

SQUERO

PENDANT

CHROMAWERX - SOLA, DUO



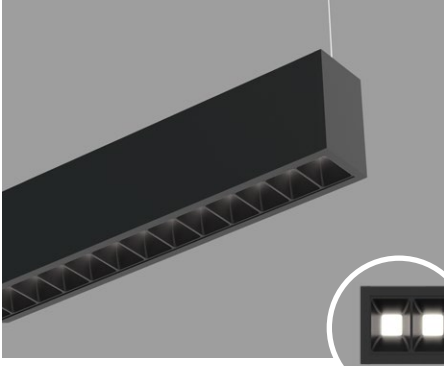
Project: _____

Type: _____

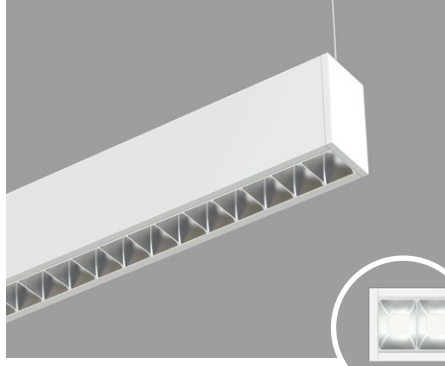
LUMENWERX

DESCRIPTION

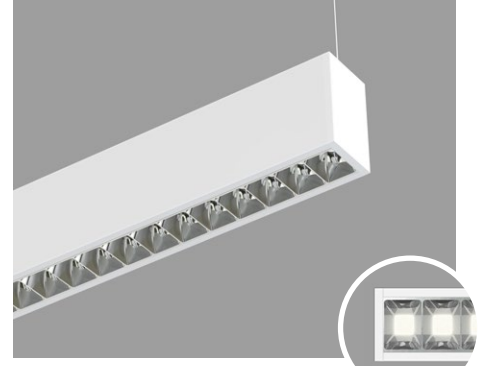
Squero brings style and flexibility to linear lighting systems. Less than 2" wide, Squero offers a variety of optics, each providing a different visual texture, as well as photometric performance. Squero can be installed as individual luminaires or in continuous runs. See separate spec sheets for static white Squero, as well as Squero Combination and Squero Combination Pattern, where various optics can be combined in a single fixture.



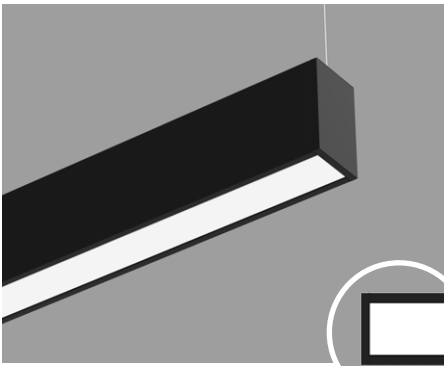
MBPL
Matte Black Parabolic Louver



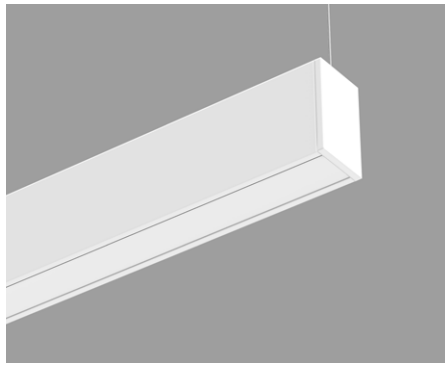
MPL
Matte Parabolic Louver



SPL
Specular Parabolic Louver



HLO
High-Efficiency Lambertian Optic



BLA
Blank

SQUERO

LUMENWERX

PENDANT

CHROMAWERX - SOLA, DUO

Project: _____

Type: _____

Order Guide

LUMINAIRE ID	DISTRIBUTION	DIRECT OPTIC	INDIRECT OPTIC Specify NA for Direct fixture	LIGHT SOURCE ²	CRI
SQUP					
SQUP - Squero Pendant	DI - Direct/Indirect D - Direct	MBPL - Matte Black Parabolic Louver MPL - Matte Parabolic Louver SPL - Specular Parabolic Louver HLO - High-Efficiency Lambertian Optic BLA ¹ - Blank ¹ Can be specified as the direct optic option for a Direct/Indirect fixture.	WIO2 - Widespread Indirect Optic TIO - Translucent Indirect Optic WA12 - Widespread Asymmetric Indirect Optic NA - Not applicable	SOLA - Dim-to-warm single channel control 35K to 22K DUO - Tunable white 2-channel control 65K to 27K ² Static white and BIOS also available. Consult other spec sheet.	80CRI - 80 CRI 90CRI - 90 CRI

DIRECT LUMEN PACKAGE	INDIRECT LUMEN PACKAGE Specify NA for Direct fixture	LUMINAIRE LENGTH	VOLTAGE
350LMF - Eco low output 350 lm/ft 500LMF - Low output 500 lm/ft 750LMF - Medium output 750 lm/ft 1000LMF ³ - High output 1000 lm/ft ³ Not available with MBPL optic.	350LMF - Eco low output 350 lm/ft 500LMF - Low output 500 lm/ft 750LMF - Medium output 750 lm/ft 1000LMF ^{4,5} - High output 1000 lm/ft NA - Not applicable ⁴ Not available with WA12. ⁵ For Direct/Indirect, Direct must not exceed 750 lm/ft.	#FT#IN ^{6,7} - Specify nominal length (#) in 1' and/or 1" increments Standard nominal lengths: Single units: 3' to 12' Continuous runs: lengths over 12' ⁶ Minimum 4' for Direct/Indirect, minimum 3' for Direct. ⁷ Parabolic Louvers are available in 1" increments, HLO and Blank in 1" increments.	120V - 120V 277V - 277V UNV - 120V-277V

