



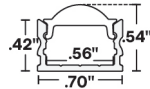
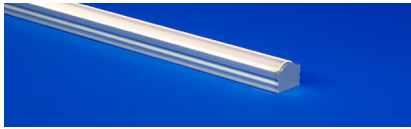
ESSENTIALS LALO-OPTICS (02)

WD APPLICATIONS

24VDC Linear Fixtures - Surface & Recessed



410.2 & 410.16
Closet Rated
in 1.5HE



- Shallow, low-profile linear fixture for surface or recessed installations
- Produces a 17° beam angle
- Mounting options include stainless steel clips, magnets, and low-profile magnet mounts
- Features painted end caps to match extrusion finish
- Suitable for installation in the storage area of a clothes closet when specified with LEDs at 4.0 watts or less per foot per NEC regulations
- Can be suitable for exterior use when specified as wet, contact factory for more information
- Used in applications to provide warmer CCTs as the light is dimmed
- When using DALI and DMX power supplies, LED wattage must be doubled
- Optional plastic louver accessory available in white or black for added glare control

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PRODUCT	WATTS/ FT	CCT	RATED	EFFICIENCY	LENS	WIRE INPUT/ OUTPUT	CONNECTOR/ WIRE IN	CONNECTOR/ WIRE OUT	WIRE COLOR	WIRE TYPE	MOUNTING	FINISH	LENGTH (IN)	EXACT/ OPTIMAL
				STD	17DEG									

