SQUERO

SURFACE
CHROMAWERX - SOLA, DUO
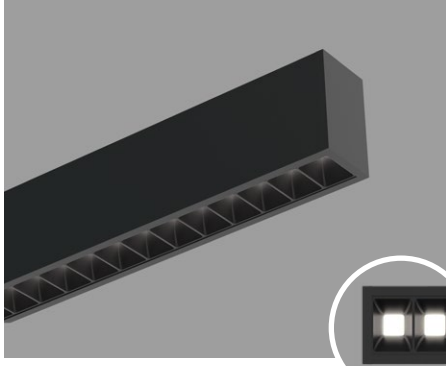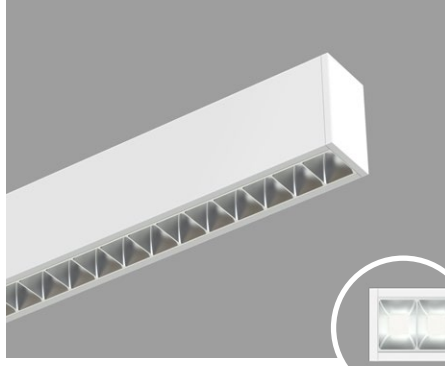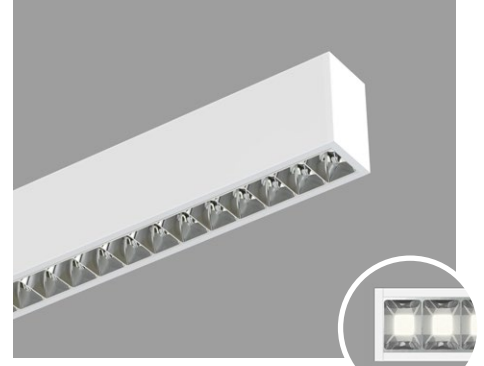
LUMENWERX

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.
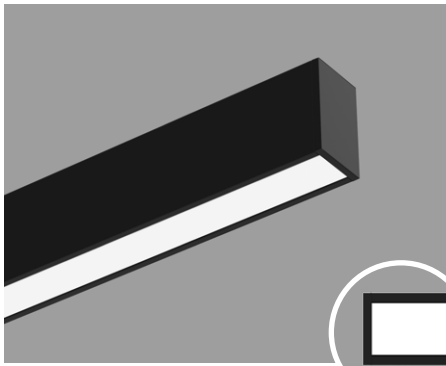

MBPL
Matte Black Parabolic Louver

MPL
Matte Parabolic Louver

SPL
Specular Parabolic Louver

HLO
High-Efficiency Lambertian Optic

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CHROMAWERX - SOLA, DUO

LUMENWERX

Project: _____

_____

Type: _____

Order Guide

LUMINAIRE ID	DISTRIBUTION	OPTIC		LIGHT SOURCE [1]	CRI
SQUS	**D**				
SQUS - Squero Surface	**D** - Direct	**MBPL** - Matte Black Parabolic Louver **MPL** - Matte Parabolic Louver **SPL** - Specular Parabolic Louver **HLO** - High-Efficiency Lambertian Optic		**SOLA** - Dim-to-warm single channel control 35K to 22K **DUO** - Tunable white 2-channel control 65K to 27K [1] Static white and BIOS also available. Consult other spec sheet.	**80CRI** - 80 CRI **90CRI** - 90 CRI

