eldoLED

LINEARdrive DC Family LED Drivers

European Selection

The eldoLED LINEARdrive DC range is designed for controlling constant voltage LED applications, such as LED tape used in cove lighting and architectural luminaires. The various products in the range can be used for controlling white light, Tunable White and RGBW color.

Supported dimming protocols include DALI-2, DMX, 0-10V and Casambi via LEDcode.

The LIN180D and LIN720D also have an integrated controller for defining and controlling simple shows.

The housing is intended for independent use and includes a strain relief. Due to its integrated heatspreader, the driver can control up to 8A per LED string that is provided by an external power supply.

Family members include 200W models with 2 LED outputs, as well as 180W and 720W models with 4 LED outputs.

The family has been designed to meet the standards in Europe (CE, UKCA and ENEC), North America (UL Recognized) and India (BIS).

Key Features and Benefits

- Stand-alone control of constant voltage LED applications between 12V and 28VDC or 12V and 48VDC, with strain-relief and integrated heatspreader.
- Wide range of control options:
  - The family includes various control protocols: DALI-2, DMX, 0-10V. LIN200D models with DALI-2 can be connected to a Casambi wireless control module by eldoLED.[1]
- Integrated control for defining and controlling simple shows for LIN180D and LIN720D.
- Natural and flicker-safe dimming down to 0.1%
  - Dimming with smooth brightness changes and excellent flicker performance. Configurable minimum dim level[2] and adaptable dim curves[2].
- Programmable
  - Fine-tune your control using FluxTool with LightShape[3]
  - Programmable features vary per model and include:
    - Dimming level
    - Dimming curve
    - Tunable White, using LightShape[3]
- LIN200D models can control up to 200W (8A) of power in 2 LED outputs. LIN180D and LIN720D models can control up to 180W and 720W respectively in 4 LED outputs.
- Suitable for use up to 50°C ambient temperature.

1. *See the eldoLED BT Casambi datasheet for further details.*
2. *Applies to DALI products*
3. *eldoLED LightShape technology enables precision of the color and light output in white light applications, creating color consistency among different luminaires in the same space. See www.eldoled.com/technology*

Applications

- Constant voltage LED applications, such as LED tape used in cove lighting or architectural linear luminaires

Specifications and Certifications

E333135

Products

Product	Max Power	Number of LED outputs	Max. Output	Max output per LED	Control Protocol	Order Number
LINEARdrive DC	200W	2	8A	8A	DALI-2 DT6 (1 DALI address)	LIN200D-D2Z1D*
LINEARdrive DC	200W	2	8A	8A	DALI-2 DT6 (2 DALI addresses)	LIN200D-D2Z2D*
LINEARdrive DC	200W	2	8A	8A	DALI-2 DT8 (Tc) (Tunable White**)	LIN200D-D2Z2C*
LINEARdrive DC	200W	2	8A	8A	0-10V	LIN211D
LINEARdrive DC	200W	2	8A	8A	DMX	LIN212D
LINEARdrive DC	200W	2	8A	8A	DMX	LIN222D
LINEARdrive DC	180W	4	6A	2A	DMX	LIN180D
LINEARdrive DC	720W	4	24A	6A	DMX & DALI	LIN720D

*For explanation see the Ordering Guide
** DT8 uses 1 DALI address

LINEARdrive DC Family LED Drivers – Datasheet

Ordering Guide *(LIN200D series only)*

LIN	200	D	D	2	Z	1	D
Family	**Output Wattage**	**Housing**	**Input Voltage**	**Output Channels**	**AUX**	**Control Channel**	**Control**
LINEARdrive	200	D	D = DC (12-28VDC)	2	No AUX	1 2	D = DALI-2 DT6 C = DALI-2 DT8(Tc)

