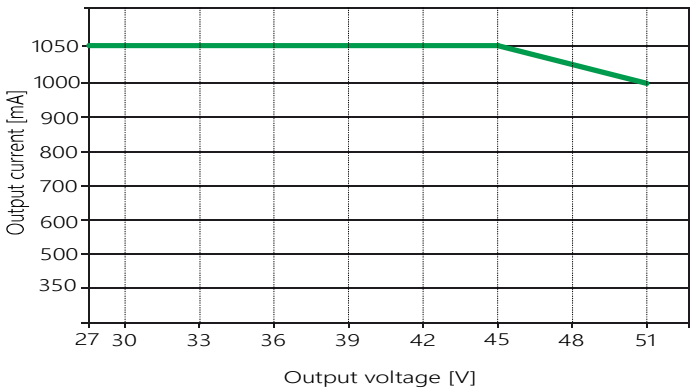
Life-time



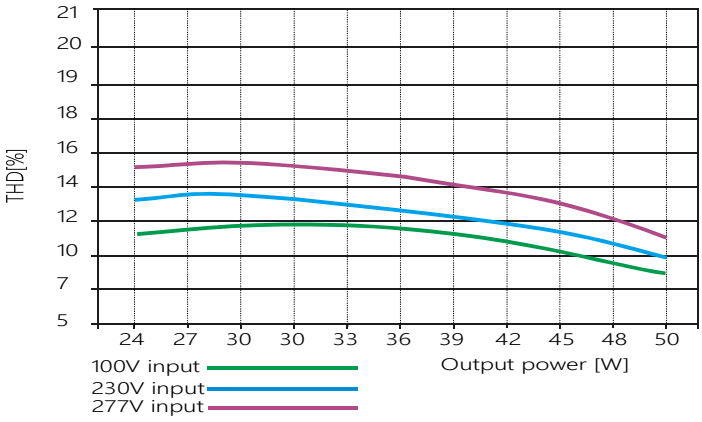
Power factor vs load



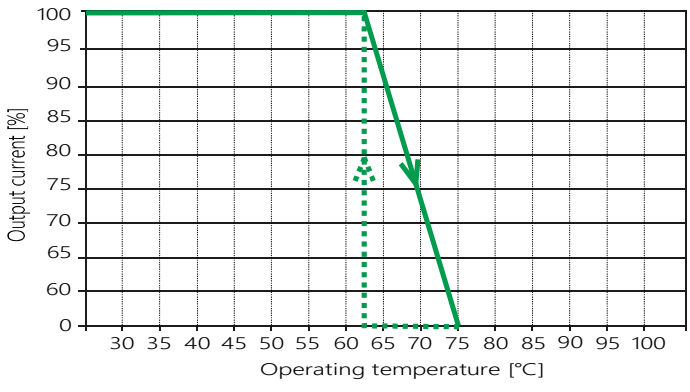
Output power limit



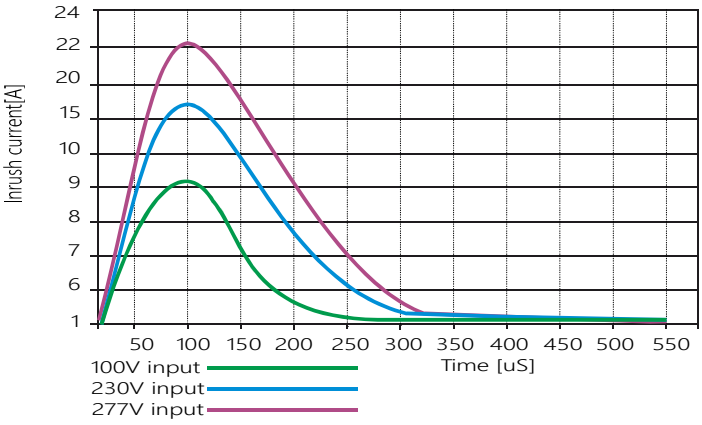
THD vs load



Over temperature derating



Inrush current



Functions

Function	DALI-2	
	read	write
LED current	☑	☑
Integrated DALI bus PSU on / off	☑	☑
DALI default parameters	☑	☑
Scenes and groups	☑	☑
DC level	☑	☑
Output power limit	☑	☑
OEM GTIN	☑	☑
OEM identification	☑	☑
Energy reports	☑	
Diagnostic and monitoring	☑	☑
Customer memory bank	☑	☑
Manufacture information	☑	