LUMEN PACKAGE	LUMINAIRE LENGTH	VOLTAGE	DRIVER [4]
350LMF - Eco low output 350 lm/ft **500LMF** - Low output 500 lm/ft **750LMF** - Medium output 750 lm/ft **1000LMF** [2] - High output 1000 lm/ft [2] Not available with MBPL optic.	**#FT#IN** [3] - Specify nominal length (#) in 1' and/or 1" increments **Standard nominal lengths:** Single units: 3' to 12' Continuous runs: lengths over 12' [3] Parabolic Louvers are available in 1' increments, and HLO in 1" increments.	**120V** - 120V **277V** - 277V **UNV** - 120V-277V	<u>SOLA</u> **SD1** - Single 0-10V input <u>DUO</u> **DMX** [5,6] - DMX **DDA** [6] - DALI DT6 **DDA8** [6] - DALI DT8 **DD1** - Dual 0-10V input for CCT/intensity **PSQ0** [6] - Lutron T-Series 1% Tunable White [4] PoE (Power-over-Ethernet) compatible. Consult factory for details. [5] For more information, see pages 7 to 12. [6] On-site commissioning is required.

ELECTRICAL	MOUNTING	FINISH	OPTIONS
1C			
1C - 1 circuit	**GRD** - Grid ceiling **DRC** - Drywall ceiling	**W** - Matte white **AL** - Aluminum **B** - Matte black **CF#** - Custom finish, specify RAL#	**FU120** - Fuse 120V **FU277** - Fuse 277V **NA** - None

Accessories
Optional, order separately

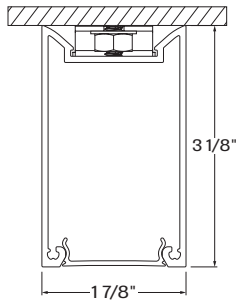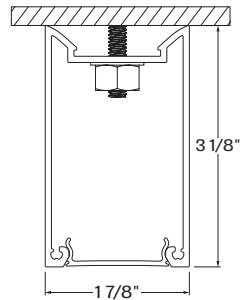| WALL CONTROLLER	
DMX	DD1
WCW [7] - DMX wall controller white **WCB** [7] - DMX wall controller black [7] Available with DMX only. For more information, see pages 7 to 12, or consult factory.	**TWCW** [8] - Dual 0-10V wall controller white **TWCB** [8] - Dual 0-10V wall controller black [8] Available with DD1 only. For more information, see page 13, or consult factory.

Lumenwerx reserves the right to modify product specifications without notification.
SQUERO-SURFACE-TW-SPEC-REV1   July 13, 2023

PoE
Power over Ethernet

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Dimensions

GRD - Grid ceiling

3 1/8"
1 7/8"

DRC - Drywall ceiling

3 1/8"
1 7/8"

Section Views

MBPL, MPL & SPL
Matte Black, Matte & Specular
Parabolic Louver

HLO
High-Efficiency Lambertian
Optic

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CHROMAWERX - SOLA, DUO

LUMENWERX
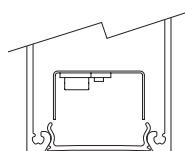
Photometrics

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

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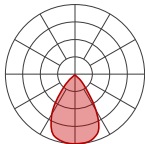
LM/FT	W/FT	LPW
350	5.2	67
500	7.5	66
750	11.7	64

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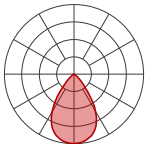
LM/FT	W/FT	LPW
350	3.5	99
500	5.1	98
750	7.7	98
1000	10.6	95

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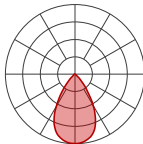
LM/FT	W/FT	LPW
350	3.1	113
500	4.4	113
750	6.7	112
1000	9.1	109

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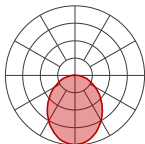
LM/FT	W/FT	LPW
350	3.1	112
500	4.6	108
750	7.3	103
1000	10.2	98

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LUMENWERX

Technical Specifications

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 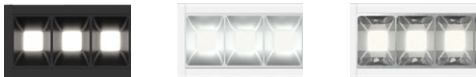shallow viewing angles. Matte (MPL) offers a softer appearance, a wider beam spread, and gentle brightness transition at cut-off. Matte black (MBPL) offers the highest UGR in Squero as the black parabolic louver is very quiet and glare free. The UGR is the best in class rating of under 10.

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).

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.

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.

