





Features

The High Efficacy (LLHE48 and LLHE64) series is a small form factor high performance constant voltage LED strip. Designed to deliver best in class efficacy while operating at low temperature, LLHE48 and LLHE64 deliver constant light output, outstanding color consistency and dimming performance without the need of an additional heat sink.

Mounting

LLED strip is equipped with 3M[™] adhesive transfer tape (9472LE).

Applications

Indoor only - millwork, cove, architectural reveals, undercabinet, display case, handrail, accent lighting.

Approvals

Class 2 damp listed

Operating voltage

24 VDC

Life (L90)

100,000 hours

Warranty 5 years













Technical information

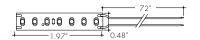
TYPE		LLHE48					
OUTPUT OPTIONS	LO-1W	LO	so	МО	но	VHO	хно
Lumens Output (3000K)	128 lm/ft	265 lm/ft	367 lm/ft	490 lm/ft	786 lm/ft	995 lm/ft	1119 lm/fi
Average Power Consumption (for a 4' section)	1.0 W/ft	1.9 W/ft	2.8 W/ft	3.5 W/ft	6.5 W/ft	7.5 W/ft	9.6 W/ft
Efficacy	128 lm/W	139 lm/W	131 lm/W	140 lm/W	121 lm/W	133 lm/W	117 lm/W
Cutting Increment (in)			1.97"			1.5	51"
Pitch Length		0.25"					9"
Max Run Length (in series)	60 ft	48 ft	42 ft	33 ft	21 ft	15 ft	13 ft
Dimensions		0.48"W x 0.06" H					

CCT	Multiplier				
ССТ	(reference - 3000K)	CRI	R_{f}	R_g	R ₉
2200K	0.73	92	91	97	42
2500K	0.81	93	96	96	62
2700K	0.94	92	90	99	58
3000K	1.00	92	89	99	57
3500K	1.02	92	89	99	60
4100K	1.02	92	86	94	71

Section Start/End Options

SL

Soldered lead wires (72")

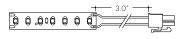


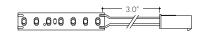
NC No connector



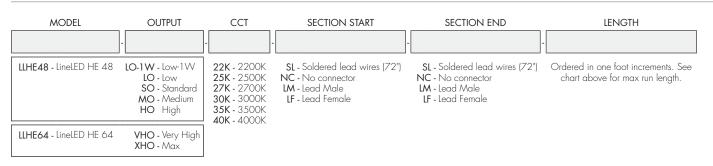
LF Lead Female 3" cable







Ordering code





Minii Connectors

Minii connectors are easy, field-installable accessories that make joining LL strip simple! Their minimal width allows them to fit into extrusions, while their transparent frame eliminates dark spots. **Note: verify internal extrusion dimensions to confirm compatibility**

LL-PJC-12-03

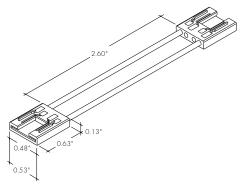
Jumper minii connector with 3" wire for LLHE LED strip



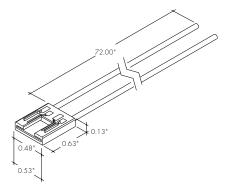
Power feed minii connector with $72^{\prime\prime}$ wire for LLHE LED strip

LL-BSC-12

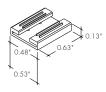
Butt splice minii connector for LED strip





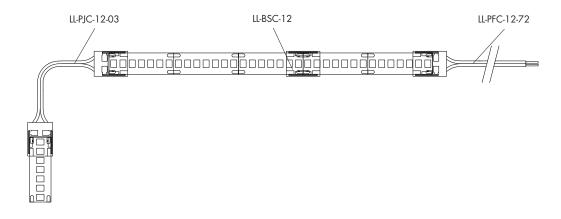


Not compatible with LLHE64



Not compatible with LLHE64

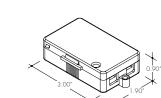
Sample Layout



Accessories

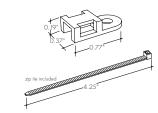
CL2

Silicon mounting Clip



LVSP-4T-BK

Low Voltage, 4 Terminal Splice Box, Black



recommended at every 12" when LineLED strip is facing down.