Sample Part Number: **LL2WD-6.0-19/30-DRY-STD-17-P1-BW-BW-BK-CL2-SST-BK-48"-E**

<div><div>1</div><div>PRODUCT</div></div> <div><div>LL2WD</div><div>LED engine is built with 2 wires suitable for phase dimming control. See following pages for compatible power supplies.</div></div> <div><div>LL2DW</div><div>LL2DW-USA</div><div>Select USA option for BAA and BABA projects. Only DRY or WET ratings apply.</div><div>LED engine is built with 3 wires requiring 0-10V, DMX or DALI control. Using DALI, DMX, or non QTL power supplies may double watts/ft. See following pages for compatible power supplies.</div></div>	<div><div>2</div><div>WATTS/FT</div></div> <div><div>6.0</div><div>6.0W/ft</div></div> <div><div>1.5HE</div><div>1.5W/ft HE</div></div> <div><div>2.5HE</div><div>2.5W/ft HE</div></div> <div><div>1.5HE</div><div>1.5W/ft HE</div></div> <div><div>2.5HE</div><div>2.5W/ft HE</div></div>	<div><div>3</div><div>CCT</div></div> <div><div>19/27</div><div>1900K/2700K</div></div> <div><div>19/30</div><div>1900K/3000K</div></div> <div><div>20/27</div><div>2000K/2700K</div></div> <div><div>20/30</div><div>2000K/3000K</div></div> <div><div>27/40</div><div>2700K/4000K</div></div> <div><div>27/55</div><div>2700K/5500K</div></div> <div><div>24/30</div><div>2400K/3000K</div></div> <div><div>27/40</div><div>2700K/4000K</div></div>	<div><div>4</div><div>RATED</div></div> <div><div>DRY</div><div>IP20</div></div> <div><div>WET</div><div>IP67</div></div> <div><div>Can be suitable for exterior use, contact factory for more information</div></div> <div><div>DRY</div><div>IP20</div></div> <div><div>WET</div><div>IP67</div></div> <div><div>Can be suitable for exterior use, contact factory for more information</div></div> <div><div>DMP</div><div>IP54</div></div>	<div><div>5</div><div>EFFICIENCY</div></div> <div><div>STD</div><div>Standard</div></div>	<div><div>6</div><div>LENS</div></div> <div><div>17DEG</div><div>Optical 17°</div></div> <div><div>For representation of LED visibility, see Diode Visibility section on following pages. For beam angles, see Photometric Performance section on following pages. For optional snap-on louver ordering, see External Louver Accessory section on following pages</div></div>
<div><div>7</div><div>WIRE INPUT/OUTPUT</div></div> <div><div>S1</div><div>Single 1 (Input only) - End Feed</div></div> <div><div>S2</div><div>Single 2 (Input only) - Bottom Feed</div></div> <div><div>P1</div><div>Pass Through 1 (Input/output) - End Feed</div></div> <div><div>P2</div><div>Pass Through 2 (Input/output) - Bottom Feed</div></div>	<div><div>8</div><div>CONNECTOR/WIRE IN</div></div> <div><div>BW</div><div>Bare Wire (Standard 24")</div></div> <div><div>BRL</div><div>Barrel</div></div> <div><div>CON6</div><div>Connector 6"</div></div> <div><div>CON24</div><div>Connector 24"</div></div> <div><div>BW</div><div>Bare Wire (Standard 24")</div></div> <div><div>BRL</div><div>Barrel</div></div> <div><div>CON6</div><div>Connector 6"</div></div> <div><div>CON24</div><div>Connector 24"</div></div>	<div><div>9</div><div>CONNECTOR/WIRE OUT</div></div> <div><div>CLS</div><div>Closed End (No feed)</div></div> <div><div>BW</div><div>Bare Wire (Standard 24")</div></div> <div><div>BRL</div><div>Barrel</div></div> <div><div>CON6</div><div>Connector 6"</div></div> <div><div>CON24</div><div>Connector 24"</div></div>	<div><div>10</div><div>WIRE COLOR</div></div> <div><div>WH</div><div>White</div></div> <div><div>BK</div><div>Black</div></div> <div><div>N/A</div><div>For Barrel</div></div> <div><div>wet barrel only available in black</div></div>		
<div>For continuous mounting, consider bottom feed.</div>					
<div><div>11</div><div>WIRE TYPE</div></div> <div><div>CL2</div><div>Class 2</div></div> <div><div>CL2P</div><div>Plenum Rated</div></div> <div><div>N/A</div><div>For Barrel</div></div> <div><div>CL2P only available with bare wire leads (BW)</div></div>	<div><div>12</div><div>MOUNTING</div></div> <div><div>SST</div><div>Stainless Steel</div></div> <div><div>M4</div><div>Low Profile Magnet</div></div> <div><div>MG</div><div>Magnet</div></div>	<div><div>13</div><div>FINISH</div></div> <div><div>ST</div><div>Satin</div></div> <div><div>BK</div><div>Black</div></div> <div><div>CU</div><div>Custom</div></div> <div><div>Custom finishes require a longer lead time, consult factory</div></div>	<div><div>14</div><div>LENGTH (IN)</div></div> <div><div>Minimum length is 12", maximum length is 98" not including end caps. Contact us for lengths under 12".</div></div>	<div><div>15</div><div>EXACT/OPTIMAL</div></div> <div><div>O</div><div>Optimal Illumination</div></div> <div><div>E</div><div>Exact Specified Length</div></div> <div><div>Exact fixtures match the exact length you specify, but they may have dim spots at the ends. Optimal fixtures are slightly shorter than the length specified, but provide full illumination from end to end. See Exact/Optimal Fixture Length charts.</div></div>	

For continuous mounting, consider bottom feed.

BRL only available with LL2WD
BW: Standard length is 24", Max length is 120".
Request custom length by writing in part number next to BW (example: BW48)

