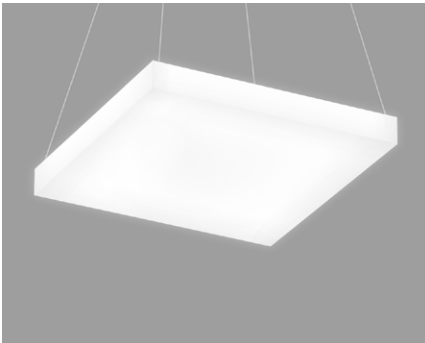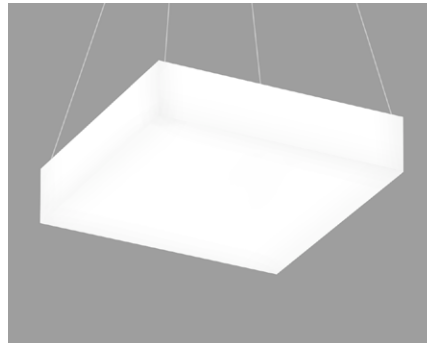# POP CORE SQUARE 2x2 LED

LUMENWERX
WWW.LUMENWERX.COM

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE AND DIM TO WARM

IMPORTANT: a qualified DMX integration consultant is required to ensure proper installation and function of any DMX network

Shown with 2.5" optics

Shown with 5" optics

DESCRIPTION

POP Core features a simple, uniformly luminous diffuser and delivers up to 124 LPW. The diffuser and light engine form a fully enclosed unit secured by a twist-and-lock mechanism for easy maintenance with no exposed hardware. POP Core is an ideal vehicle for ChromaWerx white tuning in education, office, and healthcare applications where modular luminaires are used.

CHROMAWERX

up to 124 lm/w performance

ORDER GUIDE

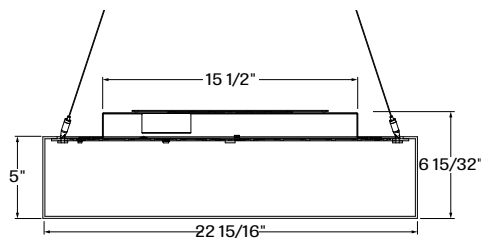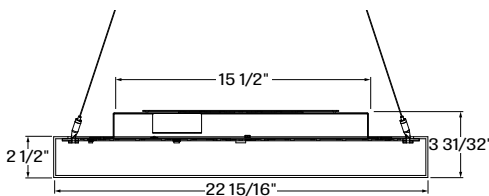| POSQPDI	2FTX2FT	ULO		LED		
LUMINAIRE ID	**SIZE**	**OPTICS**	**HEIGHT**	**LIGHT SOURCE**	**CRI**	**DIRECT LUMEN PACKAGES**
POSQPDI - pop square pendant direct/indirect	**2FTX2FT** - 2' X 2'	**ULO** - Uniform Lambertian Optic	**2H** - 2.5" optic **5H** - 5" optic	**LED** - high performance LED	**80** - 80CRI **90** - 90CRI	**2500** - min. low output 2500lm **3500** - medium output 3500lm **4500** - max. high output 4500lm **####** - other required lm

					1	5SWAC36
INDIRECT LUMEN PACKAGES	**CHROMAWERX**	**VOLTAGE**	**DRIVER**		**ELECTRICAL**	**MOUNTING**
900 - min. medium output 900lm **1100** - max. high output 1100lm **####** - other required lm	**DUO** - tunable white 2 channel control 27k to 65k **SOLA** - dim to warm single channel control 22k to 35k	**120** - 120V **277** - 277V	**DMX** - to specify see pages 5 to 10 **DA** - Dali (duo only) local on-site commissioning is required **0-10** - Single 0-10V input (Sola) or dual 0-10V input for CCT/Intensity (Duo) **PSQ0** - Lutron T-Series 1% Tunable White (Duo only)		**1** - 1 circuit	**5SWAC36** - power 5" square white canopy (36" air craft cable) For all other options refer to our Pendant Mounting Guide

See page 2 for ordering code detailed information

FINISH	OPTIONS
W - matte white **CF#** - custom finish specify RAL#	**FU** - fuse **CU** - custom

DMX WALL CONTROLS

To specify see pages 5 to 10

CROSS SECTION

15 1/2"
2 1/2"
3 31/32"
22 15/16"

POSQPDI + 2H - pop square pendant direct/indirect with 2.5" optics

15 1/2"
5"
6 15/32"
22 15/16"

POSQPDI + 5H - pop square pendant direct/indirect with 5" optics

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POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE AND DIM TO WARM
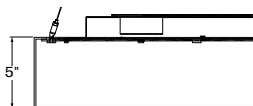
OPTICS

UNIFORM EFFICIENCY LAMBERTIAN OPTIC (ULO) - made of formed impact modified white PMMA, the optic provides an even light distribution with up to 88% transmission. Its unique enclosed shell design protects LEDs against Electrostatic Discharge and dust while its back surface project a soft glow on the mounting surface.