LL.ZIP

Cable/Wire Strain Relief Clip

*Not compatible with Minii connectors

BOS Channel (BOSC-XX)

10.48 - 0 60"



Lens Options / Light Transmission





GR Graze



CLA Channel (CLAC-XX)

0.77







Frosted

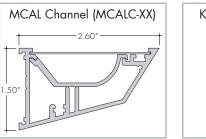


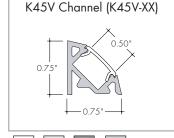


Round Square Frosted

13° Semi-Frosted

*Not compatible with Minii connectors





HF

















0.84





94%

C 82%

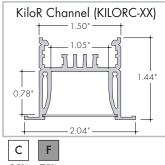


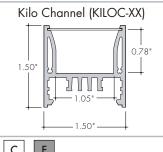


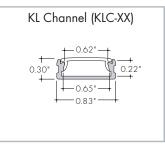




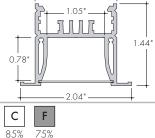






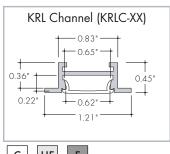


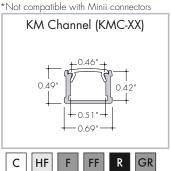
RF



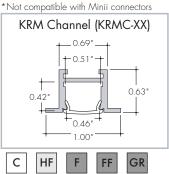




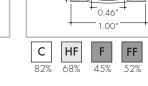




82% 68%







С HF

Installation

All mounting channels are field cuttable using miter saw with circular blade suitable for cutting aluminum.

Ordering

Extrusions are sold separately. View respective specsheets for details on ordering extrusions and their accessories (endcaps, mounting brackets, etc).

Led Dotting per Extrusion

using the frosted lens option

Extrusion	LED Model LLHE48	LED Model LLHE64
KSC, KRSC	CD	ND
KMC, KRMC, K45V	ND	ND
KXLC, KRXLC	ND	ND
K45V	CD	CD
K45R	ND	ND
KLC, KRLC	CD	ND
KILOC, KILORC	ND	ND
RO	ND	ND
RO15	ND	ND
BOSC	ND	ND
CLAC	ND	ND
MCAL	ND	ND



CD - Clear Dotting SD - Slight Dotting ND - No Dotting





М

64%

60%







81%

67%

51%





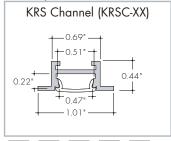
Q Round Square Frosted

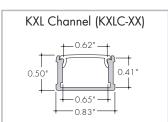
65%

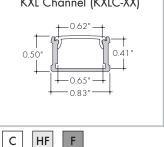
41%



*Not compatible with Minii connectors

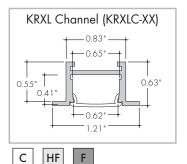


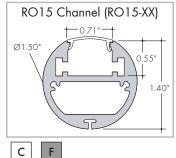




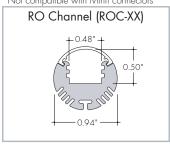
51%

67%











C

86%

Led Dotting per Extrusion

using the frosted lens option

Extrusion	LED Model LLHE48	LED Model LLHE64
KSC, KRSC	CD	ND
KMC, KRMC, K45V	ND	ND
KXLC, KRXLC	ND	ND
K45V	CD	CD
K45R	ND	ND
KLC, KRLC	CD	ND
KILOC, KILORC	ND	ND
RO	ND	ND
RO15	ND	ND
BOSC	ND	ND
CLAC	ND	ND
MCAL	ND	ND



CD - Clear Dotting ${\bf SD}\,$ - Slight Dotting ND - No Dotting

Installation

All mounting channels are field cuttable using miter saw with circular blade suitable for cutting aluminum.

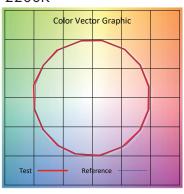
Ordering

Extrusions are sold separately. View respective specsheets for details on ordering extrusions and their accessories (endcaps, mounting brackets, etc).