DRIVER ⁸	ELECTRICAL	MOUNTING ¹¹	FINISH ¹²	OPTIONS
SOLA SDI - Single 0-10V input DUO DMX ^{9,10} - DMX DDA ¹⁰ - DALI DT6 DDA8 ¹⁰ - DALI DT8 DDI - Dual 0-10V input for CCT/intensity PSQO ¹⁰ - Lutron T-Series 1% Tunable White ⁸ PoE (Power-over-Ethernet) compatible. Consult factory for details. ⁹ For more information, see pages 9 to 14. ¹⁰ On-site commissioning is required.	1C 1C - 1 circuit	ACS - Aircraft cable, standard STS - Stem, standard ACC() - Aircraft cable, custom STC() - Stem, custom ¹¹ See page 3 for ordering details.	W - Matte white AL - Aluminum B - Matte black CF# - Custom finish, specify RAL# ¹² Blank finish will match fixture finish.	FU120 - Fuse 120V FU277 - Fuse 277V CTB9 ¹³ - T-bar caddy clip, 9/16" CTB15 ¹³ - T-bar caddy clip, 15/16" CTG9 ¹³ - Tegular caddy clip, 9/16" CTG15 ¹³ - Tegular caddy clip, 15/16" CST ¹³ - Screw slot caddy clip NA - None ¹³ Available with aircraft cable only.

Accessories

Optional, order separately

WALL CONTROLLER	
DMX WCW ¹⁴ - DMX wall controller white WCB ¹⁴ - DMX wall controller black ¹⁴ Available with DMX only. For more information, see pages 9 to 14, or consult factory.	DDI TWCW ¹⁵ - Dual 0-10V wall controller white TWCB ¹⁵ - Dual 0-10V wall controller black ¹⁵ Available with DDI only. For more information, see page 15, or consult factory.

PENDANT

CHROMAWERX - SOLA, DUO

Pendant Mounting Code

Standard

For a standard mounting, please refer to the information below.

MOUNTING	
ACS - Aircraft cable, standard	STS - Stem, standard
Ø5" for power canopy Ø3" for non-power Canopies are white Power cord is white for all fixture finishes (except black fixture is black power cord) Aircraft cable length is 36"	Ø5" for power canopy Ø5" for non-power Canopies are white Stem finish is the same color as fixture Stem length is 18" Stem is not field adjustable

Custom

Aircraft Cable

For a custom mounting, specify the options in the parentheses.

Example: ACC(3NPC-72IN-W-PCB-SLC)

MOUNTING					
ACC()					
	NON-POWER CANOPY SIZE	AIRCRAFT CABLE LENGTH	CANOPY FINISH	POWER CORD COLOR	OPTIONS
ACC	3NPC - Ø3" non-power canopy 5NPC - Ø5" non-power canopy	36IN - 36" 72IN - 72" 120IN - 120" #IN ¹ - Other lengths, specify in inches ¹ Maximum length is 288". For longer lengths, please consult factory.	W - Matte white AL - Aluminum B - Matte black CF# - Custom finish, specify RAL#	PCW - White PCB - Black	SEM - Seismic mounting SLC - Sloped ceiling for aircraft cable NA - None

Stem

For a custom mounting, specify the options in the parentheses.

Example: STC(5NPC-36IN-W-STW-SLS)

MOUNTING					
STC()					
	NON-POWER CANOPY SIZE	STEM LENGTH	CANOPY FINISH	STEM COLOR	OPTIONS
STC	5NPC - Ø5" non-power canopy	18IN - 18" 36IN - 36" #IN ² - Specify length in inches ² Minimum length is 6". Maximum length is 72". Stem is not field adjustable.	W - Matte white AL - Aluminum B - Matte black CF# - Custom finish, specify RAL#	STW - Matte white STAL - Aluminum STB - Matte black STCF# - Custom finish, specify RAL#	SLS - Sloped ceiling for stem NA - None

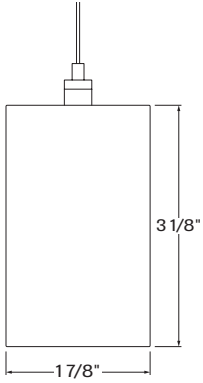
SQUERO

LUMENWERX

PENDANT

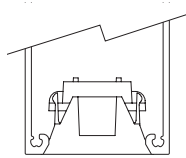
CHROMAWERX - SOLA, DUO

Dimensions



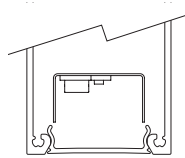
Section Views

DIRECT OPTICS



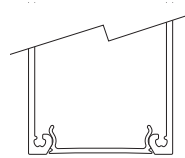
MBPL, MPL & SPL

Matte Black, Matte & Specular
Parabolic Louver



HLO

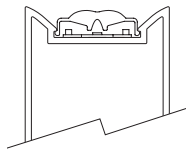
High-Efficiency Lambertian
Optic



BLA

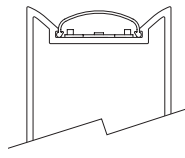
Blank

INDIRECT OPTICS



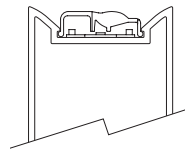
WIO2

Widespread Indirect Optic



TIO

Translucent Indirect Optic



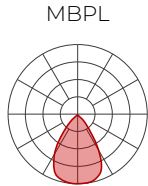
WAI2

Widespread Asymmetric
Indirect Optic

Photometrics

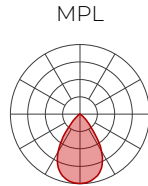
Values calculated based on a 4ft fixture at 35K and 80 CRI for all optics.