OPTICS HEIGHT

POP square pendant 22 is available with both 2.5" and 5" diffuser.

2 1/2"

5"
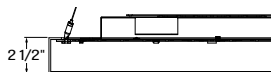
POSQPDI + 2H - pop square pendant direct/indirect with 2.5" optics

POSQPDI + 5H - pop square pendant direct/indirect with 5" optics

LIGHT SOURCE - LED

PERFORMANCE AT 4000K

High Indirect Output (1100 Lumens)

LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
Low output	4000K	29	2500	1100	3600	124
Medium output	4000K	38.5	3500	1100	4600	120
High output	4000K	46.5	4500	1100	5600	120

Medium Indirect Output (900 Lumens)

LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
Low output	4000K	27.5	2500	900	3400	124
Medium output	4000K	36.5	3500	900	4400	120
High output	4000K	45	4500	900	5400	120

| Lumen Adjustment Factors	
2700K	0.917
3000K	0.959
3500K	0.988
4000K	1.000
6500K	1.053

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

All LED's 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

ANSI C78.377-2015
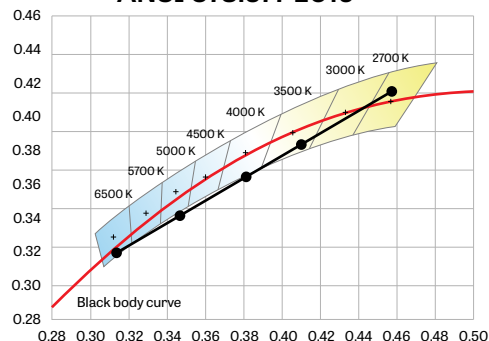
ChromaWerx Sola is single-channel control that dims output while warming the color temperature in a pre-determined relationship. A simple digital or analog control sends a common signal to dual output digital drivers, which are programmed to adjust a specially populated LED array to emulate the effect 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 is a two-channel control. It uses analog or digital protocols for synchronous control of both warm and cool LED arrays, enabling the user to set color temperature and light output. Commonly called "tunable white", ChromaWerx two-channel control provides the range of warm (2700K) to cool (6500K) 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.

POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE AND DIM TO WARM

ELECTRICAL

DMX (Duo only)

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 (Duo Only)

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. 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%.

0-10V (Sola)

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%.

0-10V (Duo)

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 2700K-6500K). 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 (Duo only)

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 Quatum System.

MOUNTING OPTIONS

Fixtures are pendant-mounted, using aircraft cables. Unless otherwise specified, LumenWerx provides the following hardware:

For cable-mounted fixtures - 5SWAC36, 5" square white canopy with a 36" cable.

For all other options, see our website for a detailed Pendant Mounting Guide

Power
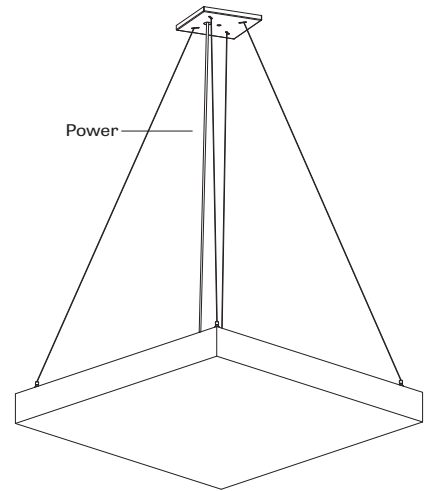
FINISH

Interior - 95% reflective, matte white powder coating

Exterior - matte white powder coating.

CONSTRUCTION

Housing - 16 gauge spun aluminum, matte white powder coating

Diffuser - Uniform lambertian optic, precisely formed impact modified acrylic, completely enclosed

WEIGHT

SQ 22 X 2.5 - 15.68lbs - 7.12kg
SQ 22 X 5 - 16.88lbs - 7.67kg

CERTIFICATIONS

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

WARRANTY

For all ChromaWerx products, LumenWerx provides a three-year limited warranty of 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.