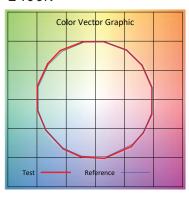
TM-30-15: Data

2200K



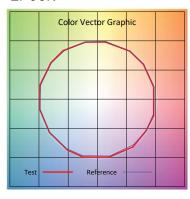
		Graphic Shifts (%)		
Hue Bin	Rf	Chroma	Hue	
1	96.8	-1.4%	-0.2%	
2	97.4	-0.7%	-0.3%	
3	96.2	-0.5%	-0.4%	
4	97.5	-0.8%	-1.0%	
5	97.3	-0.8%	1.1%	
6	95.4	1.0%	2.8%	
7	98.1	0.5%	0.6%	
8	95.7	2.8%	1.3%	
9	97.0	1.1%	-0.8%	
10	96.4	0.6%	-1.6%	
11	96.0	1.3%	-2.2%	
12	94.7	0.8%	-3.0%	
13	92.0	0.2%	-7.8%	
14	87.2	-1.1%	-7.9%	
15	96.6	-0.9%	-1.7%	
16	94.1	-1.6%	-3.2%	

2400K



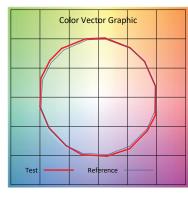
		Graphic Shifts (%)		
Hue Bin	Rf	Chroma	Hue	
1	97.3	-0.7%	-0.6%	
2	98.0	-0.7%	0.1%	
3	96.7	0.1%	1.2%	
4	97.4	0.0%	0.5%	
5	97.0	1.0%	1.9%	
6	95.0	2.9%	1.6%	
7	96.4	1.7%	-0.9%	
8	96.2	1.9%	-1.3%	
9	97.2	0.4%	-1.1%	
10	97.9	-0.3%	-0.3%	
11	96.9	1.2%	1.2%	
12	94.8	1.7%	-0.4%	
13	93.6	2.2%	-4.9%	
14	92.7	2.2%	-3.9%	
15	96.7	0.4%	-2.0%	
16	92.9	0.3%	-4.7%	

2700K



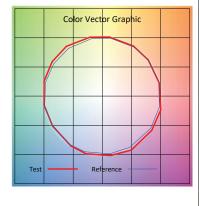
		Graphic Shifts (%)		
Hue Bin	Rf	Chroma	Hue	
1	97.1	-1.0%	-0.6%	
2	98.2	-0.7%	-0.2%	
3	97.0	-0.5%	0.8%	
4	97.1	-1.2%	0.2%	
5	96.9	-0.1%	1.9%	
6	96.2	1.7%	1.8%	
7	97.3	0.8%	-0.1%	
8	97.9	1.0%	-0.3%	
9	98.2	-0.1%	-0.1%	
10	96.8	-0.2%	1.5%	
11	94.8	0.9%	3.0%	
12	94.4	2.4%	0.2%	
13	95.7	1.6%	-2.4%	
14	94.2	2.7%	-3.1%	
15	96.5	-0.0%	-1.4%	
16	92.3	0.7%	-5.3%	

3000K



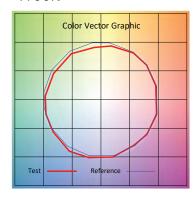
		Graphic Shifts (%)		
Hue Bin	Rf	Chroma	Hue	
1	95.9	0.2%	-1.7%	
2	97.4	0.2%	-0.2%	
3	96.3	0.7%	1.2%	
4	95.1	1.9%	1.6%	
5	94.9	2.3%	2.1%	
6	92.6	4.3%	1.2%	
7	92.1	3.9%	-2.2%	
8	93.1	3.3%	-2.3%	
9	94.8	1.2%	-2.8%	
10	94.6	-0.5%	-2.7%	
11	96.2	-0.1%	1.0%	
12	93.7	2.7%	-0.3%	
13	95.7	2.5%	-1.3%	
14	94.2	3.6%	-2.1%	
15	94.2	2.2%	-2.5%	
16	92.0	2.5%	-5.3%	

3500K



		Graphic Shifts (%)		
Hue Bin	Rf	Chroma	Hue	
1	96.4	0.5%	-1.5%	
2	97.7	0.3%	0.2%	
3	94.7	1.0%	2.2%	
4	94.4	1.7%	2.2%	
5	93.4	3.0%	2.3%	
6	91.4	5.0%	1.0%	
7	92.7	4.1%	-1.6%	
8	94.1	2.8%	-2.1%	
9	95.0	0.9%	-2.1%	
10	95.9	-0.8%	-1.6%	
11	93.5	1.1%	3.4%	
12	91.7	3.1%	3.0%	
13	95.3	3.1%	0.5%	
14	93.0	5.3%	-0.8%	
15	93.5	3.4%	-2.1%	
16	90.9	3.2%	-4.6%	

