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PEN-60

Pendent LED Fixture
Low Voltage
6 or 9 Watt Tunable White
Direct Current Controlled

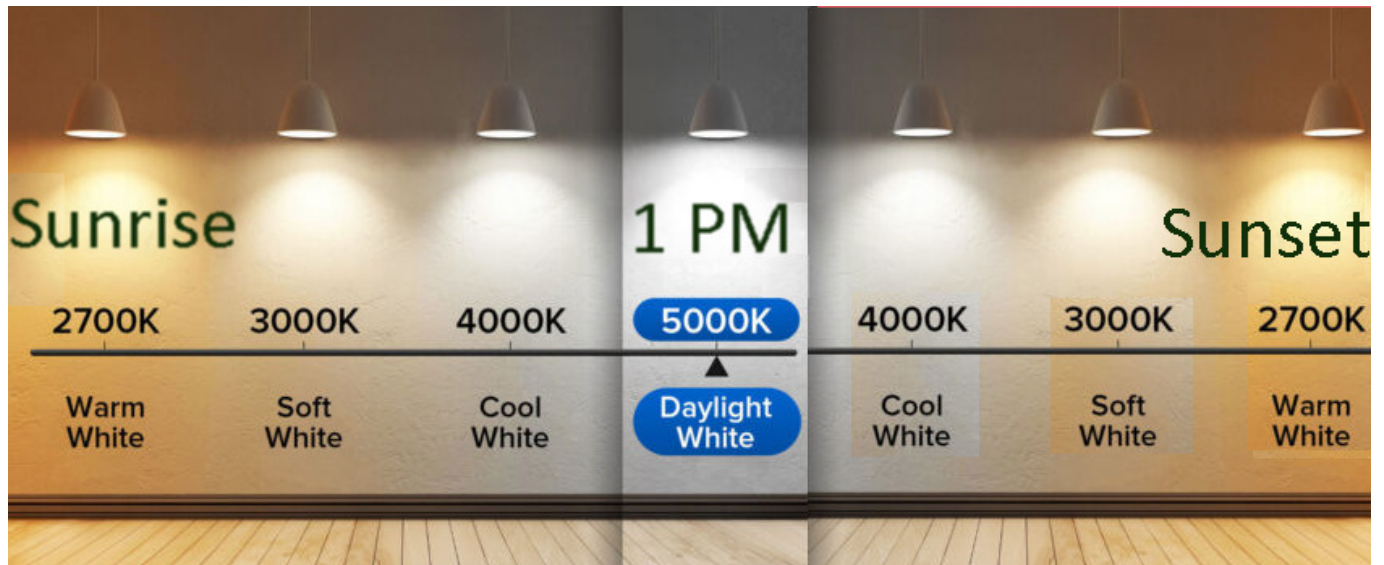
Bright LEDs, Cool operation
Low Voltage mounting solution



Technical specifications

Size	72mm diameter
CRI	90 and better
Dimming	0 to 100%, flicker free, no artifacts
Driver Type	Use 3 or 4 wire drivers
Operating Wattage	6 Watts 9v typically
Operating current	0 to 720 mA total of current in both channels, can mix for color control
Maximum wattage	7 watts
Lumens	780
Color Temperature	6 options available
Operating Voltage	7.5 to 9.0 volts
Recommended wiring	Series, 4 or 5 fixtures in series sharing one driver
Connectors	2x OJ-606 (M + F)
Constant Voltage	do not use Constant Voltage
Operating Temperature	Ceiling mount, -20 to 50 Deg C non condensing
IP Rating	IP65 Suitable for indirect water exposure