Wall controllers are covered by the manufacturer warranty.

POP CORE SQUARE 2x2 LED

LUMENWERX
WWW.LUMENWERX.COM

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE

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 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.
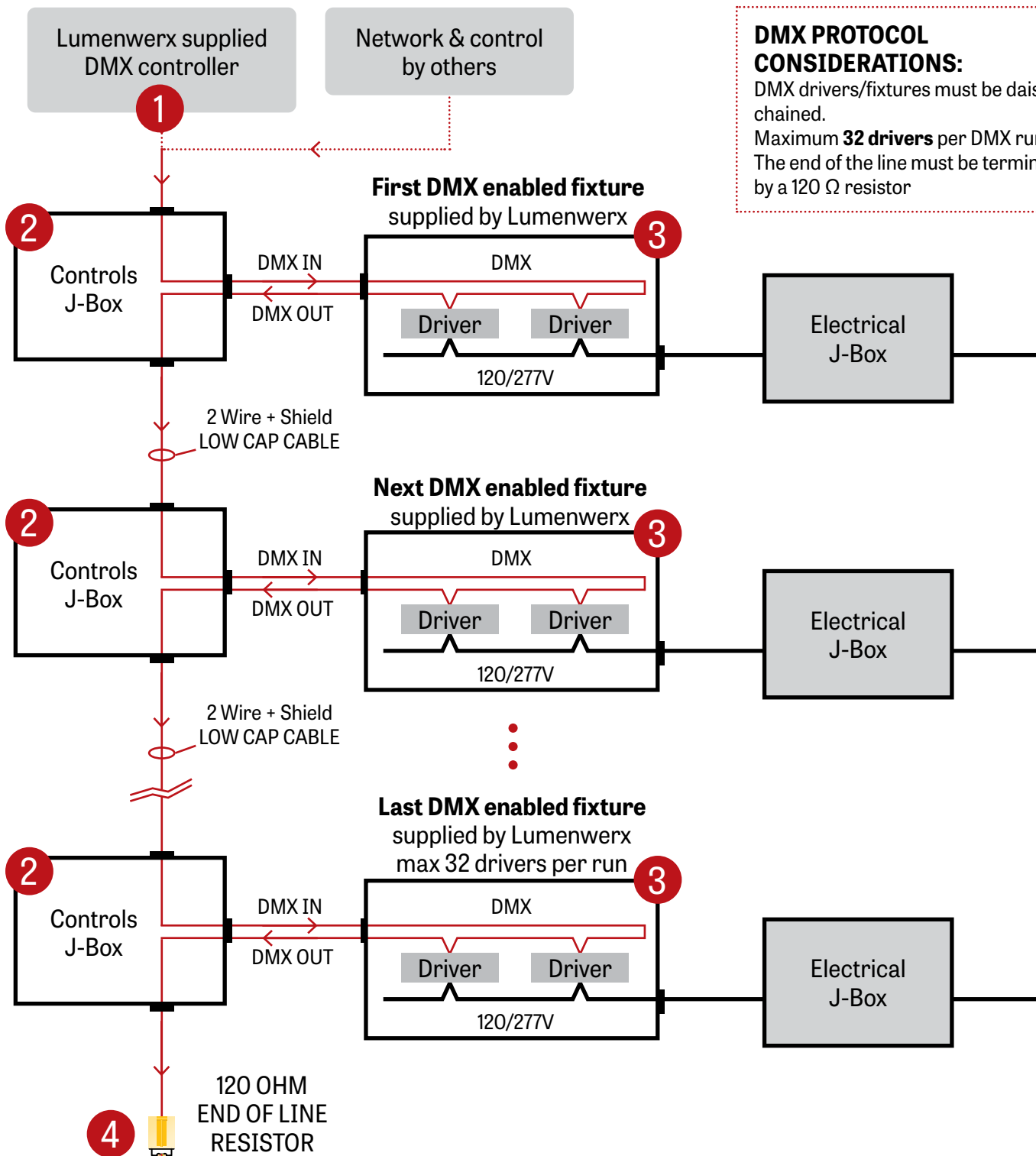Refer to your DMX integrator for the installation. ✓

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. ✓

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POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE

GENERIC DMX NETWORK ARCHITECTURE

Lumenwerx supplied DMX controller

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

First DMX enabled fixture
supplied by Lumenwerx

Controls J-Box

DMX IN
DMX OUT

DMX

Driver   Driver

120/277V

Electrical J-Box

2 Wire + Shield
LOW CAP CABLE

Next DMX enabled fixture
supplied by Lumenwerx

Controls J-Box

DMX IN
DMX OUT

DMX

Driver   Driver

120/277V

Electrical J-Box

2 Wire + Shield
LOW CAP CABLE

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

Controls J-Box

DMX IN
DMX OUT

DMX

Driver   Driver

120/277V

Electrical J-Box

120 OHM
END OF LINE
RESISTOR

POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE

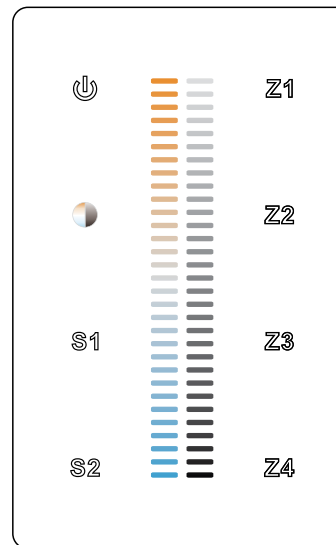**1** LUMENWERX SUPPLIED DMX CONTROLLER

To the first fixture

WALL BOX SUPPLIED BY OTHERS

2 Wire +
Shield Low Cap Cable

Back Panel

Front Panel

V-
12-24
Vdc | V+
12-24
Vdc | DMX- | DMX+ | SHIELD

BLACK | RED | WHT-BLUE | BLUE | BARE

Z1
Z2
S1   Z3
S2   Z4
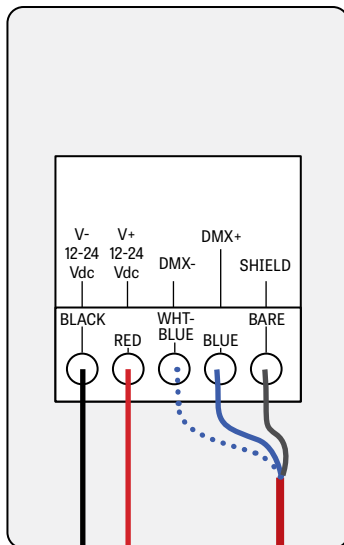
Controller image may differ