4100K



		Graphic S	Shifts (%)
Hue Bin	Rf	Chroma	Hue
1	91.5	-1.3%	1.6%
2	95.3	-0.1%	-0.4%
3	95.4	-1.0%	-1.3%
4	89.1	-4.8%	-3.5%
5	86.6	-8.7%	-2.1%
6	91.9	-5.0%	0.5%
7	87.8	-6.2%	4.0%
8	86.7	-3.5%	6.7%
9	82.7	-1.2%	11.7%
10	81.6	1.0%	10.5%
11	84.5	5.4%	8.0%
12	92.6	3.3%	-0.3%
13	90.9	2.3%	3.9%
14	92.6	-1.5%	-1.5%
15	86.6	0.5%	-4.4%
16	86.7	0.5%	-4.7%



HE64XHO

Total

Wattage

9.7

19.1

28.4

38.4

50.0

59.7

63.8

70.0

77.1

81.7

85.0

89.9

93.8

Power Consumption

	LLHE48	3-LO-1W	HE	48LO	HE	4850	HE4	OM8	HE4	18НО	HE6	4VHO	HE
Nominal Length	W/ft	Total Wattage	W/ft	Total Wattage	W/ft	Total Wattage	W/ft	Total Wattage	W/ft	Total Wattage	W/ft	Total Wattage	W/ft
1	0.90	0.90	1.7	1.7	2.5	2.5	3.5	3.5	5.7	5.7	7.6	7.6	9.7
2	0.95	1.90	1.9	3.7	2.7	5.4	3.5	7.0	7.3	14.7	7.6	15.1	9.6
3	0.97	2.90	2.0	5.7	2.8	8.2	3.5	10.2	7.1	20.6	7.5	22.6	9.5
4	0.98	3.90	1.8	7.1	2.8	11.2	3.5	13.9	6.5	25.4	7.5	30.1	9.6
5	0.98	4.90	1.8	9.0	3.0	14.6	3.6	17.6	6.4	31.6	7.6	38.4	9.8
6	0.98	5.90	1.9	11.3	2.9	17.9	3.5	21.4	6.4	38.7	7.6	46.1	9.8
7	0.99	6.90	1.8	13.1	2.9	20.8	3.5	25.1	6.2	44.1	7.6	52.3	9.2
8	0.99	7.90	1.8	14.7	2.9	23.3	3.6	28.5	6.2	49.4	7.6	60.1	8.8
9	1.02	9.20	1.8	16.4	2.9	25.9	3.5	31.9	6.1	55.2	7.6	67.4	8.6
10	1.02	10.20	1.8	18.1	2.9	28.6	3.5	35.5	6.1	60.5	7.4	74.4	8.2
11	1.02	11.21	1.7	19.1	2.8	31.2	3.5	38.9	6.4	70.2	7.2	79.2	7.7
12	1.02	12.22	1.7	20.4	2.9	34.4	3.5	42.3	6.1	73.4	7.0	83.4	7.5
13	1.02	13.23	1.7	22.1	2.8	36.8	3.5	45.7	5.9	76.9	6.9	90.2	7.2
14	1.02	14.24	1.6	22.8	2.8	39.3	3.5	48.8	5.7	79.4	6.6	92.7	
15	1.02	15.25	1.6	23.5	2.8	41.9	3.5	52.1	5.5	82.0	6.3	95.2	
16	1.02	16.26	1.6	25.6	2.8	45.3	3.5	56.5	5.2	84.3			
1 <i>7</i>	1.02	17.27	1.7	28.5	2.8	48.1	3.5	59.4	5.0	86.2			
18	1.02	18.28	1.7	30.4	2.8	51.0	3.5	62.8	4.9	88.1			
19	1.02	19.29	1.8	33.6	2.8	53.3	3.5	65.8	4.7	90.2			
20	1.02	20.30	1.8	35.8	2.8	56.0	3.5	69.0	4.6	91.5			
21	1.01	21.31	1.8	37.7	2.8	59.4	3.4	71.4	4.4	93.1			
22	1.01	22.32	1.8	39.5	2.8	61.3	3.3	73.5					
23	1.01	23.33	1.8	41.4	2.8	64.4	3.3	75.4					
24	1.01	24.34	1.8	43.1	2.8	66.0	3.2	77.2					
25	1.01	25.35	1.9	46.2	2.7	68.1	3.2	78.8					
26	1.01	26.36	1.9	48.2	2.7	70.7	3.1	79.8					
27	1.01	27.37	1.9	50.4	2.7	72.0	3.0	81.4					
28	1.01	28.38	1.9	52.2	2.6	73.6	3.0	82.9					
29	1.01	29.39	1.9	53.9	2.6	74.7	2.9	84.2					
30	1.01	30.40	1.9	57.7	2.5	76.1	2.9	86.1					
31	1.01	31.38	1.9	59.6	2.5	77.0	2.8	87.6					
32	1.01	32.36	1.9	61.4	2.4	77.7	2.8	89.2					
33	1.01	33.34	1.9	63.3	2.4	78.9	2.7	90.7					
34	1.01	34.32	1.9	65.0	2.3	78.0							
35	1.01	35.30	1.9	65.4	2.2	78.1							
36	1.01	36.28	1.9	67.1	2.2	79.5							
37	1.01	37.26	1.9	69.3	2.2	80.4							
38	1.01	38.24	1.9	71.1	2.1	80.9							
39	1.01	39.22	1.9	73.0	2.1	81.0							
40	1.01	40.20	1.9	74.7	2.0	81.2							
41	1.00	41.00	1.9	76.0	2.0	82.6							
42	1.01	42.00	1.8	77.3	2.0	83.0							
43	1.00	42.90	1.8	78.6									
44	1.00	43.80	1.8	79.9									