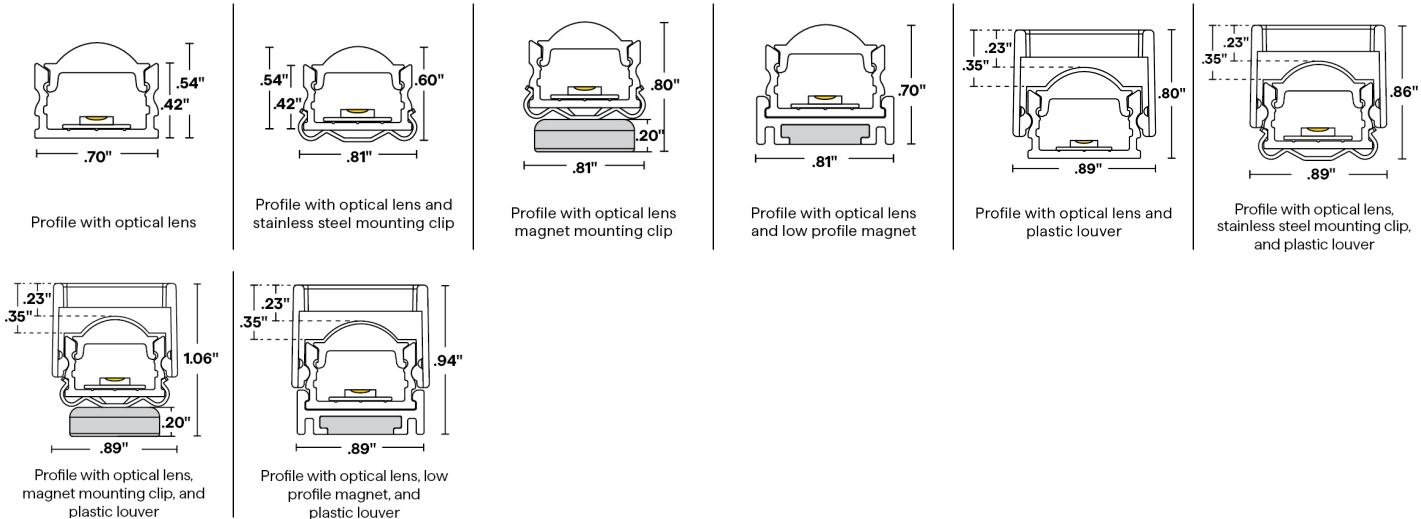
BRL only available with LL2WD
BW: Standard length is 24", Max length is 120".
Request custom length by writing in part number next to BW (example: BW48)



ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

24VDC Linear Fixtures - Surface & Recessed

1 PRODUCT - DIMENSIONS



2 DELIVERED LUMENS

[Calculated L70 = 70000 hrs]
Tested with LL2WD-6.0-30-DRY-STD

	3000K	
	LM/FT	CRI
17	454	98

[Calculated L70 = 70000 hrs]
Tested with LL2DW-**-30-DRY-STD

	1.5HE W/FT		2.5HE W/FT	
	LM/FT	CRI	LM/FT	CRI
17	153	98	242	98

6 DIODE VISIBILITY

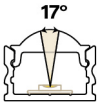


Optical lens

PHOTOMETRIC PERFORMANCE

Nominal beam spread shown, beam spread varies based on light engine. For more detailed information, see photometric data.

17DEG



Optical 17°



ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

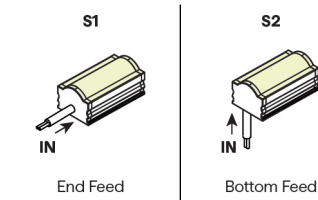
24VDC Linear Fixtures - Surface & Recessed

TEMPERATURE RATINGS

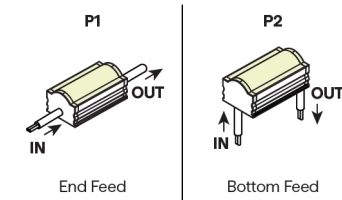
		WD 6.0 W/FT		DW 1.5 HE W/FT		DW 3.0 HE W/FT		DW 2.5 HE W/FT		DW 5.0 HE W/FT	
				QTL power supply other than DALI, DMX		DALI, DMX, or non-QTL power supply		QTL power supply other than DALI, DMX		DALI, DMX, or non-QTL power supply	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
DRY	Ambient Operating Temp - Surface	-4°F	115°F	-13°F	105°F	-4°F	120°F	-4°F	135°F	-4°F	120°F
DMP	Ambient Operating Temp - Surface	**	**	-4°F	140°F	-4°F	130°F	-4°F	130°F	-4°F	115°F
WET	Ambient Operating Temp - Surface	-4°F	110°F	-4°F	140°F	-4°F	130°F	-4°F	130°F	-4°F	115°F