DIRECT OPTICS



MBPL

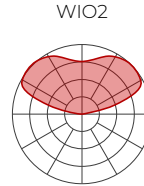
LM/FT	W/FT	LPW
350	5.2	67
500	7.5	66
750	11.7	64



MPL

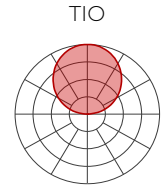
LM/FT	W/FT	LPW
350	3.5	99
500	5.1	98
750	7.7	98
1000	10.6	95

INDIRECT OPTICS



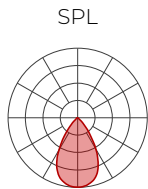
WIO2

LM/FT	W/FT	LPW
350	2.4	145
500	3.5	141
750	5.5	136
1000	7.7	130



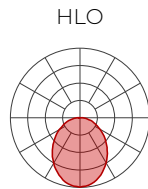
TIO

LM/FT	W/FT	LPW
350	2.8	127
500	4.0	124
750	6.3	119
1000	8.8	114



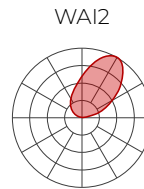
SPL

LM/FT	W/FT	LPW
350	3.1	113
500	4.4	113
750	6.7	112
1000	9.1	109



HLO

LM/FT	W/FT	LPW
350	3.1	112
500	4.6	108
750	7.3	103
1000	10.2	98



WAI2

LM/FT	W/FT	LPW
350	2.5	139
500	3.7	135
750	5.8	130

DIRECT/INDIRECT - LPW CALCULATION

For Direct/Indirect performance values, follow the formula.

$$\frac{\left(\begin{array}{c} \text{DIRECT} \\ \text{LM/FT} \end{array} + \begin{array}{c} \text{INDIRECT} \\ \text{LM/FT} \end{array} \right)}{\left(\begin{array}{c} \text{DIRECT} \\ \text{W/FT} \end{array} + \begin{array}{c} \text{INDIRECT} \\ \text{W/FT} \end{array} \right)} = \text{LPW}$$

Technical Specifications

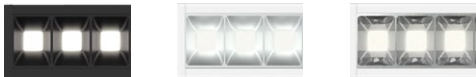
DIRECT OPTICS

Parabolic Louvers (MBPL, MPL & SPL)

Parabolic Louver Optics provide excellent shielding and a pleasing crisp visual texture. The precisely molded louvers consist of 1" deep blades and side reflectors with shielding of 50° lengthwise and 45° crosswise.

The parabolic contour of the blades and side reflectors direct light into a comfortable downlight distribution with a spacing criterion of 1.1, while minimizing shadows from the LED array above each cell.

Three finishes are available: matte black, matte, and specular. Specular (SPL) provides higher efficacy, sharper cut-off, and an ultra quiet appearance at shallow viewing angles. Matte (MPL) offers a softer appearance, a wider beam spread, and gentle brightness transition at cut-off. Matte black (MBPL) offers the highest UGR in Squero as the black parabolic louver is very quiet and glare free. The UGR is the best in class rating of under 10.



High-Efficiency Lambertian Optic (HLO)

The High-Efficiency Lambertian Optic (HLO) shielding of diffusing 0.075" thick acrylic with up to 88% transmission and good source obscuration is combined with matte white side reflectors to create an efficient optical chamber with uniform luminosity.

Luminaire brightness is controlled by the flux-to-shielding area ratio. For visual comfort, avoid high lumen output unless Squero is installed in a high ceiling application. Spacing criteria: 1.2 (longitudinal) x 1.1 (lateral).



Blank (BLA)

Aluminum Blank covers provide spacing – functional or rhythmic – in the direct component of a Squero Combination luminaire. Covers are sized according to the Combination design, finished to match the luminaire housing, and snap into the aperture.



INDIRECT OPTICS

Widespread Indirect Optic (WIO2)

The Widespread Indirect Optic (WIO2) is a horizontal LED array with a widespread indirect micro prismatic optic that offers an impressive 160° spread. WIO2 creates an even illumination for smooth brightness on the ceiling that can achieve uniformity ratios of up to 2:1.

Uniformity [max/min]

Based on 18' continuous runs, in a 20' x 40' room, 10' wall height

Mounting height from ceiling	Spacing (Center to center)		
	8'	10'	12'
12"	5.5	10.0	9.0
18"	6.5	6.0	6.0
24"	2.5	4.0	4.5

Translucent Indirect Optic (TIO)

The Translucent Indirect Optic (TIO) is composed of a horizontal LED array that has a translucent lens to mask pixilation from the diodes. TIO has a 100° spread in the indirect that is ideal when the fixture is mounted farther away from the ceiling.

Widespread Asymmetric Indirect Optic (WAI2)

The Widespread Asymmetric Indirect Optic (WAI2) offers an upward grazing effect with a 45° forward throw. It softly highlights the ceiling in the up-light while distributing the required illumination of the rest of an interior space. For avoiding glare and enjoying visual comfort, WAI2 is an ideal solution.

LIGHT SOURCE

Custom linear array of alternating color temperature mid-flux LEDs are mounted directly to the housing for optimal thermal performance. For the Duo products, a color temperature range from 6500K-2700K is achievable with color points on or below the black body curve. For the Sola products, a color temperature range from 3500K-2200K is controlled synchronously with intensity. Color consistency between fixtures is maintained to within 3 SDCM. LEDs operate at reduced drive current to optimize efficacy and lumen maintenance.

All LEDs have been tested in accordance with IESNA LM-80-08 and the results have shown L80 lumen maintenance greater than 60,000 hours. Absolute product photometry is measured and presented in accordance with IESNA LM-79, unless otherwise indicated.