46

47

48

49

51-60

1.00

1.00

1.00

1.00

0.99

0.99

1.8

81.8

82.5

83.1

45.60

46.50

47.40

48.20

49.60

59.40



Voltage Drop Calculator

The below chart assumes nominal voltage of 24 Volts and a Voltage Drop Allowance of 3% through the wire

Wattage	Maximum Wire Length From Power Supply to Start of Run [ft]									
[W]	12 AWG	14 AWG	16 AWG	18 AWG	20 AWG	22 AWG	24 AWG			
5	1088.2	684.4	430.3	270.6	170.2	107.1	67.3			
10	544.1	342.2	215.1	135.3	85.1	53.5	33.7			
15	362.7	228.1	143.4	90.2	56.7	35.7	22.4			
20	272.0	171.1	107.6	67.7	42.6	26.8	16.8			
25	217.6	136.9	86.1	54.1	34.0	21.4	13.5			
30	181.4	114.1	71.7	45.1	28.4	17.8	11.2			
35	155.5	97.8	61.5	38.7	24.3	15.3	9.6			
40	136.0	85.5	53.8	33.8	21.3	13.4	8.4			
45	120.9	76.0	47.8	30.1	18.9	11.9	7.5			
50	108.8	68.4	43.0	27.1	17.0	10.7	6.7			
55	98.9	62.2	39.1	24.6	15.5	9.7	6.1			
60	90.7	57.0	35.9	22.6	14.2	8.9	5.6			
65	83.7	52.6	33.1	20.8	13.1	8.2	5.2			
70	77.7	48.9	30.7	19.3	12.2	7.6	4.8			
75	72.5	45.6	28.7	18.0	11.3	7.1	4.5			
80	68.0	42.8	26.9	16.9	10.6	6.7	4.2			
85	64.0	40.3	25.3	15.9	10.0	6.3	4.0			
90	60.5	38.0	23.9	15.0	9.5	5.9	3.7			
96	56.7	35.6	22.4	14.1	8.9	5.6	3.5			



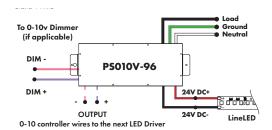
Power Supplies

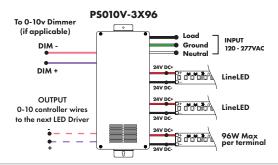
See Power Supply instructions and spec sheet for wiring information. For a complete list of compatible dimmers, see Compatible Dimming Chart on the Resources page.