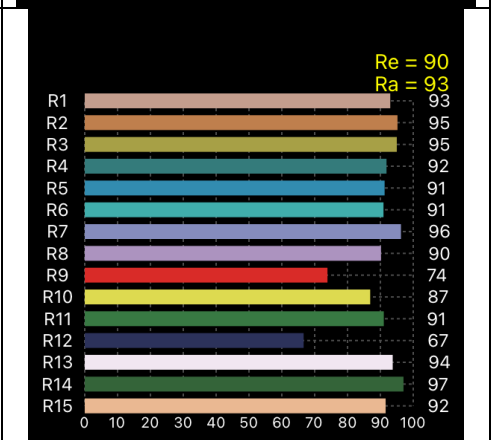
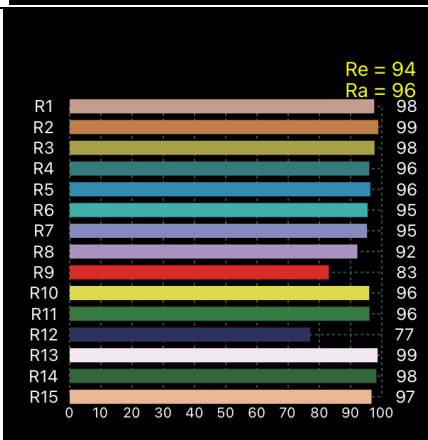
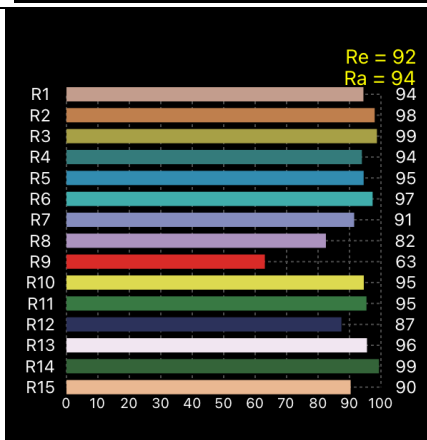
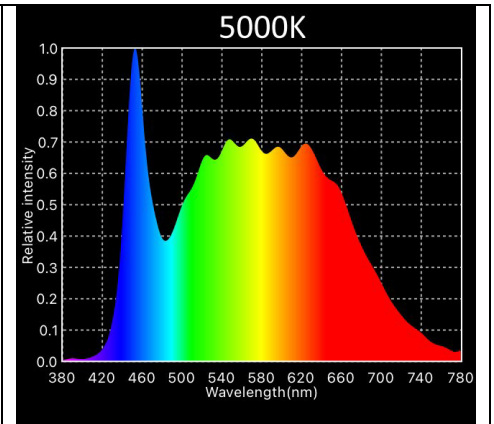
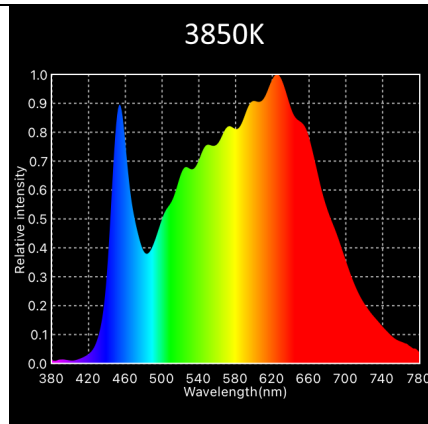
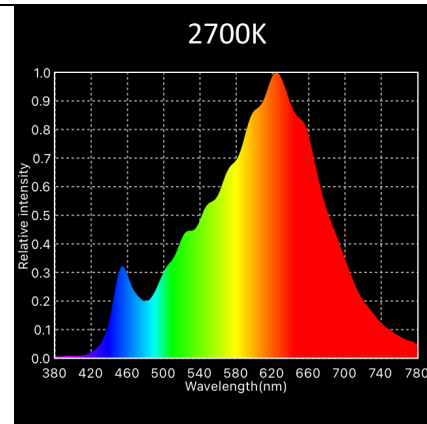
Color Temperature options



Optional Time of Day lighting rhythm

Available in 6 different color temperatures, this fixture can be operated as a fixed color, or tunable white fixture. Any 660 mA current source can be used. Up to 5 fixtures can be wired in series to share one driver. That driver can be located up to 150 ft from the LEDs – since constant current eliminates the concerns about voltage drop. Connecting both inputs in parallel will generate the color CCT marked #. .