ANSI C78.377-2015
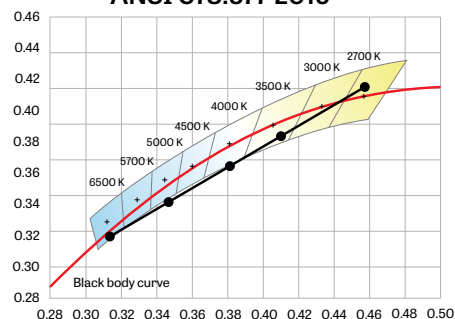
LUMINAIRE LENGTH

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.

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.

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CHROMAWERX - SOLA, DUO

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.

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 mounted directly to T-bar, drywall and hard surface ceilings, hardware supplied by others. Long runs require a minimum of 6" distance from the vertical wall.

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
End plate - Die cast aluminum (0.125" nominal)

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.

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CHROMAWERX - SOLA, DUO

LUMENWERX

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 <u>contact information of your DMX integrator.</u>**

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

DMX controller supplied by Lumenwerx

How many zones do you have?
A zone consists of one or more luminaires behaving identically.
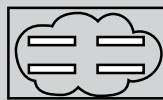
1 Zone   **2 Zones**

How to calculate the required number of drivers:

per 4' fixture	per 4' fixture
Driver	Driver Driver
1x driver	2x driver
Direct only	Direct high output

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 ans approval. Please contact our controls specialist at controls@lumenwerx.com
Additional cost and equipment will be required. ✓

ETL LISTED
c us
Intertek

PoE
Powered Ethernet

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GENERIC DMX NETWORK ARCHITECTURE

Lumenwerx supplied DMX controller **1**

Network & control by others

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

2 Controls J-Box

First DMX enabled fixture supplied by Lumenwerx **3**

DMX IN
DMX OUT
DMX
Driver | Driver
120/277V

Electrical J-Box

2 Wire + Shield
LOW CAP CABLE

2 Controls J-Box

Next DMX enabled fixture supplied by Lumenwerx **3**

DMX IN
DMX OUT
DMX
Driver | Driver
120/277V

Electrical J-Box

2 Wire + Shield
LOW CAP CABLE

2 Controls J-Box

Last DMX enabled fixture supplied by Lumenwerx max 32 drivers per run **3**

DMX IN
DMX OUT
DMX
Driver | Driver
120/277V

Electrical J-Box

4 120 OHM END OF LINE RESISTOR

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LUMENWERX

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1 | LUMENWERX SUPPLIED DMX CONTROLLER

To the first fixture

WALL BOX SUPPLIED BY OTHERS

2 Wire +
Shield Low Cap Cable

Back Panel

V-
12-24
Vdc

V+
12-24
Vdc

DMX-

DMX+

SHIELD

BLACK

RED

WHT-
BLUE

BLUE

BARE

Front Panel

⏻   Z1

S1   Z3

S2   Z4

Z2

Controller image may differ

I.E.: Cerco Cable 7539-10
Belden 9841
Belden 8241

DC out

**Power Supply
120-277VAC / 24VDC**

N — BLUE — Neutral

L — BROWN — DC in

Line

Ground

Electrical
J-Box

---

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Intertek

PoE
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2 J-BOX DMX DAISY CHAIN DETAIL