0-10V Dimming Power Supplies 0.1% 120VAC - 277VAC



MODELS	96W	3X96
Length	14.40"	13.00"
Width	5.20"	6.62"
Depth	2.60"	4.20"



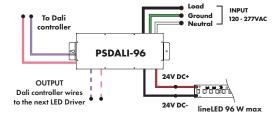


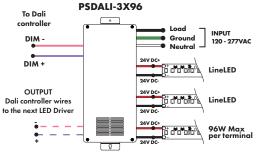
DALI 0% Dimming Power Supplies 120VAC - 277VAC



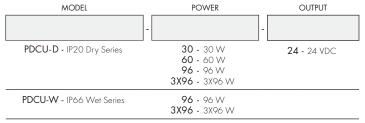
Features eldoLED's LINEARdrive configurable dimmable drivers

Model	96W	3X96
Length	14.40"	13.00"
Width	5.20"	6.62"
Depth	2.60"	4.20"

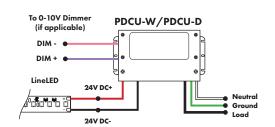




Universal Power Supply 1% 120VAC - 277VAC



0-10V dims down to 1%, MLV/ELV/TRIAC dims down to 1%.
For a complete list of compatible dimmers, see <u>Compatible Dimming Chart</u> on the Resources page.



MODEL	PDCU-W-96W	PDCU-W-3X96W	PDCU-D-30W	PDCU-D-60W	PDCU-D-96W	PDCU-D-3X96W
Length	8.66"	11.85"	6.10"	7.93"	8.25"	9.57"
Width	3.73"	4.32"	3.35"	3.35"	4.10"	5.94"
Depth	1.61"	1.81"	1.33	1.32"	1.56"	1.13"

Linear LED strip - 24 VDC

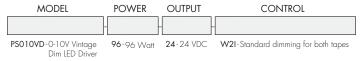


Power Supplies

See Power Supply instructions and spec sheet for wiring information. For a complete list of compatible dimmers, see Compatible Dimming Chart on the Resources page.

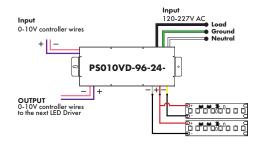
Customizable Dim to Warm or Variable White via 0 - 10V

(for tunable white or warm dimming control of Dynamic option)

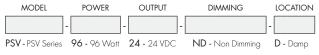


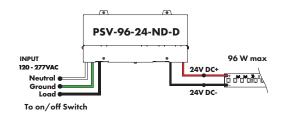
*Zonal control power supplies

MODELS	96W
Length	14.40"
Width	5.20"
Depth	2.60"



Non-Dimming Power Supply 120VAC - 277VAC

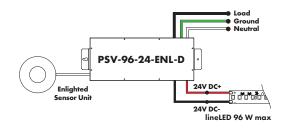




Enlighted Enabled Dimming Power Supplies 120VAC - 277VAC



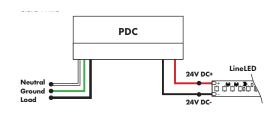
Model	96W
Length	14.40"
Width	5.20"
Depth	2.60"



Triac, MLV, ELV Compatible Dimmers



MODELS	96W
Length	8.25"
Width	4.10"
Depth	1.56"

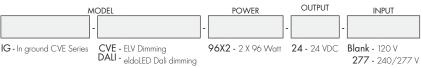




Power Supplies

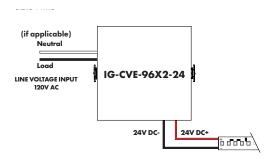
See Power Supply instructions and spec sheet for wiring information. For a complete list of compatible dimmers, see Compatible Dimming Chart on the Resources page.

In-Ground Power Supplies



Both dims down to 0%

MODEL	Dual Circuit
Length	8.40"
Width	8.30"
Depth	8.10"



\$\tutron

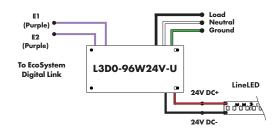
Luminii is a Lutron OEM Advantage Partner

Lutron Power Supplies 0.1%

MODEL

L3D0-96W24	4V-U
Hi-lume™ 0.1% EcoSystem Voltage LED Driv	ver with Soft-On, Fade-to-Black™

MODELS	L3D0
Length	10.50"
Width	5.50"
Depth	2.00"



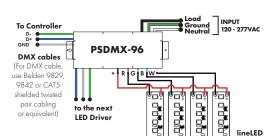
DMX Dimming Power Supplies 120VAC - 277VAC

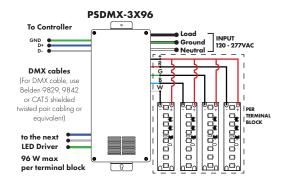


Features eldoLED's LINEARdrive configurable dimmable drivers

*Zonal control power supplies. Control multiple tapes/zones using DMX channels.