7 WIRE INPUT/OUTPUT

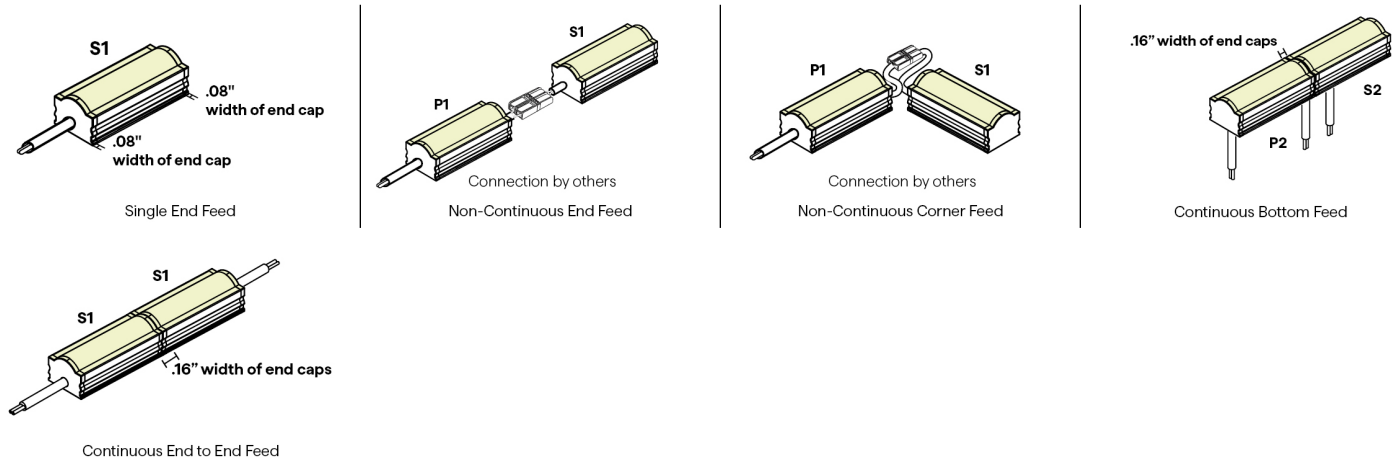
SINGLE (Input only)



PASS THROUGH (Input/Output)

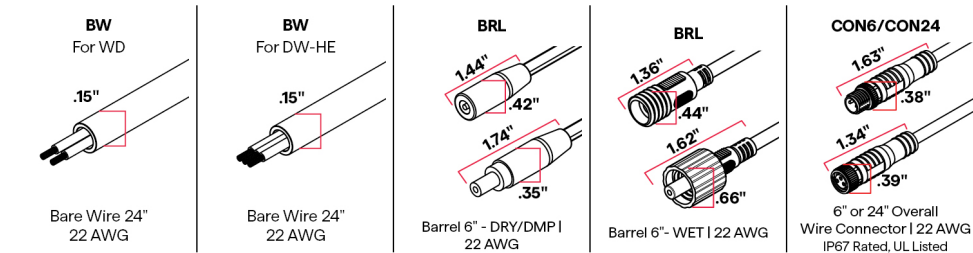


CONFIGURATION OPTIONS



8 / 9 CONNECTOR/WIRE - IN/OUT

Connector/Wire In or Out not needed to specify product. Standard configuration is BW for Wire In and CLS for Wire out



10 WIRE COLOR



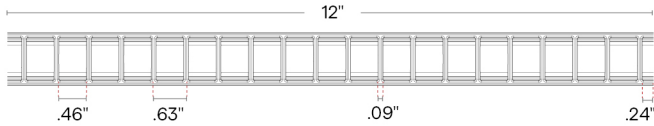


ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

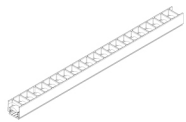
24VDC Linear Fixtures - Surface & Recessed

EXTERNAL LOUVER ACCESSORY

PLASTIC



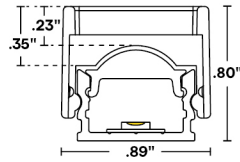
L1-XX



Lumen Multiplier

WH BK

0.73 0.53

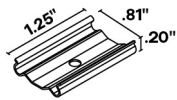


Profile with plastic louver

To order separately use
LALO-L1-OPTICS-KIT-WH or
LALO-L1-OPTICS-KIT-BK

12 MOUNTING

SST



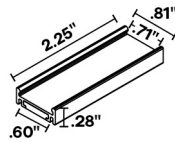
Stainless Steel Clip

2 clips provided for 4' or less; 4 clips provided for greater than 4'

To order separately use SST-01

Each clip comes with a #4 x 5/8" Flat Head SS

M4

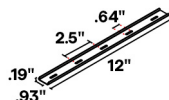


Low Profile Magnet

One M4 provided per foot.