- LED current

  The LED output current must be adapted to the connected LED module. The value is limited by the current range of respective device. The LED current can be programmed by DALI , and the final setting will take effect immediately.

- Integrated DALI bus power supply

  The integrated DALI bus power supply has an output current of 55 mA. It is activated by factory default. Sensors and also external drivers could be directly connected to this power supply. The DALI power supply can be disabled by DALI, and the final setting will take effect immediately. If the integrated DALI power supply is activated and the driver needs to be integrated into an existing, already powered DALI network, MUST make sure that the connected polarity is correct and the total output current is not more than 250mA.

- Scenes and groups

  The function provides a method to set the 16 scenes level and 16 groups by DALI, and the final setting will take effect immediately.

- Light level in DC power input operation

  In emergency light systems with a central battery supply, the DC recognition function uses the input voltage to detect if emergency mode is present. The LED driver then automatically switches to DC mode and dims the light to the defined DC level. Without DC recognition, difficult and more complex solutions would have to be applied in order to detect emergency mode. DC recognition is integrated in the device as standard. No additional commissioning is necessary for activation.

This is a safety-relevant parameter. The setting is relevant for the capacity of the central battery system.

The LED driver is designed to operate on DC voltage and AC voltage.

Light output level in DC operation: 0 - 100% programmable by DALI, and the final setting will take effect after restart of the LED driver. The factory default is 15%.

In DC operation, dimming mode can be activated by DALI, and the final setting will take effect immediately.

If it is activated, the requirements of the DC recognition function are ignored, and it is activated by factory default.

That means even if DC is detected, the LED driver continues to behave as in AC mode:

* The present dimming level is retained.
* The emergency light level defined for the DC recognition function (DC level) is ignored.
* Control signals via DALI continue to be executed.

If dimming on DC is activated, then emergency mode is not recognized. The device no longer automatically switches to the emergency light level.

● Output power limit

This function protects the LED driver from overload by reducing the max. output current in case of operation above the output power limit. The driver will continuously monitor the LED module voltage and limit the output power less than 51W.

Load voltage	Output current													
	350mA	450mA	500mA	550mA	600mA	650mA	700mA	750mA	800mA	850mA	900mA	950mA	1000mA	1050mA
27V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
30V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
33V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
36V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
39V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
42V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
45V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	/
48V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	/
51V	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	/

● Memory bank 1 extension

This function provides an extension to memory bank 1 to enable asset management functionality.
Several functions and values could be read out to gain access in content management systems.
For example, luminaire year, week, and description. Also power levels, AC mains voltage and light output can be read out.

● Energy reports

This function provides the information related to energy reporting accessible through memory banks.
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.

● Diagnostic and monitoring

This function provides the information related to diagnostics and maintenance 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.

● Manufacture information

The production barcode and other manufacture information can be read out by DALI.

- Power-up fading

  This function lowers the voltage and current stress of components and improves reliability of the driver when power on. According to the fixed time for fading on, the device dims from 0% up to the power-on level smoothly.

- Dimming curve selection

  The driver supports logarithmic and linear dimming curve. The dimming curve can be selected by DALI, and the final setting will take effect immediately. Changing the dimming curve shall have no effect either on the light output or on any of the stored levels.

- AUX power supply

  An auxiliary (AUX) supply provides 24V 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.