PENDANT

CHROMAWERX - SOLA, DUO

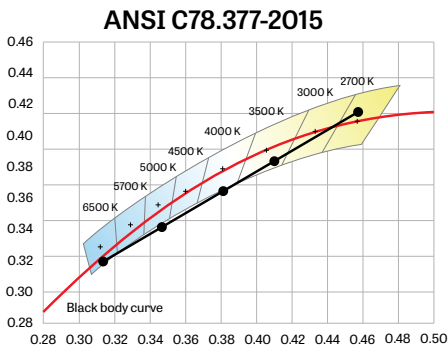
CHROMAWERX - TUNABLE WHITE

Chromawerx SOLA

It is a single-channel control that dims output while warming the color temperature in a pre-determined relationship. A simple analog control sends a common signal to dual output digital drivers, which are programmed to adjust a specially populated LED array to emulate the effect of dimming a filament source. Dimming range is programmable but the default option runs from 3500K at 100% of full power to 2200K at 5% of full power. CRI is maintained above 80 throughout the dimming range.

Chromawerx DUO

It is a two-channel control. It uses an analog (0-10V) protocol for separate control of luminaire CCT and intensity or a digital (DMX, DALI and PSQ0) protocol for synchronous control of both warm and cool LED arrays to enable the user to set color temperature and light output. Commonly called "tunable white", Chromawerx two-channel control provides the range of cool (6500K) to warm (2700K) color that can be useful for helping to entrain circadian rhythms, stimulate alertness for improved educational and work productivity, and compensate for jet lag, among other applications. The Chromawerx drivers are programmed to limit maximum light output and power usage across all color temperatures. CRI is maintained above 80. When paired with DALI drivers (DDA/DDA8), color tuning follows a linear dimming curve.



LUMINAIRE LENGTH

Squero is made up of standard 3 to 12 foot sections that may be joined together to create longer continuous run lengths. Exact run lengths must be noted in the product code. The minimum individual section available is 3 feet for Direct fixtures and 4 feet for Direct/Indirect fixtures.

All individual sections are joined together onsite using the joiner kits provided. Lumenwerx offers joiner kits that are extremely simple to work with in the field and result in a fixture that appears virtually seamless with no light leak at any connection.

ELECTRICAL

SOLA

SD1

Factory-set, adjustable output current LED driver with universal (120-277VAC) input. Using a single 0-10V control signal, the light output warms in color temperature as it dims down to 1% and 2200K. At maximum driver load, efficiency<86%, PF>0.9, THD<20%.

DUO

DMX

Factory-set adjustable output current electronic driver with 120-277V AC line input. Using DMX wall controls (optionally supplied by Lumenwerx) or an existing DMX control system, both channels of LEDs are independently adjustable. Each DMX driver can be independently addressed using the built-in RDM (Remote Device Management) in the field. Dimming down to 1% is attainable. Rated life (90% survivorship) of 50,000 hours at 50°C maximum ambient temperature. At maximum driver load, efficiency<84%, PF>0.9, THD<20%.

DALI

Factory-set adjustable output current electronic driver with 120-277V AC line input. Using an existing DALI control system (supplied by others), one control channel adjusts the fixture color temperature, and the other control channel adjusts fixture brightness. With DALI Type 6, two DALI addresses are required to control both channels. With DALI Type 8, one DALI address is required to control both channels. Dimming down to 1% is attainable. Rated life (90% survivorship) of 50,000 hours at 50°C maximum ambient temperature. At maximum driver load, efficiency<84%, PF>0.9, THD<20%.

DD1

Factory-set adjustable output current LED driver with universal (120-277VAC) input. Controlled via two individual 0-10V signals, one for setting light output down to a minimum of 1% and the other for adjusting the CCT (default range of 6500K-2700K). Rated life of 50,000 hours at 70°C maximum driver case temperature and 100% load conditions. Typical efficiency of 86%, PF>0.9, THD<20% at 100% load conditions.

PSQ0

Lutron T-Series 2-Channel tunable white drivers enable high-performance human centric lighting (HCL) applications. Digital control of color temperature (CCT) and intensity are achieved when used with the ESN T-Series tunable white controller as a part of a Lutron Quantum System.

SQUERO

LUMENWERX

PENDANT

CHROMAWERX - SOLA, DUO

PoE

Depending on the PoE manufacturer selected, Lumenwerx will install the node in factory as either integral to the luminaire or as a remote module. Factory programming of the PoE node may or may not enable the following functionalities: lumen package, Duo (tunable white), emergency battery backup, and sensor integration. These must be addressed and evaluated on a case-by-case basis.

MOUNTING OPTIONS

Fixtures can be pendant-mounted, using aircraft cables, or stem-mounted. Unless otherwise specified, Lumenwerx provides the following hardware:

Standard aircraft cable option (ACS) - Canopies are white, Ø5" for power canopy, Ø3" for non-power. Power cord is black for black fixtures, and white for all other fixture finishes. Aircraft cable length is 36".

Standard stem option (STS) - Canopies are white, Ø5" for both power and non-power. Stem finish is the same color as fixture. Stem length is 18". Stem is not field adjustable.

Caddy clips, if required specify under OPTIONS

For all other options, see the mounting code on page 3.

FINISH

Interior - 95%, reflective matte powder coated white paint

Exterior - Matte white, matte black, or aluminum powder coating. Custom finishes are also available.