Electrical Specifications

	Max Output Power	Nominal Input Voltage	Max Input Current	Typ. Efficiency (full load)	Typ. Max Tc
LIN180D	180W	12-28VDC	6A	>98%	65°C
LIN200D	224W	12-28VDC	8A	>99%	65°C
LIN211/212/222D	224W	12-28VDC	8A	>99%	65°C
LIN720D	720W	12-48VDC	24A	>98%	65°C

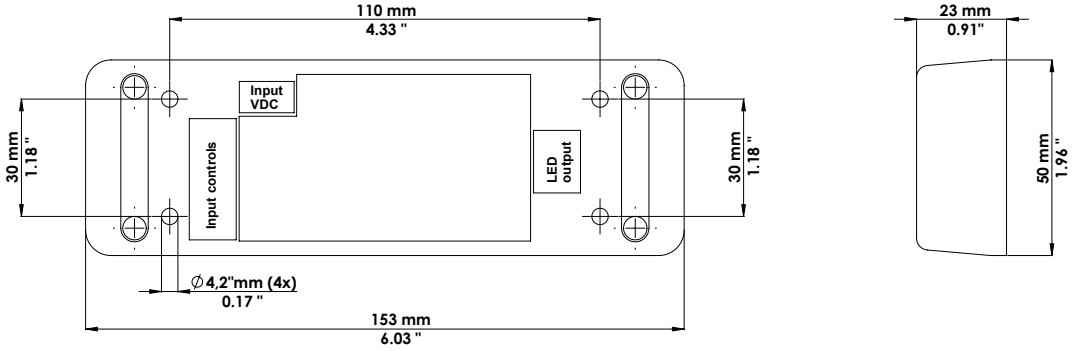
Other electrical specifications are set by the external power supply used.

Mechanical Details

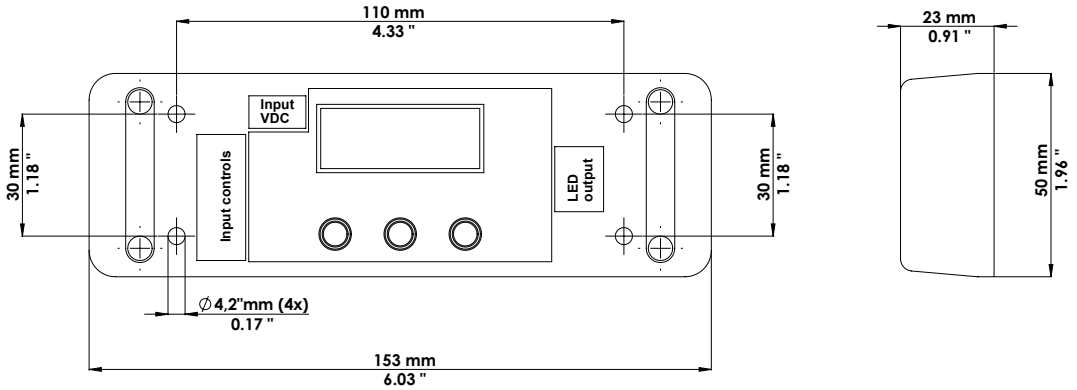
Length	153mm (length) x 50mm (width) x 23mm (height)		
Packaging	Individual box; 12 pcs / 48 pcs per box		
Box Dimensions	330 x 240 x 220mm		
	LIN211/212/180D	**LIN200D-D2ZxX**	**LIN720D**
Weight of Individual Product	140g	131g	170g
Box Weight	7.7kg (48 pcs)	1.6 kg (12 pcs)	9.2kg (48 pcs)

The dimensions of the products with and without display are the same, as well as their cover.