96W	3X96
14.40"	13.00"
5.20"	6.60"
2.60"	4.20"
	14.40"







Decoders



DMX512 decoder with RDM functionality features 5 PWM output channels with common anode. High PWM output frequency range allows the product to be used in HD video conferencing spaces. All DMX products to be installed per DMX512 Standard.

Power 96 Watt

Inputs RJ45, XLR-5Pin, Terminal Block

MODEL

DDMX-5CH-RDM-PRO

DDMX-5CH-RDM-PRO-DMX512 Decoder

DMX Channels

1 to 5 settable

PWM Output Resolution Ratio

8 or 16 bit

PWM Output Frequency

500Hz - 30KHz

Output Dimming Curve Gamma Value

 $0.1 \sim 9.9$



MODEL

DDMX-RGBW

DDMX-RGBW - DMX512 Decoder

Translates controller DMX512 programs for RGB and white LED strips.

Unique DMX address for the decoder can be set easily and displayed by the numeric display on the case. Changing and resetting the DMX address requires manual input.

Use power repeater to expand output (Luminii part# RGBW-SR).

Operating Voltage 12-36 VDC

Power Capacity up to 96W at 24V Operating Temperature Range from -4°F to +122°F in case

PWM Output Frequency 200Hz or 1500Hz



MODEL

RGBW-RC-R

RGBW-RC-R - RGBW receiver

The RGBW receiver is easily paired with controller by the click of a button. Receiver can be reset to factory settings at any time.

Each receiver can store one static RGB color, one color sequence, and one brightness setting for the white LED strip. Receivers assigned to the same scene within the same zone will have the same LED static color and color sequence.

Operating Voltage 12-36 VDC

Power Capacity up to 96W at 24V **Operating Temperature Range** from $-4^{\circ}F$ to $+122^{\circ}F$ in case



Decoders



MODEL

RGBW-SR

RGBW-SR - RGBW signal repeater

Extends identical signal when connected in series to an RGBW LED control system. The RGBW signal repeater works with Luminii RGB and RGBW controllers, receivers, and decoders.

RGBW signal can be extended indefinitely when adequate power supply (not included) is connected to the system.

Operating Voltage

Power Capacity up to 96W at 24V

Operating Temperature Range from -4°F to +122°F in case



MODEL

RGBW-WI-R

RGBW-WI-R - WIFI generator

RGBW-WI-R creates a local network that enables any electronic device (phone, tablet, etc.) to control the RGB/W strip connected to a RGBW-RC-R receiver.

The control functions are achieved through a free application download for Android and iOS devices called REALCOLOR.

Operating Voltage

Power Supply PI-130-24 (included) **Operating Temperature Range** from -4°F to +122°F in case



MODEL

TSDMX-E

TSDMX-E - Touchscreen DMX controller

Programmable advanced DMX512 lighting controller featuring a touch-screen interface. Operates as stand alone controller or integrated with most architectural lighting control systems. Can controller endless DMX512 enabled devices.

Mounts to standard single or dual gang wall box with the included power supply inside the junction box. Terminal block design for power and data connections.

Features

- Sleek glass design which sits 0.43" from the wall
- Graphical color display to show selected environment
- Color/dimmer/speed palette
- Color temperature mixing
- Touch sensitive buttons. No mechanical parts
- Touch sensitive wheel allows for accurate color selection
- Multi-zone microSD memory
- Multi-room control with 500 scenes, 10 zones
- 1024 DMX channels. Control 340 RGB fixtures
- USB & Ethernet connectivity for programming and control

Power Supply

7 VDC (included)

Programmability

PC, Mac, Tablet, Smartphone

Output Signal

DMX512 (1024 channels)

Color Parameters

- Brightness
- Saturation
- Speed of color changing sequence
- Fading / dimming / brightness