CONSTRUCTION

Housing - Extruded aluminum (0.100" nominal) up to 90% recycled content

Interior brackets - Die formed cold rolled sheet steel 10 gauge thick

Joining system - Die cast aluminum

Louvers - Injection molded optical grade polycarbonate (0.100" nominal) up to 95% reflective

Light guide - Clear PMMA laminated with microstructure film formed into optical TIR/extraction form

End caps - Die cast aluminum (0.125" nominal)

Hanger - Chromed griplock securely attached in end caps and/or joiners with stainless steel hardware

Aircraft cable suspension - 7x7 braids stainless steel air craft cable 0.05" thick

Stem - 0.5" diameter threaded steel tube matte white or aluminum powder coating. Custom finishes are also available

WEIGHT

4ft - 10.02 lbs - 4.54 kg

6ft - 15.18 lbs - 6.89 kg

8ft - 19.78 lbs - 8.97 kg

CERTIFICATION

ETL - Rated for Indoor Dry/Damp locations. Conforms to UL Standard 1598 and certified to CAN/CSA Standard C22.2 No. 250.0.

WARRANTY

Lumenwerx provides a five-year limited warranty on electrical and mechanical performance of the luminaires, including the LED boards, drivers, and auxiliary electronics. Lumenwerx will repair or replace defective luminaires or components at our discretion, provided they have been installed and operated in accordance with our specifications. Other limitations apply, please refer to the full warranty on our website.

DUO DMX SPECIFICATION

A qualified DMX integrator is required to assure proper installation and commissioning of the DMX network. **When placing the PO, please provide the contact information of your DMX integrator.**

Please answer the following questions to help us identify your DMX network requirements.

YES

Do you require a wall controller provided by Lumenwerx?

NO

DMX controller supplied by Lumenwerx

DMX control system supplied by others. Lumenwerx will supply DMX-enabled fixtures with default DMX addressing. See following pages for technical DMX informations. ✓

How many zones do you have?

A zone consists of one or more luminaires behaving identically.

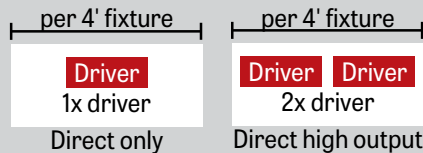


1 Zone



2 Zones

How to calculate the required number of drivers:



To Calculate # of drivers

1 - 4 Zones

5 or more Zones

Do you have more than 32 drivers in total?

NO

YES

Order a standard Lumenwerx wall controller.

WALL CONTROLLER

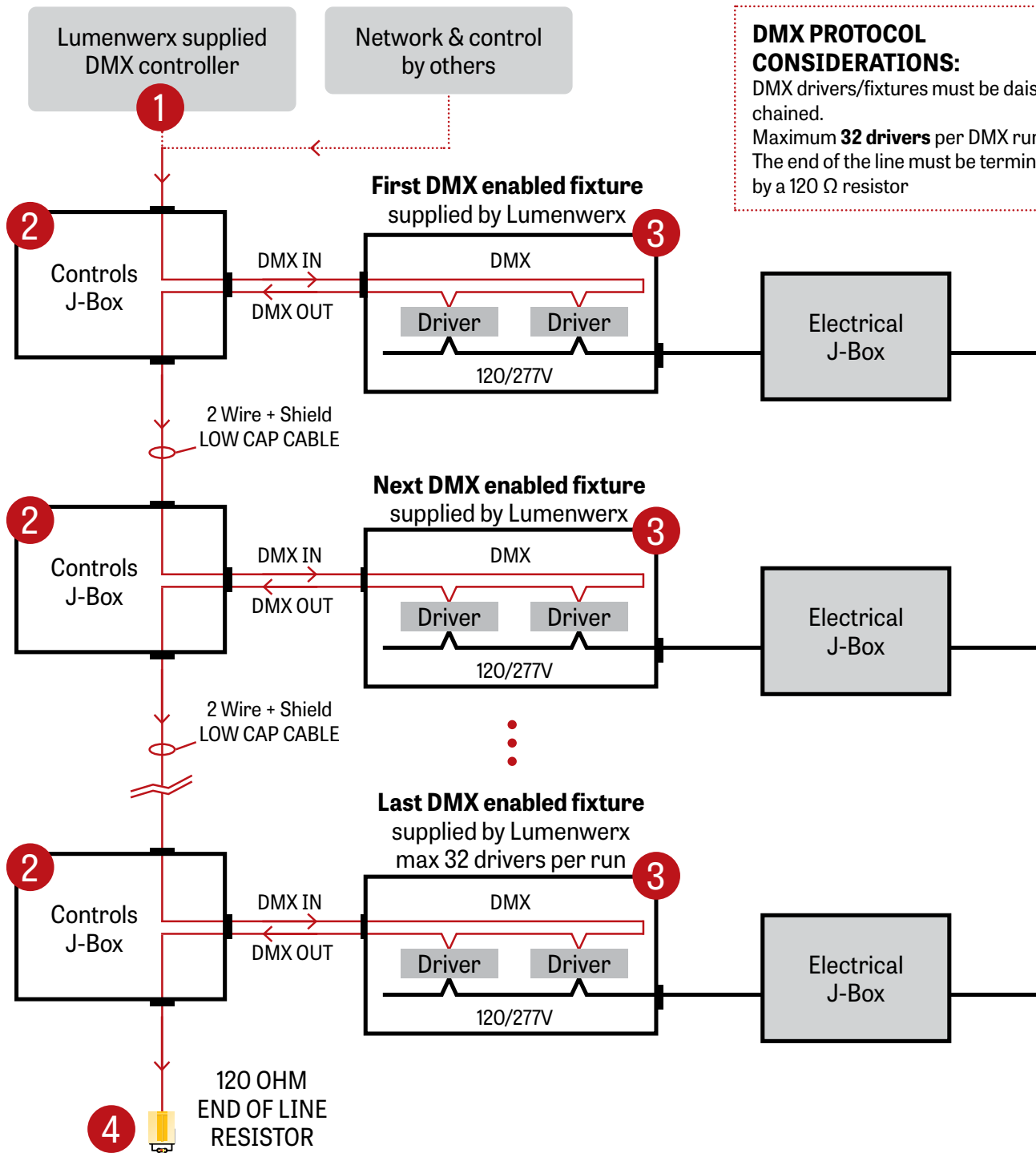
WCW - wall controller white
WCB - wall controller black