  AUX supply specification:

  * Average power of 3 W.
  * Output voltage of 24 V ±10 %.
  * Maximum voltage does not exceed 30V under any load condition including open circuit.
  * Start-up time: 90 % of the nominal specified voltage level within 600ms after applying mains power.
  * Start-up: After power-on, the load must limit the current consumption at the AUX terminals to at most 160mA until the specified voltage is reached.

Cable Specification

- Install in accordance with National and Local Electrical Codes.
- Input and output cable requirements

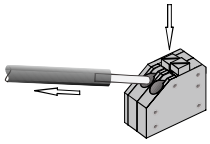
  Preparation for Input and output

Solid conductor:

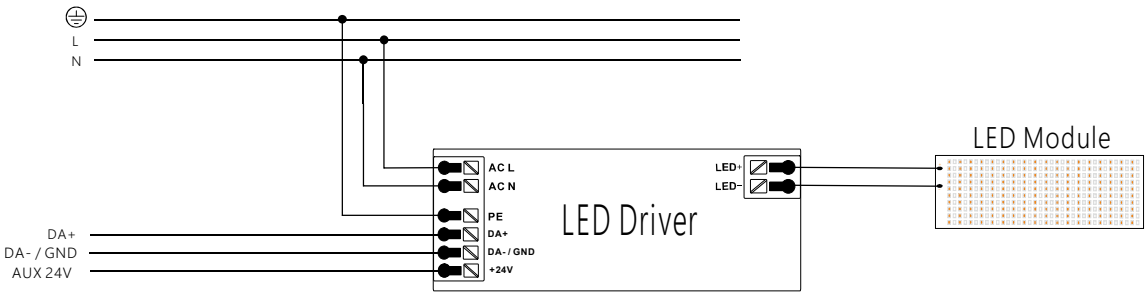
Input 0.5...0.75 mm² / 20...18 AWG.

Output 0.5...0.75 mm² / 20...18 AWG.

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

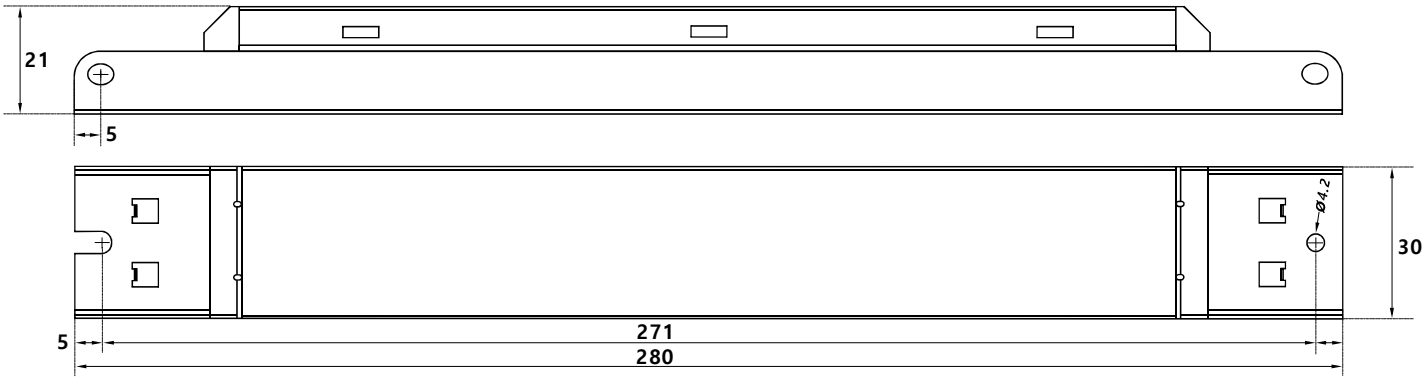


Wiring



Dimensions & Weight

	inch	mm
Case Length	11.0	280
Case Width	1.18	30.0
Case Height	0.82	21.0
Mounting Length	10.67	271
Mounting Width	1.18	30.0
Weight	0.73lb / 0.33KGS	



Unit: mm

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