Model	2700	3000	3500	3850	4000	5000
Pen-60	●			#		●
Pen-60C		●	●		●	



CCT	2689 K
CRI(Ra)	94
CQS	93
TLCI(Qa)	92.2
GAI	48.6
Illuminance	8824 lux
Foot Candle	819.7 fc
λ_p	624 nm
Flicker Percentage	0.1 %

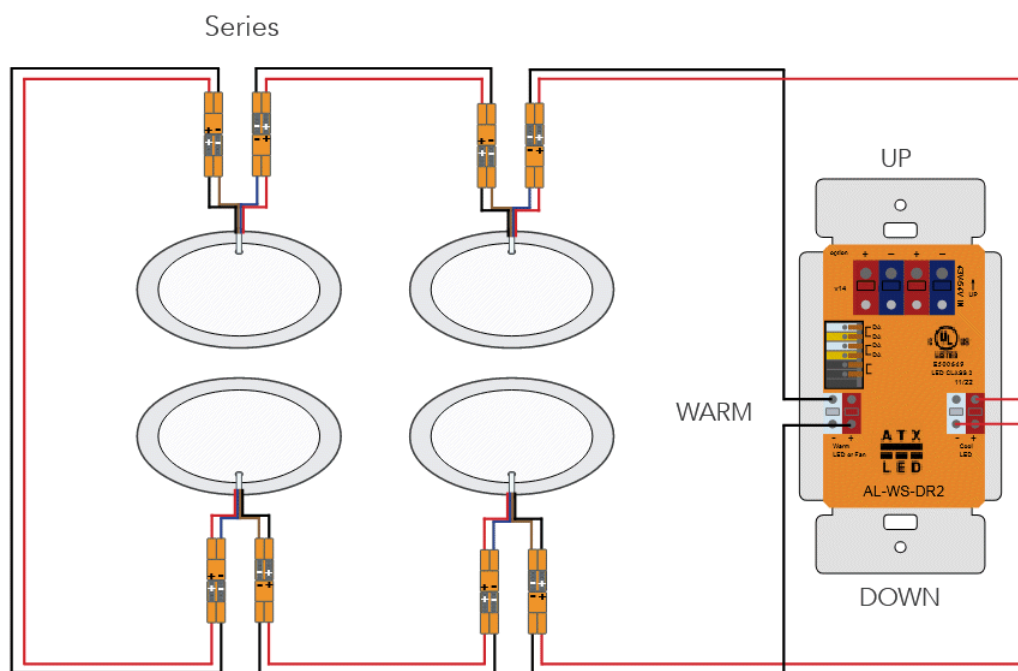
CCT	3684 K
CRI(Ra)	96
CQS	93
TLCI(Qa)	95.9
GAI	76.9
Illuminance	10317 lux
Foot Candle	958.5 fc
λ_p	625 nm
Flicker Percentage	0.1 %
Flicker Index	0.00

CCT	4818 K
CRI(Ra)	93
CQS	91
TLCI(Qa)	94.6
GAI	86.7
Illuminance	11708 lux
Foot Candle	1087.7 fc
λ_p	453 nm
Flicker Percentage	0.1 %

Ordering part numbers

Model	Voltage	Current	Watts	CCT	CRI	Lumens
PEN-60	7.5-8.6	0-660mA	5.6	tunable	90	650
PEN-60 parallel	7.5-8.6	0-990mA	9	3850K	90	900
PEN-60 series	15-17.2	0-330mA 0-500mA	5.6 9	3850K	90	650 900

AL-WS-DR2 wiring



360 mA operation

This 6 watt LED can be installed for 360 mA operation for use with 360 or 300 mA drivers. The total power is 6 watts at 3850 CCT for the PEN-60 and 3500 CCT for the PEN-60C. The voltage increases from 9v to 18v in this method.