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

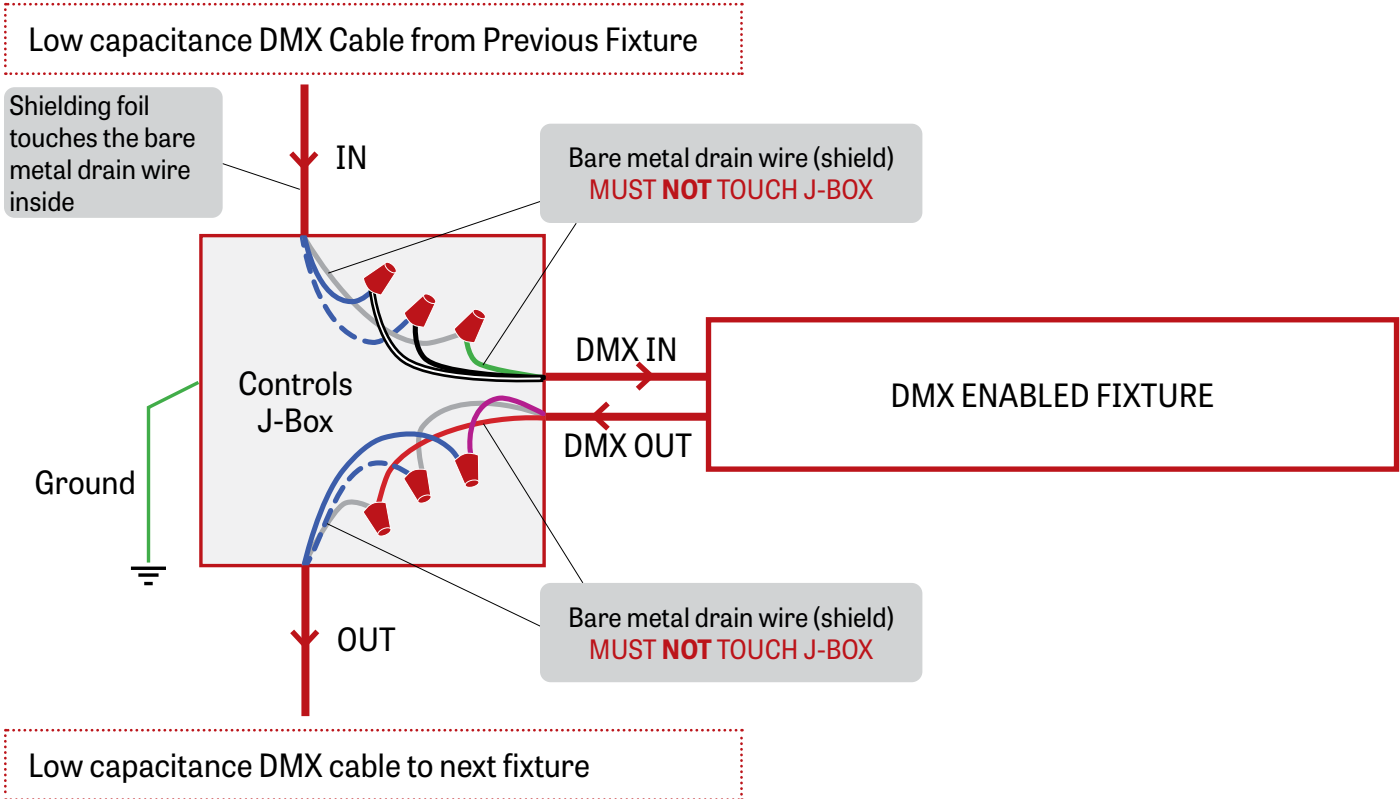DC out

Power Supply
120-277VAC / 24VDC

N — BLUE — Neutral
L — BROWN — DC in

Line

Ground

Electrical
J-Box

Intertek

POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE

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

Controls J-Box

DMX ENABLED FIXTURE

DMX OUT

Ground

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

OUT

Low capacitance DMX cable to next fixture

3   DMX CONNECTION PENDANT & WALL

DMX

IN   OUT

+ - s   + - s

white
black
green
purple
grey
red

POWER

LINE VOLTAGE

white
black
green

N   L   G

DMX

DMX ENABLED FIXTURE

PWR

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POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE
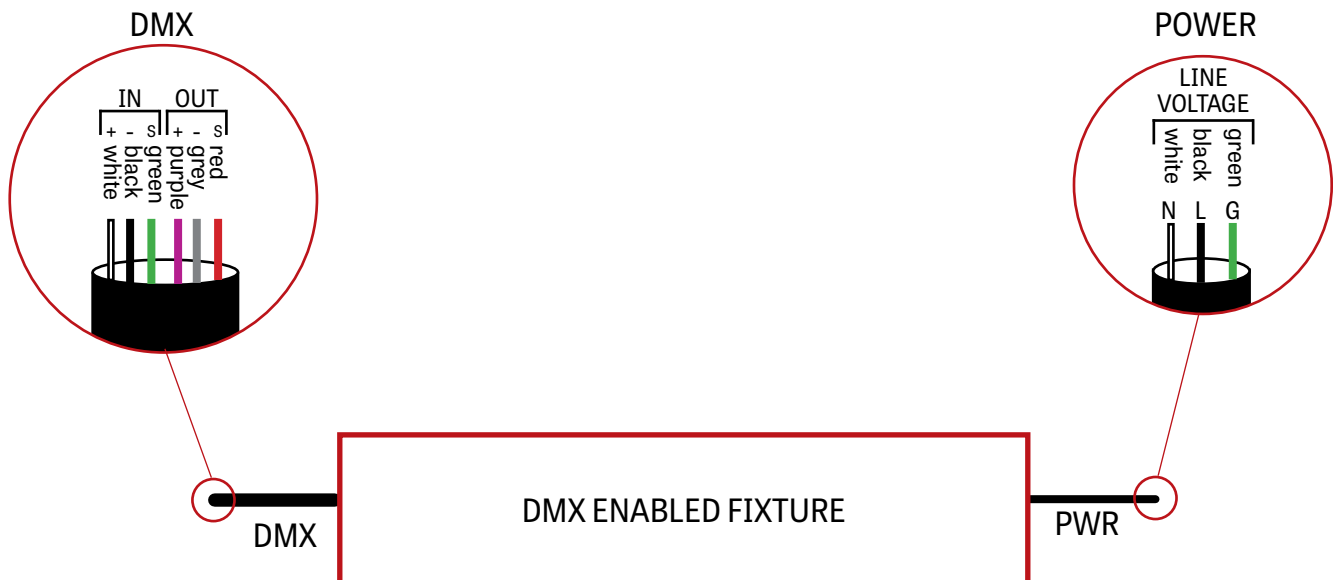
4 DMX LAST FIXTURE DETAIL