Low capacitance DMX Cable from Previous Fixture

Shielding foil touches the bare metal drain wire inside

IN

Bare metal drain wire (shield) MUST **NOT** TOUCH J-BOX

DMX IN

DMX ENABLED FIXTURE

Controls J-Box

DMX OUT

Ground

OUT

Bare metal drain wire (shield) MUST **NOT** TOUCH J-BOX
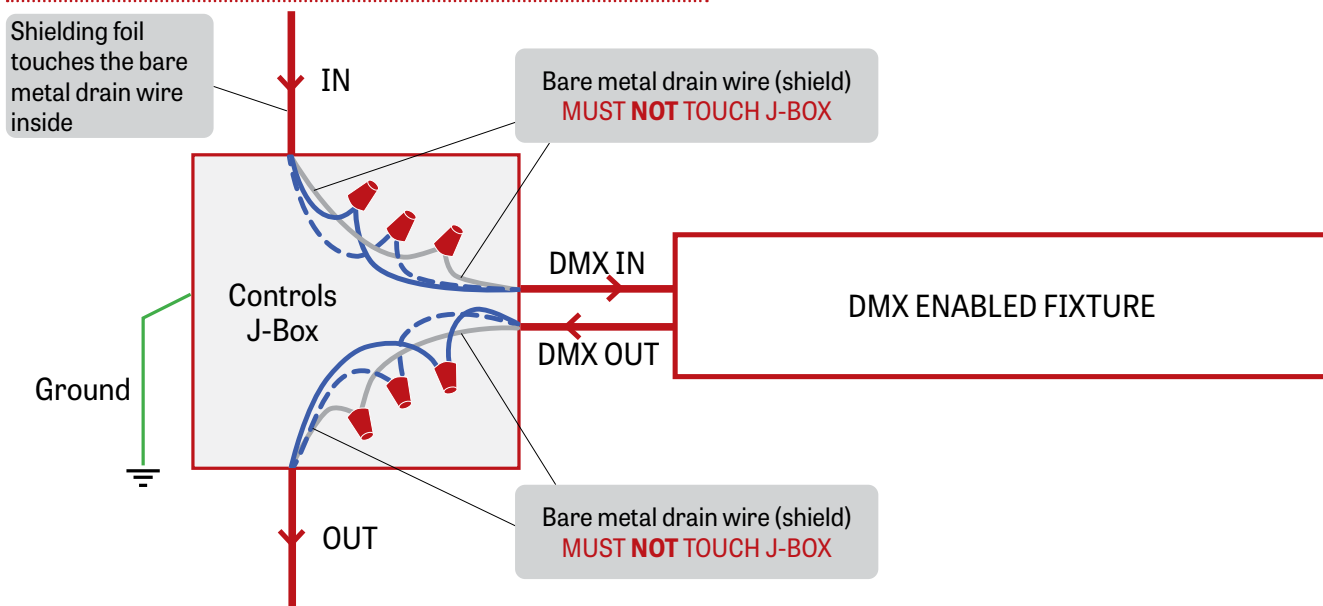
Low capacitance DMX cable to next fixture

3 DMX CONNECTION RECESSED & SURFACE

DMX

IN

Shield
DMX -
DMX +

OUT

Shield
DMX -
DMX +

POWER

LINE
VOLTAGE

white
black
green

N   L   G

DMX ENABLED FIXTURE

DMX

PWR

ETL
Intertek

PoE

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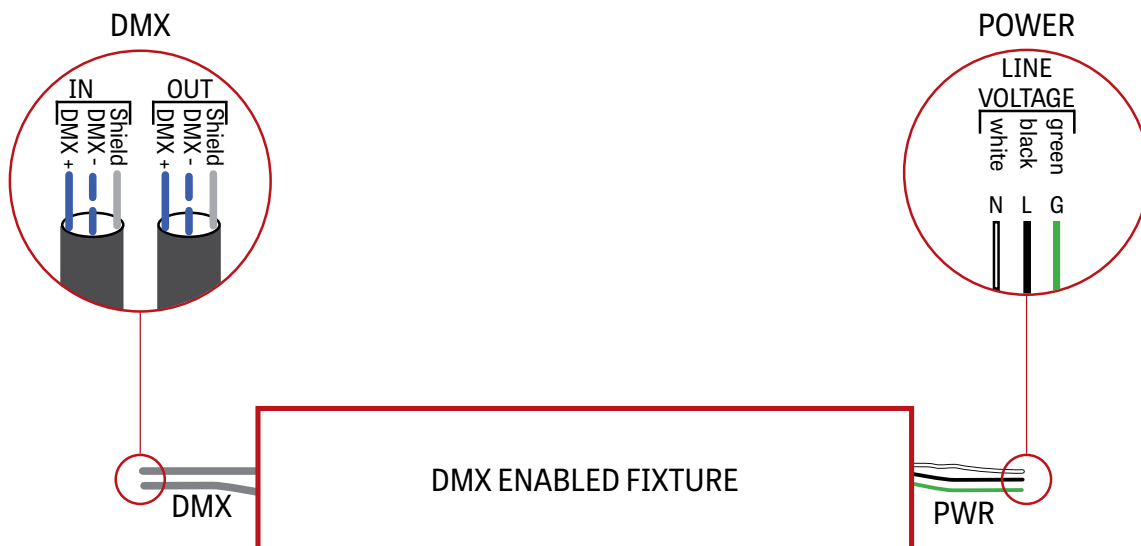
4   DMX LAST FIXTURE DETAIL