Recommended DC Drivers with Dimming

N=# of LEDs

DC drivers *	Fixed Color	Tunable White	WiFi	DALI
AL-WS-DR1	5			
AL-WS-DR2	10	5		X
AL-WS-DR2C	10	5		
AL-WS-DR2W	10	5	X	
LDD-600H	5			
LDD-600HDA	5			X

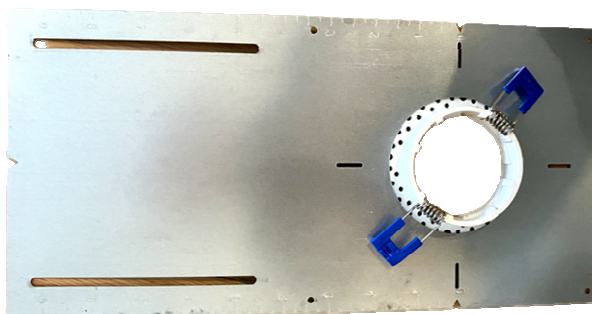
*51 volt DC input (with 54v supply, one additional is allowed – 5 instead of 4)

** no dimming

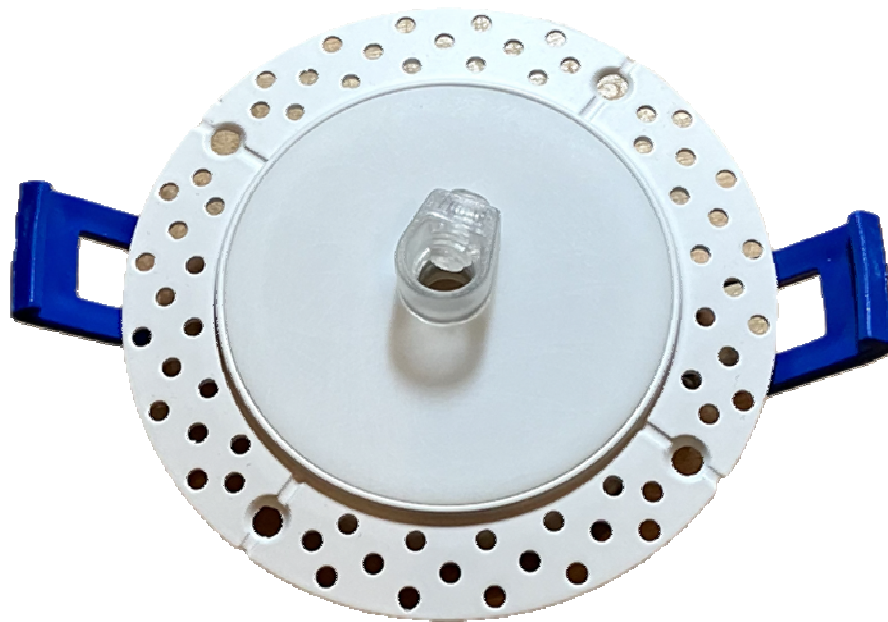
Examples of AC Drivers with Dimming

N=# of LEDs

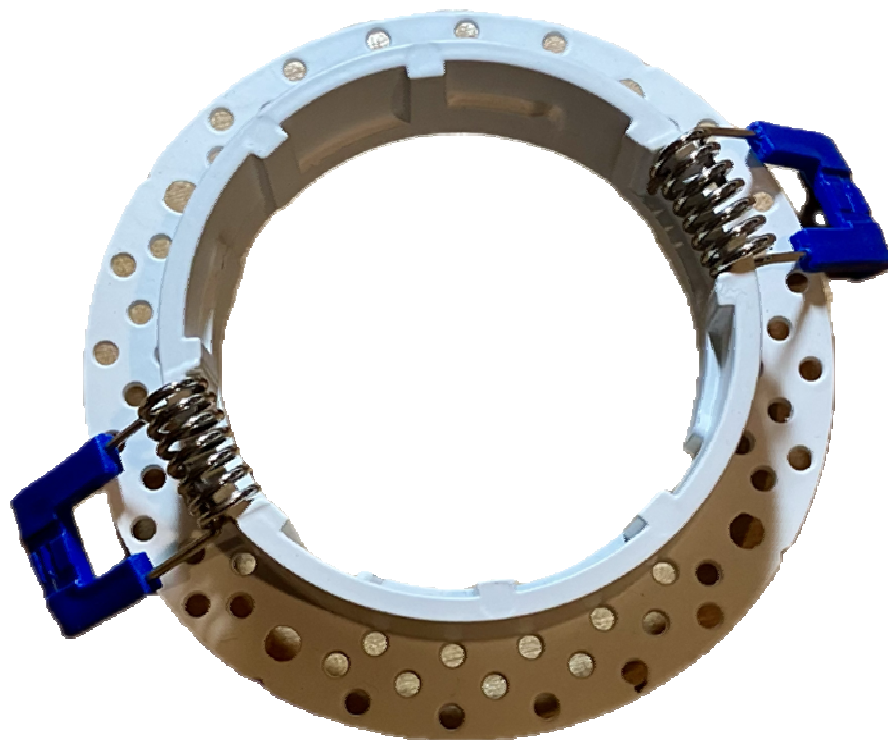
AC drivers from 120 / 240 vac to DC current	Watts	Fixed Color	Tunable White	0-10v	DALI	DMX
AL-SML-DR2-70CCT	70 / 48v	10	5		X	
SR-2309-75CCT	75 / 48v		5		X	
WP-80-40A-2AM	75 / 36v		4	X		
DMX-50-500-1750	50 / 48v					X



Flat Sheet rough in plate “flat3”



Invisible Ceiling plate (mud in ring + Insert)



Mud in ring

Meet the AL-WS-DR2 – DALI wall switch Driver

	http://atx-led.com
<p>AL-WS-DR2 44-54vdc</p> <p>DALI DT8 Switch / Driver</p> <p>Dual output Constant Current, CV and CL driver 12v and 48v Fan driver</p> <p>28 Watt Tunable CCT 56 Watt Fixed</p>	
<p><u>Product Description - AL-WS-DR2 wall switch</u></p> <p>This switch operates just like any standard residential light switch – however it takes 24-54v DC instead of 120VAC, and directly drives up to 56 watts of LED bulbs. This Decorator style switch in a standard residential style outline fits into any home, looks like any switch yet meets NEC article 411 for Low Voltage lighting.</p> <p>It supports fixed color temperature or tunable white LED fixtures for time of day light controls. With tunable white, it supports dim to warm.