To order separately use
MG-04

MMA-04



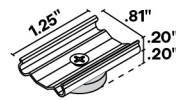
Magnet Mount
Accessory for M4

Sold separately, to order use
MMA-04

Each bracket comes with 2 #6 x 5/8" Flat Head SS

Required when mounting to a non-magnetic surface

MG

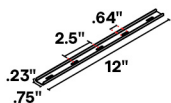


Magnet Clip

One MG provided per foot

To order separately use MG-01

MMA-01



Magnet Mount
Accessory of MG-01

Sold separately, to order use
MMA-01

Each bracket comes with 2 #6 x 5/8" Flat Head SS

Required when mounting to a non-magnetic surface

13 FINISH



Satin

Black

Custom finishes require a longer lead time, consult factory



ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

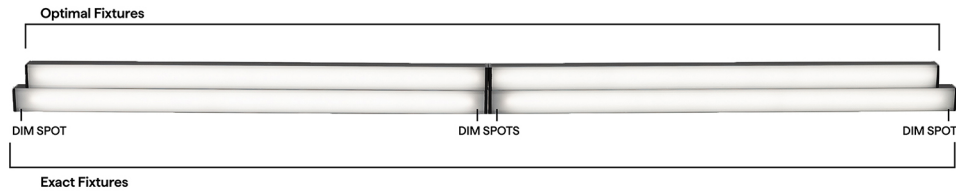
24VDC Linear Fixtures - Surface & Recessed

14 EXACT/OPTIMAL FIXTURE LENGTH

[E/O Length Calculator →](#)

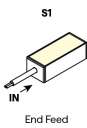
[E/O Explained →](#)

Exact fixtures are the exact length specified. Optimal fixtures' length is rounded down based on LED cut points to allow the fixture to be illuminated end to end. For runs with multiple fixtures that need to fill a specific length, it's recommended to order all optimal fixtures with an exact fixture at the end of the run.

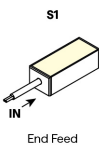
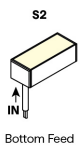
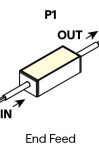
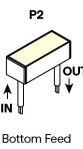


WD DRY LENGTHS BY INCH

EXACT LENGTH

Requested Length	Potential dim spot on either end of a S1 fixture
	
12"	1"
13"	0.5"
14"	1"
15"	0.5"
16"	1"
17"	0.5"
18"	1"
19"	0.5"
20"	1"
21"	0.5"
22"	1"
23"	0.5"
24"	1"
36"	1"
48"	1"
60"	1"
72"	1"
84"	1"
96"	1"

OPTIMAL LENGTH

Requested Nominal Length	S1 & S2		P1 & P2	
	S1	S2	P1	P2
				
12"	10.41"		10.66"	
13"	12.41"		12.66"	
14"	12.41"		12.66"	
15"	14.41"		14.66"	
16"	14.41"		14.66"	
17"	16.41"		16.66"	
18"	16.41"		16.66"	
19"	18.41"		18.66"	
20"	18.41"		18.66"	
21"	20.41"		20.66"	
22"	20.41"		20.66"	
23"	22.41"		22.66"	
24"	22.41"		22.66"	
36"	34.41"		34.66"	
48"	46.41"		46.66"	
60"	58.41"		58.66"	
72"	70.41"		70.66"	
84"	82.41"		82.66"	
96"	94.41"		94.66"	



ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

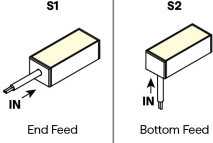
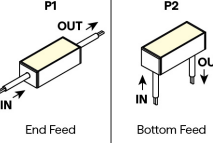
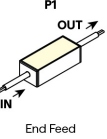
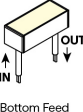
24VDC Linear Fixtures - Surface & Recessed