120 OHM
END OF LINE
RESISTOR

CAP
OFF SHIELD

+
—
S

Last DMX OUT

DMX IN
From other fixtures

+
—
S

DMX + = Blue
DMX - = White-Blue
Shield = Bare metal

DMX
Driver

DMX +
DMX -
SHIELD

LED output

LAST FIXTURE OF THE DMX NETWORK
MAX 32 DRIVERS PER DMX RUN

DMX ENABLED FIXTURE

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www.lumenwerx.com

ETL
Intertek

PoE

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DMX WALL CONTROLLER

DUO 1-4 ZONE

Default DMX Addresses:
1 Warm
2 Cool

(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.
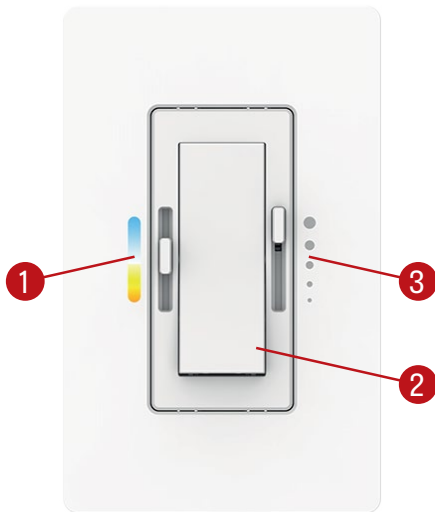

3737 Cote Vertu St-Laurent, Quebec, Canada H4R 2C9
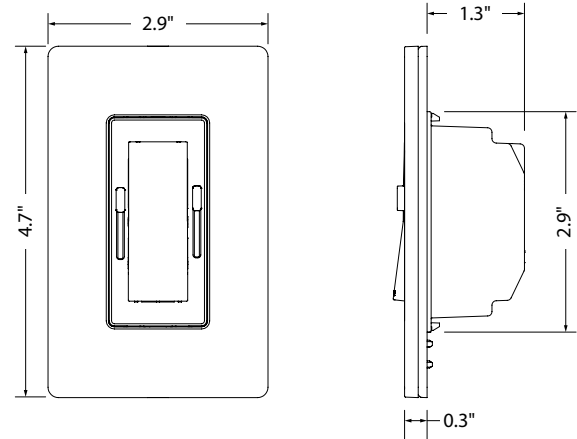T (514) 225-4304 F (514) 931-4862
www.lumenwerx.com

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DUAL 0-10V WALL CONTROLLER

Front Panel

Controller image may differ

Dimensions

2.9"

4.7"

1.3"

2.9"

0.3"

(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

Ground

Green

0-10V Ch 1 (TW Control) + −
0-10V Ch 2 (Intensity) + −

Yellow
Brown
Purple
Gray

Wall Switch
(In-Wall Dimmer)

Red

Line / Hot

Black

120 V~
50/60 Hz

White

Neutral

- + - +

* 2 Channel LED Driver / Controller

−
+

Tunable White LED's

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boilerplate
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