Add the control code at the end of your order code. Please provide a fixture layout or RCP (Reflected Ceiling Plan) showing the locations of the DMX fixtures, zones and the DMX wall controller. Refer to your DMX integrator for the installation. ✓

Subject to factory evaluation. Please contact our controls specialist at controls@lumenwerx.com. Additional cost and equipment will be required. ✓

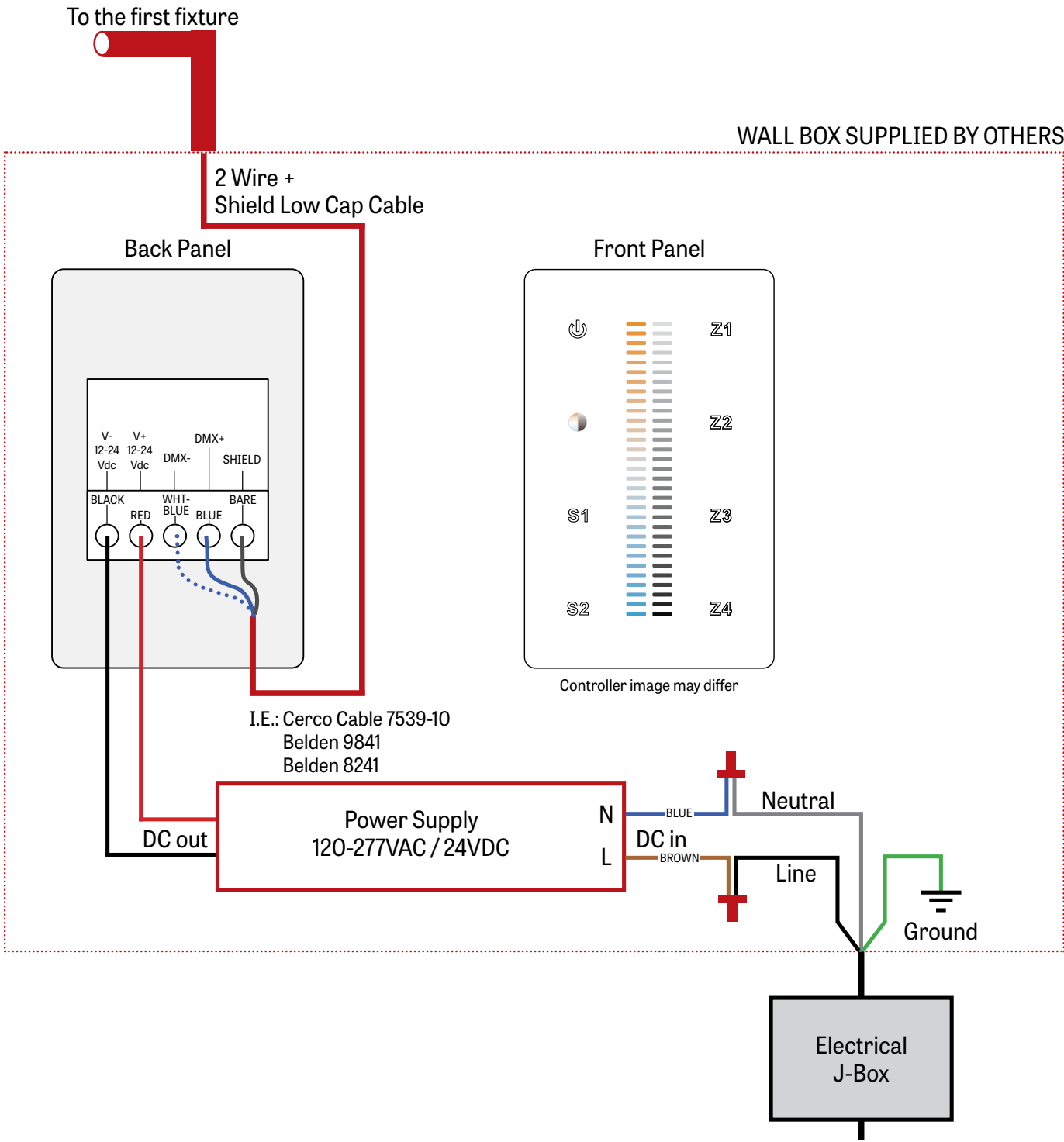
Subject to factory evaluation and approval. Please contact our controls specialist at controls@lumenwerx.com. Additional cost and equipment will be required. ✓