Products without display:



Products with display:

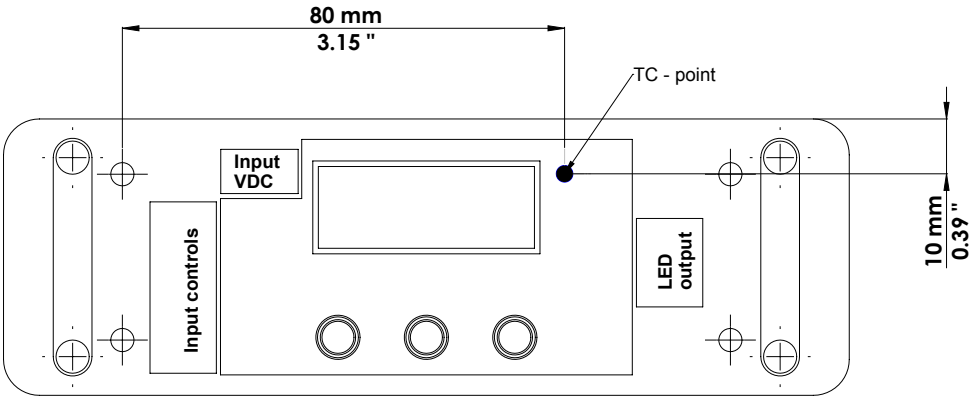


Minimum and Maximum Ratings

Parameter	Values
Input Voltage Range	12-28VDC, 12-48VDC (LIN720D only)
Ambient Operating Temperature	-20°C - 50°C
Lifetime	50.000 hours
Acoustic Noise	<24dBA

Tc Point Location

The TC point location of products with and without display is the same:



Driver configuration

LIN180D (DMX)	FluxTool with TOOLbox pro And via user interface with 3 push buttons
LIN200D-D2ZxX (DALI-2)	FluxTool with TOOLbox pro
LIN211D (0-10V)	no configuration possible
LIN212/222D (DMX)	FluxTool with TOOLbox pro
LIN720D	FluxTool with TOOLbox pro And via user interface with 3 push buttons

Programming Tools (LIN200D DALI/DMX versions only)

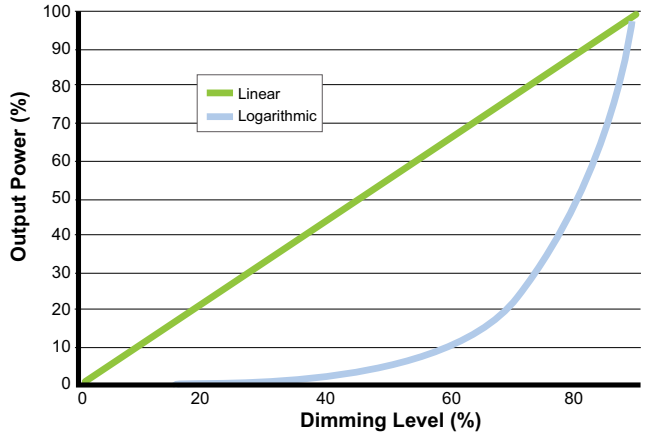
	Programming software	Programming interface: TOOLbox pro	TOOLbox adapter	Driver input terminals	Driver mode
LIN180D	FluxTool v.4.5.27 or higher	TLU20504	n/a	DMX	set to DMX mode in display
LIN212D/LIN222D	FluxTool v.4.5.27 or higher	TLU20504	n/a	DMX	
LIN200D	FluxTool v.4.6.11 or higher	TLU20504	TLA20501	LEDcode	
LIN720D	FluxTool v.4.5.27 or higher	TLU20504	n/a	DMX	set to DMX mode in display

Programming Interface

Programming Tools (FluxTool)

Dimming Curve	LOG – Logarithmic LIN - Linear
Minimum Dim Level	Settable in 0.1% increments down to 0.1%