WD WET LENGTHS BY INCH

EXACT LENGTH

Requested Length	Potential dim spot on either end of a S1 fixture 
12"	1"
13"	0.5"
14"	1"
15"	0.5"
16"	1"
17"	0.5"
18"	1"
19"	0.5"
20"	1"
21"	0.5"
22"	1"
23"	0.5"
24"	1"
36"	1"
48"	1"
60"	1"
72"	1"
84"	1"
96"	1"

OPTIMAL LENGTH

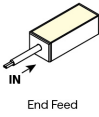
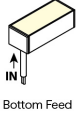
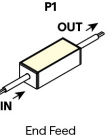
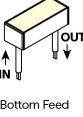
Requested Nominal Length	S1 & S2		P1 & P2	
	 S1 End Feed	 S2 Bottom Feed	 P1 End Feed	 P2 Bottom Feed
12"	10.61"		10.76"	
13"	12.61"		12.76"	
14"	12.61"		12.76"	
15"	14.61"		14.76"	
16"	14.61"		14.76"	
17"	16.61"		16.76"	
18"	16.61"		16.76"	
19"	18.61"		18.76"	
20"	18.61"		18.76"	
21"	20.61"		20.76"	
22"	20.61"		20.76"	
23"	22.61"		22.76"	
24"	22.61"		22.76"	
36"	34.61"		34.76"	
48"	46.61"		46.76"	
60"	58.61"		58.76"	
72"	70.61"		70.76"	
84"	82.61"		82.76"	
96"	94.61"		94.76"	

DW-HE DRY DMP LENGTHS BY INCH

EXACT LENGTH

Requested Length	Potential dim spot on either end of a S1 fixture 
12"	1"
13"	0.5"
14"	1"
15"	0.5"
16"	1"
17"	0.5"
18"	1"
19"	0.5"
20"	1"
21"	0.5"
22"	1"
23"	0.5"
24"	1"
36"	1"
48"	1"
60"	1"
72"	1"
84"	1"
96"	1"

OPTIMAL LENGTH

Requested Nominal Length	S1 & S2		P1 & P2	
	 S1 End Feed	 S2 Bottom Feed	 P1 End Feed	 P2 Bottom Feed
12"	10.51"		10.86"	
13"	12.51"		12.86"	
14"	12.51"		12.86"	
15"	14.51"		14.86"	
16"	14.51"		14.86"	
17"	16.51"		16.86"	
18"	16.51"		16.86"	
19"	18.51"		18.86"	
20"	18.51"		18.86"	
21"	20.51"		20.86"	
22"	20.51"		20.86"	
23"	22.51"		22.86"	
24"	22.51"		22.86"	
36"	34.51"		34.86"	
48"	46.51"		46.86"	
60"	58.51"		58.86"	
72"	70.51"		70.86"	
84"	82.51"		82.86"	
96"	94.51"		94.86"	

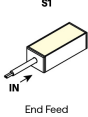


ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

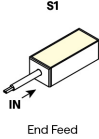
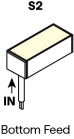
24VDC Linear Fixtures - Surface & Recessed

DW-HE WET LENGTHS BY INCH

EXACT LENGTH

Requested Length	Potential dim spot on either end of a S1 fixture
	S1 
12"	1"
13"	0.5"
14"	1"
15"	0.5"
16"	1"
17"	0.5"
18"	1"
19"	0.5"
20"	1"
21"	0.5"
22"	1"
23"	0.5"
24"	1"
36"	1"
48"	1"
60"	1"
72"	1"
84"	1"
96"	1"

OPTIMAL LENGTH

Requested Nominal Length	S1 & S2 	P1 & P2 
	S1 End Feed	P1 End Feed
12"	10.66"	11.06"
13"	12.66"	11.06"
14"	12.66"	13.06"
15"	14.66"	13.06"
16"	14.66"	15.06"
17"	16.66"	15.06"
18"	16.66"	17.06"
19"	18.66"	17.06"
20"	18.66"	19.06"
21"	20.66"	19.06"
22"	20.66"	21.06"
23"	22.66"	21.06"
24"	22.66"	23.06"
36"	34.66"	35.06"
48"	46.66"	47.06"
60"	58.66"	59.06"
72"	70.66"	71.06"
84"	82.66"	83.06"
96"	94.66"	95.06"

COMPATIBLE POWER SUPPLIES

See power supplies cut sheets for more information. Data subject to change, all data has +/- 5% tolerance.