GENERIC DMX NETWORK ARCHITECTURE



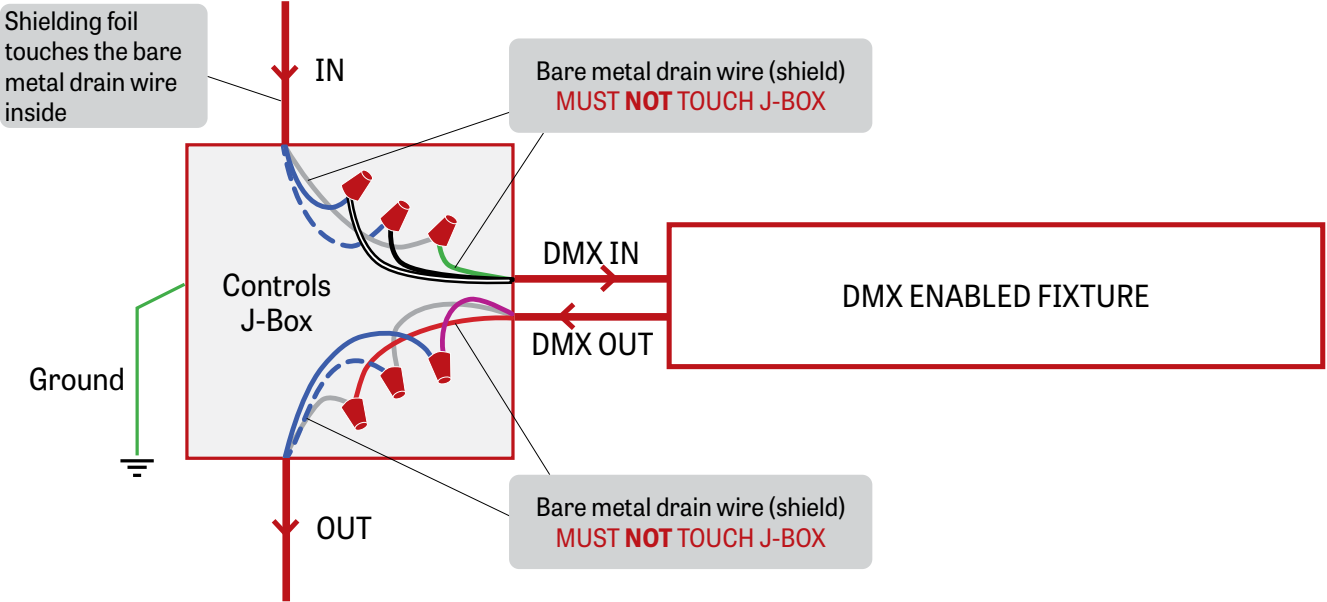
DMX PROTOCOL CONSIDERATIONS:
 DMX drivers/fixtures must be daisy chained.
 Maximum **32 drivers** per DMX run.
 The end of the line must be terminated by a 120 Ω resistor