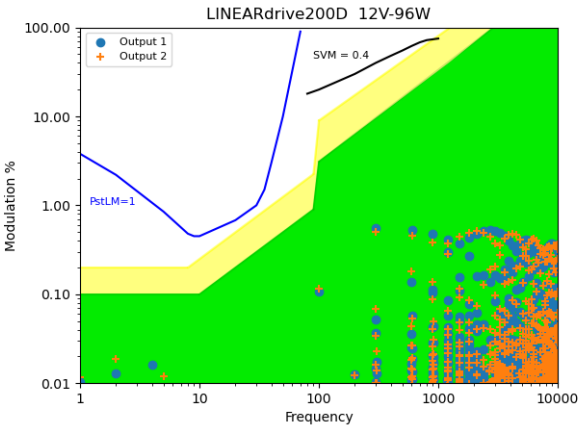
Dimming Curve

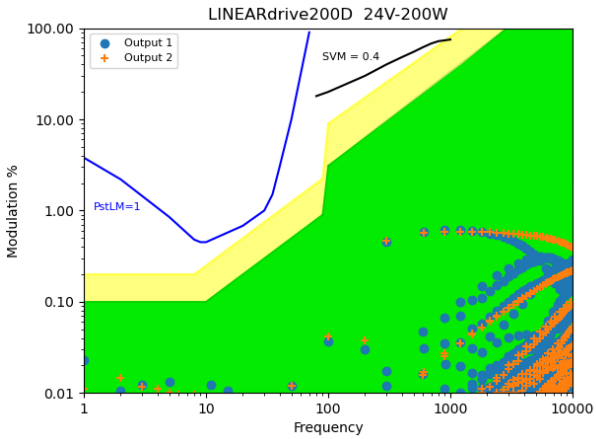


Flicker Performance

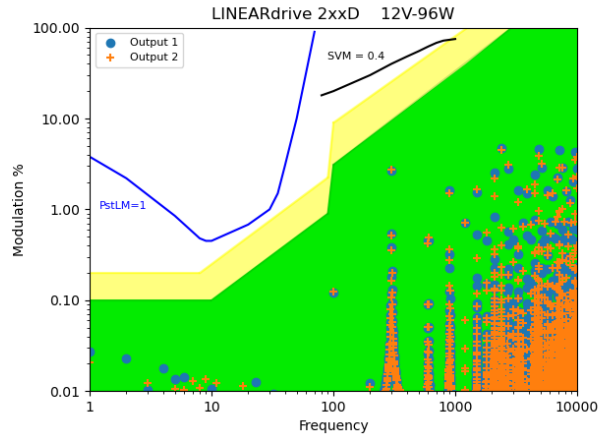
Typical performance of 12V and 24V DC input

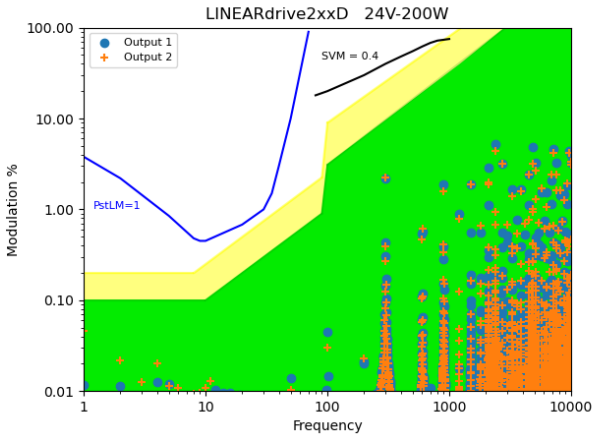
LIN200D-D2ZxX





LINEARdrive 211/212/222/180D





Wiring and Connector Lay Out

	Input (VDC)	Input (Control)		Output (LED Output)
	All types	LIN180D, LIN200D, LIN211D	LIN212D, LIN222D, LIN720D	All types
Connector Type	Push-in terminal WAGO 805 or equivalent	Push-in terminal WAGO 250 or equivalent	Push-in terminal Phoenix PTSA 0.5 or equivalent	Push-in terminal WAGO 805 or equivalent
Wire Dimensions	0.5-1.5 mm2	0.5-1.5 mm2	0.2-0.5 mm2	0.5-1.5 mm2
Wire Strip Length	9.0 mm	9.0 mm	9.0 mm	9.0 mm
Maximum Attached Cable Length	0.3m*			