DIM TO LEVEL	INDOOR	
	DW-HE Warm Dim Applications	WD
0.1%	QT-CAB-eLED+DALI-DT6 QT-CAB-eLED+DALI-DT8 QT-CAB-eLED+DALI-DT8-AWN QT-CAB-eLED+WD QT-CAB-eLED+WD-AWN QTM-eLED+DALI-DT6 QTM-eLED+DALI-DT8 QTM-eLED+DALI-DT8-AWN QTM-eLED+WD QTM-eLED+WD-AWN QZ-DW	QT-CAB-QZ-PH/0-10V QT-CAB-eLED+0-10V QT-CAB-eLED+DALI-DT6 QT-CAB-eLED+DALI-DT6-AWN QTM-eLED+0-10V QTM-eLED+DALI-DT6 QTM-eLED+DALI-DT6-AWN QZ-BOWTIE+DIMMER QZ-DMX QZ-PH/0-10V QZ-STICK-PH/0-10V QZLP
1%	QZ-DALI-DT8	QTM-eLED(E) QZ-DALI-DT6
10%	Non-Dim Power Supply with WD App Dongle	Non-Dim Power Supply with SW App Dongle







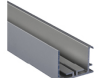


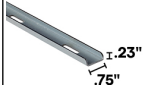
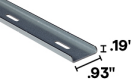


ESSENTIALS LALO-OPTICS (02) WD APPLICATIONS

24VDC Linear Fixtures - Surface & Recessed

DIMMING PROTOCOL	INDOOR	
	DW-HE Warm Dim Applications	WD
Phase	QZ-DW	QT-CAB-QZ-PH/0-10V QTM-eLED(E) QZ-BOWTIE+DIMMER QZ-PH/0-10V QZ-STICK-PH/0-10V QZLP
0-10V	QT-CAB-eLED+WD QT-CAB-eLED+WD-AWN QTM-eLED+WD QTM-eLED+WD-AWN QZ-DW	QT-CAB-QZ-PH/0-10V QT-CAB-eLED+0-10V QTM-eLED+0-10V QZ-PH/0-10V QZ-STICK-PH/0-10V QZLP
Lutron Athena	QT-CAB-eLED+DALI-DT8-AWN QT-CAB-eLED+WD-AWN QTM-eLED+DALI-DT8-AWN QTM-eLED+WD-AWN	QT-CAB-eLED+DALI-DT6-AWN QTM-eLED+DALI-DT6-AWN
ECO System		QTM-eLED(E)
DMX If using DW LED, wattage must be doubled		QZ-DMX
DALI-2: DT6 If using DW LED, wattage must be doubled except for AWN	QT-CAB-eLED+DALI-DT6 QTM-eLED+DALI-DT6	QT-CAB-eLED+DALI-DT6 QT-CAB-eLED+DALI-DT6-AWN QTM-eLED+DALI-DT6 QTM-eLED+DALI-DT6-AWN QZ-DALI-DT6
DALI-2: DT8 If using DW LED, wattage must be doubled except for AWN	QT-CAB-eLED+DALI-DT8 QT-CAB-eLED+DALI-DT8-AWN QTM-eLED+DALI-DT8 QTM-eLED+DALI-DT8-AWN QZ-DALI-DT8	
SCENE App Dimmed	Non-Dim Power Supply with WD App Dongle	Non-Dim Power Supply with SW App Dongle

COMPATIBLE MOUNTING ACCESSORIES

HINGE - HMB-M  1.41" .71" Adjustable mounting bracket - Medium	HINGE - HMB-L  1.46" 1.29" Adjustable mounting bracket - Large	HINGE - HMB-XL  4" 1.46" Adjustable mounting bracket - XLarge	Q-PIVOT  .75" 1.03" Small mounting accessory	Q-ANGLE  2.23" 1.38" Adjustable mounting accessory	VHB  Double sided mounting tape	NU-GRAZER  U Mounting Bracket	NI-GRAZER  J Mounting Bracket	BL-GRAZER  Backwards L Mounting Bracket	MMA-01  1.23" .75" Magnet Mount Accessory of MG-01
MMA-04  1.19" .93" Magnet Mount Accessory of MG-04									