1 LUMENWERX SUPPLIED DMX CONTROLLER



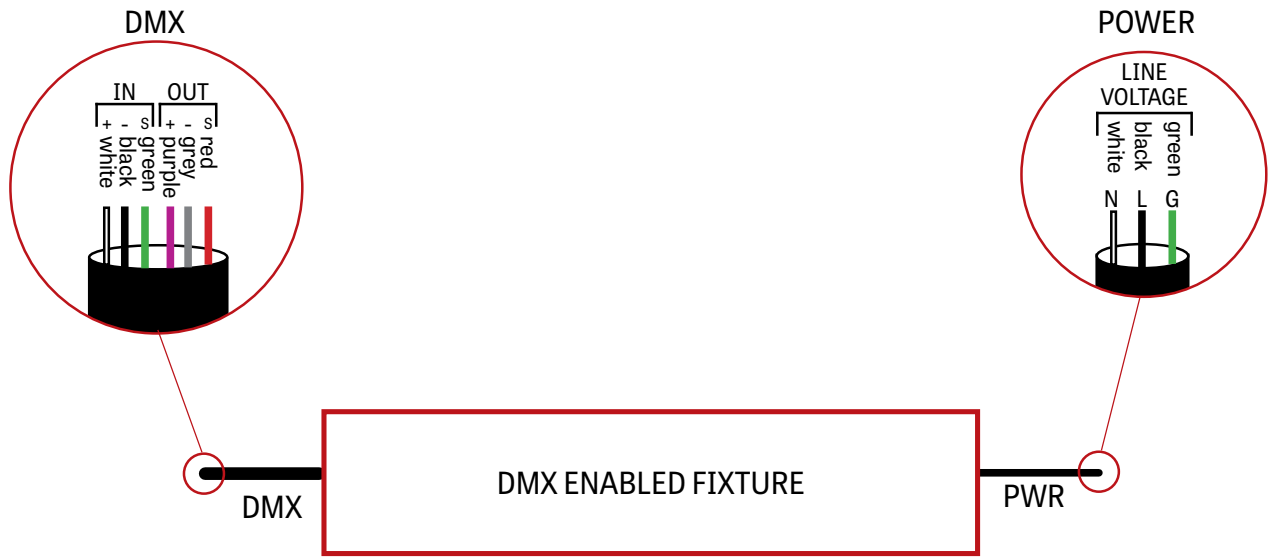
2 J-BOX DMX DAISY CHAIN DETAIL

Low capacitance DMX Cable from Previous Fixture

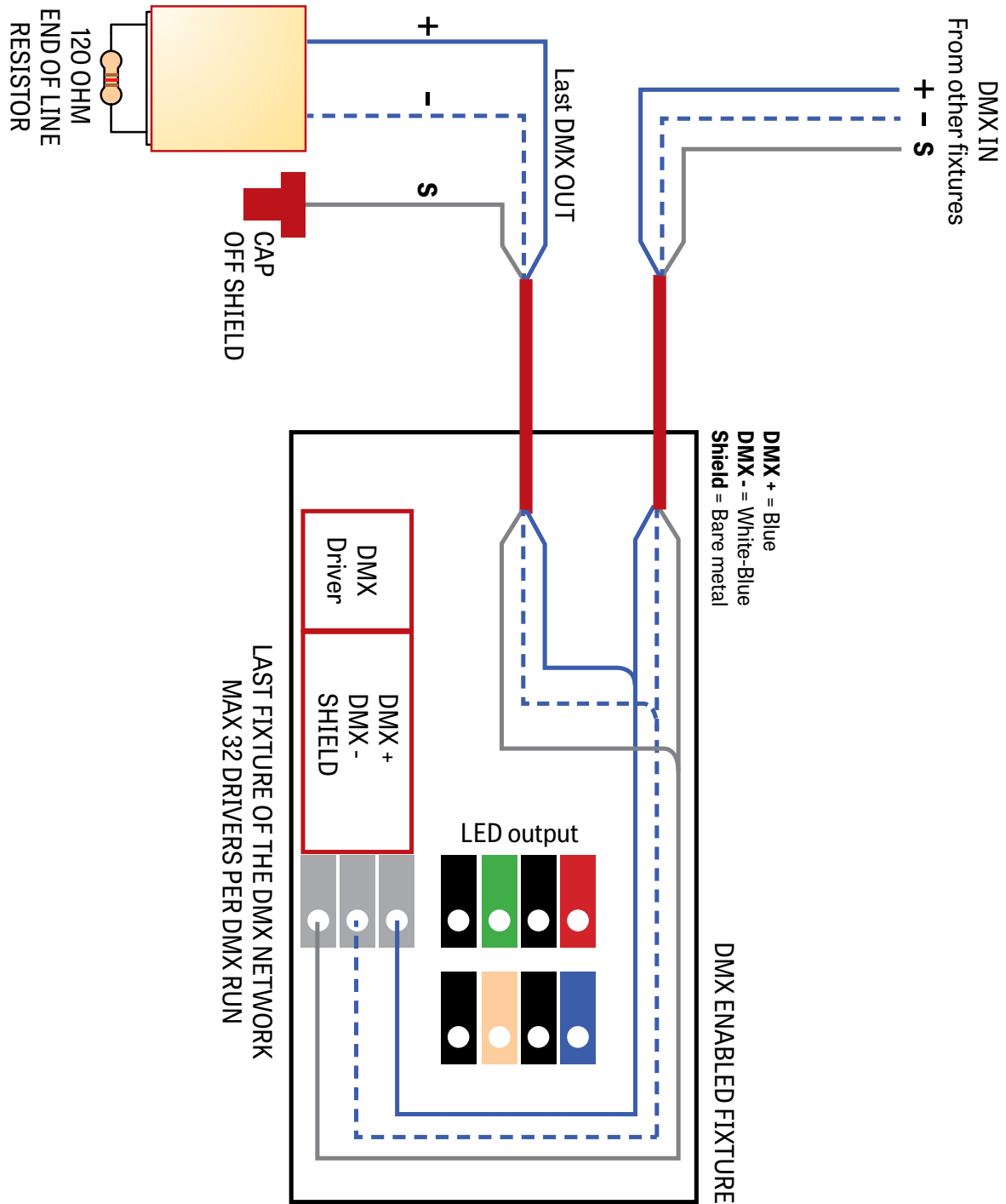


Low capacitance DMX cable to next fixture

3 DMX CONNECTION PENDANT & WALL

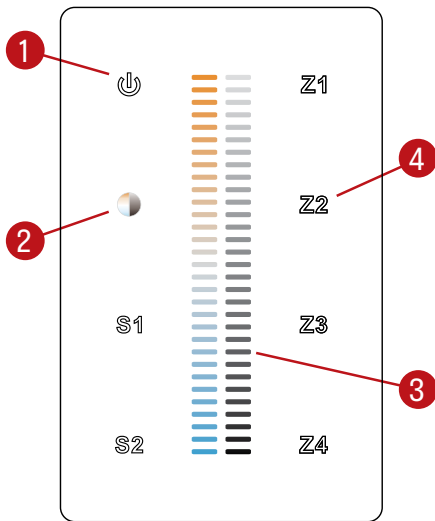


4 DMX LAST FIXTURE DETAIL



DMX WALL CONTROLLER

DUO 1-4 ZONE



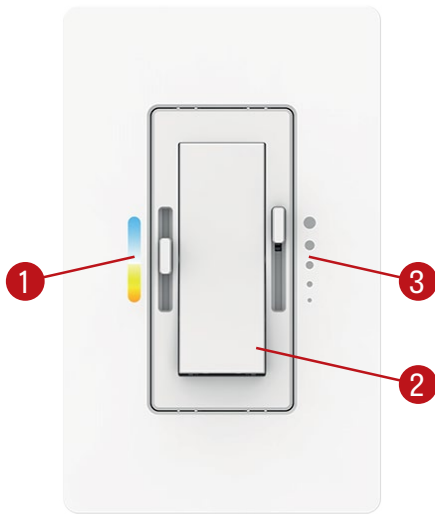
- (1) Power: Use this button to turn ON or OFF the fixture.
- (2) Brightness/CCT: Use the color/brightness toggle button to choose between color/brightness. When Blue: brightness is selected, when Yellow: color is selected.
- (3) Slider: Depending on the mode chosen in step 2, the slider will allow the user to set desired color or brightness.
- (4) Zone select: Up to 4 zones can be selected either independently or together. Once selected, the commands will be sent to the zone identified by a Blue LED.

Default DMX Addresses:

- 1 Warm
- 2 Cool

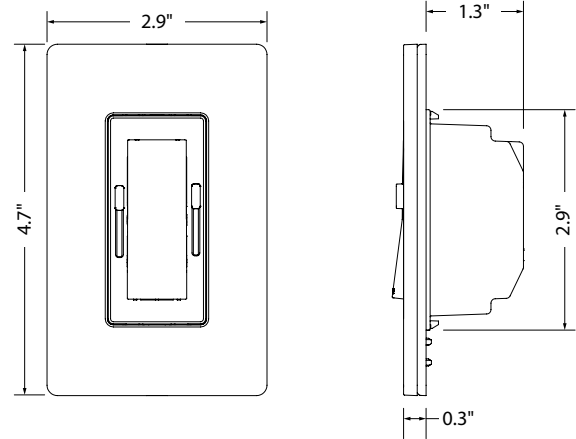
DUAL 0-10V WALL CONTROLLER

Front Panel



Controller image may differ

Dimensions



- (1) CCT control: Use this button to adjust the color temperature.
- (2) On/Off switch: Use this button to turn ON or OFF the fixture.
- (3) Dimming control: Use this button to adjust the brightness.

Wiring Diagram