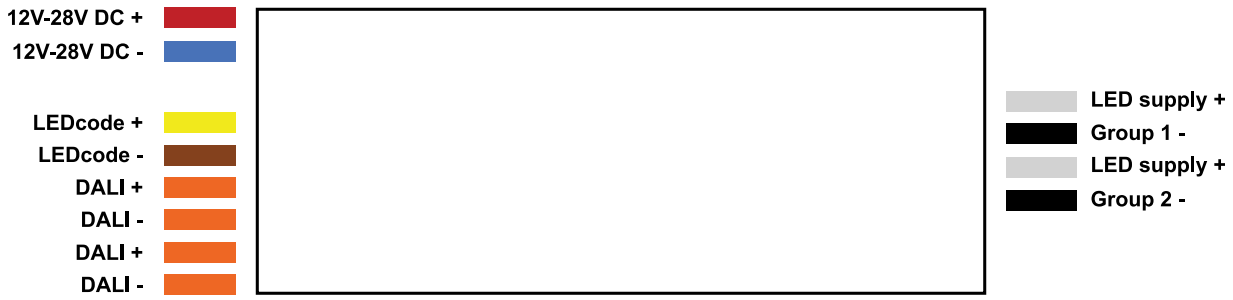
*Applicable to LIN200D-D2ZxX and LIN211/212/222D, driven by EMC for qualified power supplies

The connectors per product vary, see the reference table below:

	Input Connectors		Output Connectors	
Product	**Total number**	**Terminal type**	**Total number**	**Terminal type**
LIN180D	8	Push-in terminal WAGO 250 or equivalent	5	Push-in terminal WAGO 805 or equivalent
LIN200D-D2ZxX	6	Push-in terminal WAGO 250 or equivalent	4	
LIN211D	7	Push-in terminal WAGO 250 or equivalent	4	
LIN212/222D	9	Push-in terminal phoenix PTSA 0.5 or equivalent	4	
LIN720D	12		8	