</p> <p>Stand alone it operates as a simple switch for 2 strings of LED's with up to 660mA to 30 watts per channel. For example, with a 54v supply, 10 x 6 Watt LED's can be connected, 5 in series to each of the 2 outputs on this switch / dimmer device. Use AWG 16 or 18 to bring 51v or 54v from a central power supply over to the switches, then use AWG 20 to connect to your LEDs – no crimping tools are required to wire this device.</p> <p>For 3-way operation – a simple 2 wire link with AWG24 or better allows 2, 3, or an unlimited numbers of switches to control one set of LED's. Any single pole switch found at Home Depot can be used to add a 3-Way remote switch, or the AL-WS-M momentary switch can be used for unlimited 3-Way connections.</p> <p>A proven mechanical switch and brightness slider leverages mass production of Decorator switches, now for low voltage applications – a casual user requires no training, no App to use this switch. Perfect, flicker free dimming from off to 0.1% to 100%. No network setup is required.</p> <p>To enable Home / BUSINESS automation – the AL-WS-DR2 includes a IEC 62386 opto isolated serial bidirectional port for remote and voice control. Use the ATX LED Hub to connect to Alexa or Google home voice control. The 62386 protocol is supported, with automatic addressing. Use low cost wire in uncomplicated topology to implement remote management. Power and BUS have in and out connectors to avoid wire nuts.</p>	

Other Lighting

 <p>Trimless</p>	 <p>RL-E26</p>	 <p>RL-E12</p>
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