Connector Layout

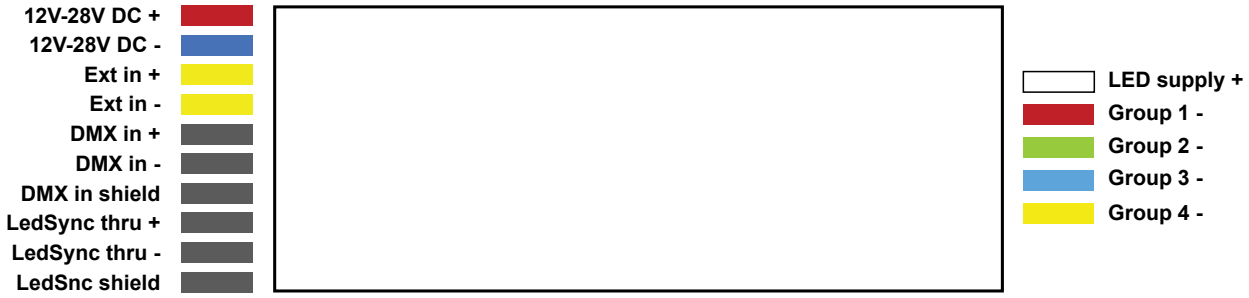
LIN200D-D2ZxX



LIN211D

LIN212/222D

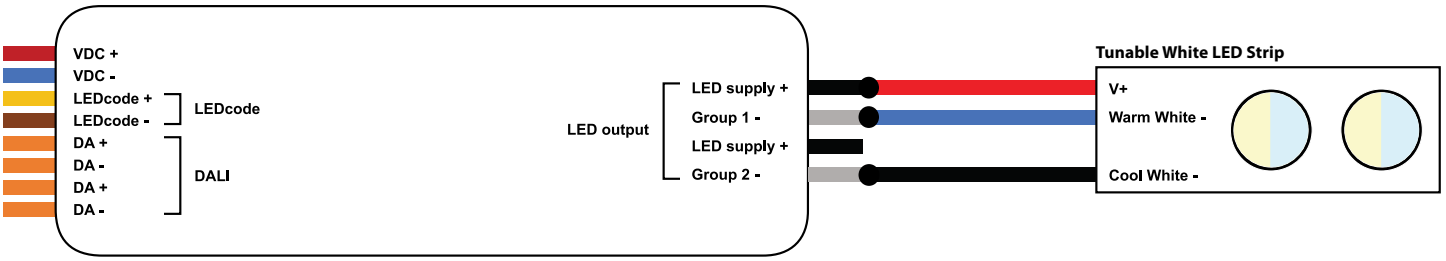
LIN180D



LIN720D

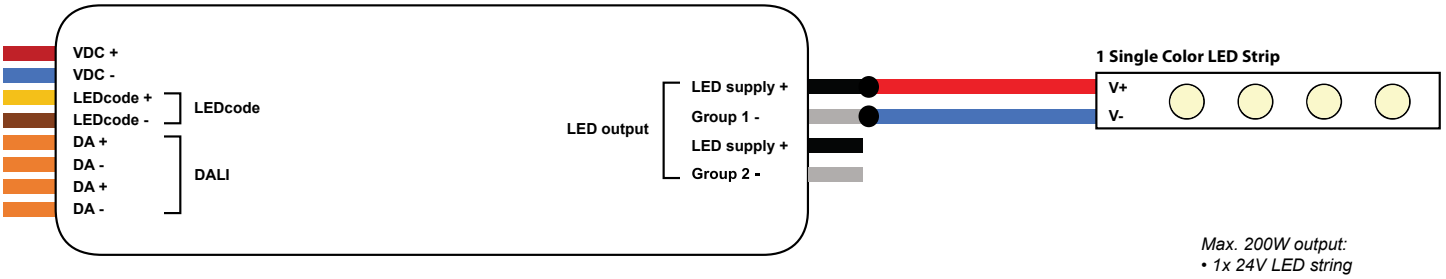
Wiring Diagram (Top View)

LIN200D-D2Z2D and LIN200D-D2Z2C:

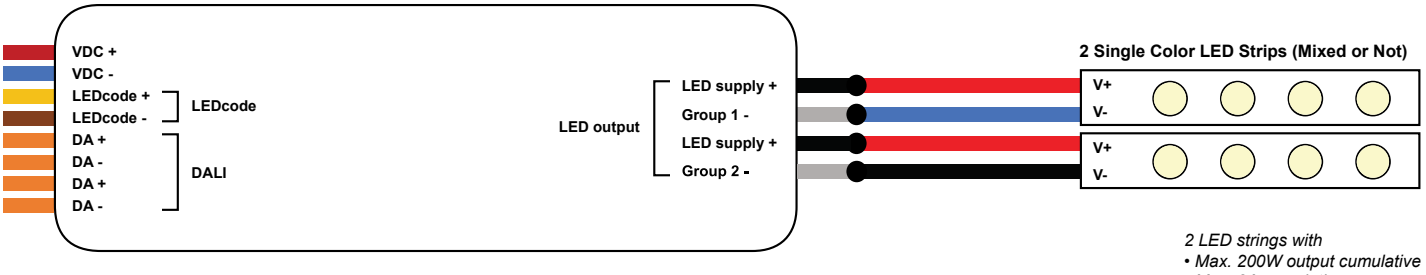


**The 2nd LED supply + is not connected.*

LIN200D-D2Z1D:



Max. 200W output:
- *1x 24V LED string*
- *1x 12V LED string with 8A*



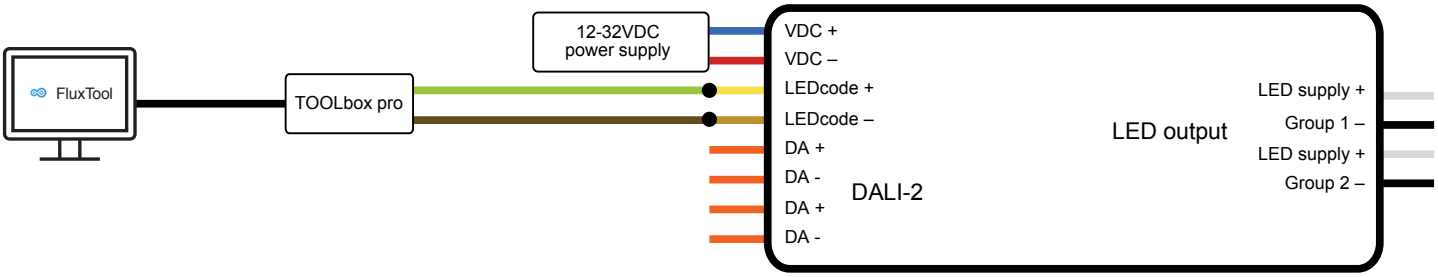
2 LED strings with
- *Max. 200W output cumulative*
- *Max. 8A cumulative*

Wiring diagrams of LIN180/211/212/222/720D can be found in separate documents on the website.

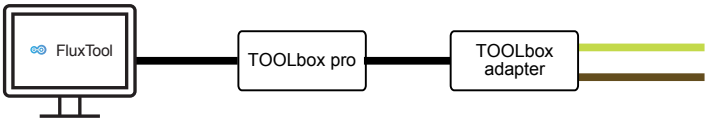
LIN200D Models with DALI-2:

Connecting to FluxTool with TOOLbox pro: via the LEDcode terminals

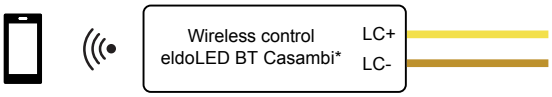
In case the driver is connected to a power supply:



In case the driver is NOT connected to a power supply:



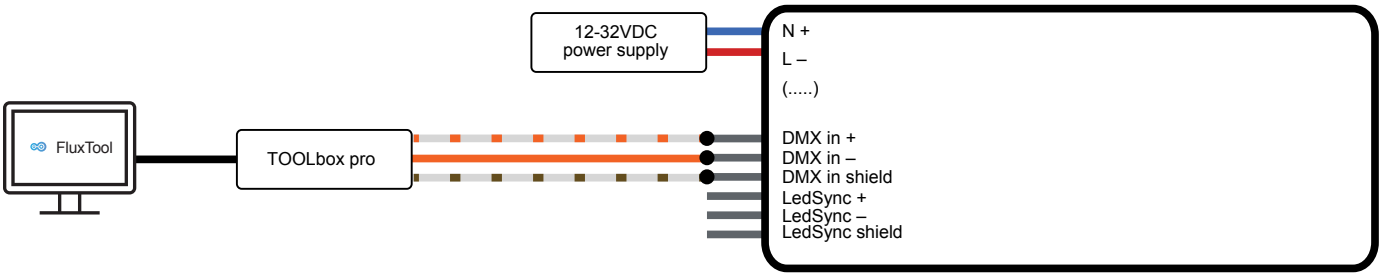
Connecting a Casambi wireless control module by eldoLED: via the LEDcode terminals



LI180D, LIN212D, LIN222D and LIN720D Models:

Connecting to FluxTool with TOOLbox pro: via the DMX terminals

Please note: the driver can only be programmed with FluxTool when connected to a power supply



Qualified Power Supplies

System compatibility	The mains power supplies listed in the table are already tested by eldoLED and are compatible with this eldoLED driver.		
	LIN180D	LIN200/211/212D	LIN720D
12V	Meanwell HLG-240H-12A	Meanwell HLG-240H-12A	
24V	Meanwell HLG-240H-24A	Meanwell HLG-240H-24A	Meanwell HLG-600H-24A

System performance	Performance requirements can only be guaranteed when all requirements are met on system level. The location, wiring and grounding of the mains switching power supply in the system may influence its performance characteristics. In different environments or applications, the same mains switching power supply may have different outcomes. Full load performance is guaranteed with maximum cable-length of 0.3 meter for mains switching power supply output cable (2 x 2.08mm²) to the LINEARdrive LED driver and maximum cable-length of 1.0 meter (2 x 1.5mm²) from the LINEARdrive LED driver to the LED load.

LED Driver Protection (LIN200D series only)

Thermal	The LED output current automatically decreases whenever the internal driver temperature exceeds a factory preset temperature. The LED output current increases once the internal driver temperature drops below the preset temperature threshold. If the internal driver temperature continues to increase, despite a decrease in output current, the LED driver will eventually shut down.
Circuit Protection	To prevent that excessive output current damages the LED driver, it is highly recommended to use appropriate circuit protection, in line with your applications' nominal current requirements and inrush current requirements, in combination with overvoltage protection (an OVP, OVC short circuit protected) AC/DC adapter or power supply.
LED Output Open Circuit	The LED output turns off whenever the LED driver detects an open circuit. The LED driver attempts a restart every 400ms after an open circuit is detected.
Reverse Polarity	The LED driver will not yield any current if the polarity of the load on the LED output is reversed. This situation will not damage the LED driver but may damage the LED load.

Standards and Compliances

UL, recognized component	UL1310 UL8750
ENEC Safety	EN 61347-1 EN 61347-2-13
ENEC Performance	EN 62384
Conducted Emissions	EN 55015
Radiated Emissions	EN 55015
Electrostatic Discharge	EN 61000-4-2
ECOdesign 2019/2020	Flicker for LED: Pst LM ≤ 1.0 at full load. Stroboscopic effect for LED: SVM ≤ 0.4 at full load.
DALI-2*	IEC 62386-101 Edition 2.0, IEC 62386-102 Edition 2.0, IEC 62386-207 Edition 1
DMX	ANSI E1.11 – 2008 (R2013), USITT DMX512-A ANSI E1.20 - 2010
0-10V	IEC/EN 60929 annex E NOTE: From 0.6V to 10V eldoLED LED drivers comply with IEC/EN 30929 annex E. Below 0.6V eldoLED LED drivers comply with ABL 0-10V Design Spec v1.2 enabling standby mode. For detailed dimming characteristics see 0-10V response chart in Control Characteristics.
Restriction of Hazardous Substance	RoHS3 (Directives 2011/65/EU-2015/863/EU)
SVHC-list Substances	REACH Art 33

*DALI products only

Safety

	Risk of electrical shock. May result in serious injury or death. Disconnect power before servicing or installing.
	The LED driver may only be connected and installed by a qualified electrician. All applicable regulations, legislation, and building codes must be observed. Incorrect installation of the LED driver can cause irreparable damage to the LED driver and the connected LEDs. Pay attention when connecting the LEDs: polarity reversal results in no light output and often damages the LEDs.
	LED drivers are designed and intended to operate LED loads only. Powering non-LED loads may push the LED driver outside its specified design limits and is, therefore, not covered by any warranty.
	eldoLED products are designed to meet the performance specifications as outlined at certain operating conditions in the data sheet. It is the responsibility of the fixture manufacturer or system engineer to test and validate the design and operation of the system under expected and potential use cases, including faults.
	Product renderings and dimensional drawings are generic for the housing type. Product label, connector type and quantity may vary.

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Warranty

eldoLED Products are covered by a 5-year limited warranty. This is the only warranty provided and no other statements in this datasheet create any warranty of any kind. All other express and implied warranties are disclaimed.
Complete warranty terms can be found at: www.eldoled.com/legal/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
The product images shown are for illustration purposes only and may not be an exact representation of the product.
Specifications subject to change without notice.