120 OHM
END OF LINE
RESISTOR

CAP
OFF SHIELD

Last DMX OUT

+

–

S

DMX IN
From other fixtures

+

–

S

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

DMX
Driver

DMX +
DMX -
SHIELD

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

LED output

DMX ENABLED FIXTURE

Intertek

POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE

DMX WALL CONTROLLER

DUO 1-4 ZONE

Default DMX Addresses:
1 Warm
2 Cool
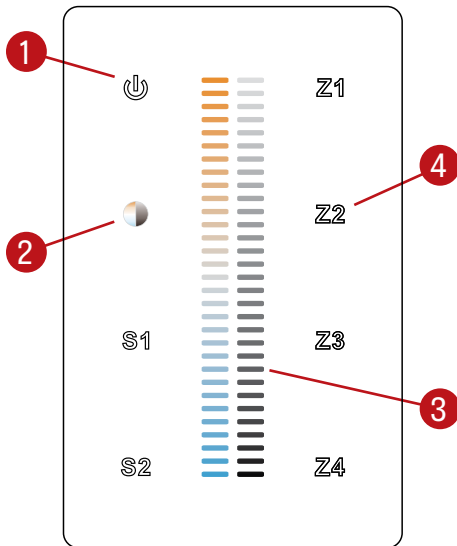
(1) Power: Use this button to turn ON or OFF the fixture.

(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.
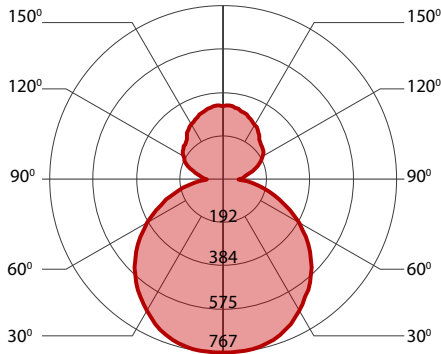
POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE AND DIM TO WARM

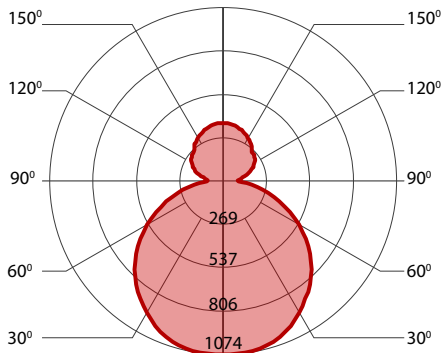### PERFORMANCE AT INDIRECT 900 LUMEN

2500 LUMEN AT 80CRI - LOW OUTPUT

PERFORMANCE

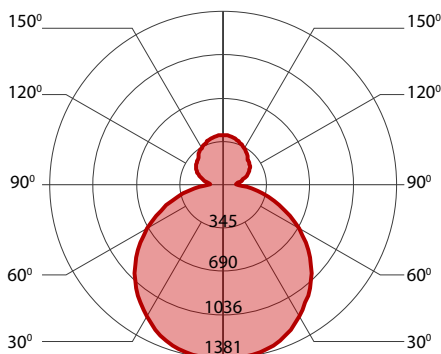| LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
low output	2700K	30	2500	900	3400	114
low output	3000K	29	2500	900	3400	117
low output	3500K	28	2500	900	3400	121
low output	4000K	27.5	2500	900	3400	124
low output	5000K	26	2500	900	3400	130
low output	6500K	26.5	2500	900	3400	129

3500 LUMEN AT 80CRI - MEDIUM OUTPUT

PERFORMANCE

LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
medium output	2700K	39.5	3500	900	4400	111
medium output	3000K	39	3500	900	4400	113
medium output	3500K	37.5	3500	900	4400	117
medium output	4000K	36.5	3500	900	4400	120
medium output	5000K	35	3500	900	4400	125
medium output	6500K	35	3500	900	4400	125

4500 LUMEN AT 80CRI - HIGH OUTPUT

PERFORMANCE

LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
high output	2700K	49	4500	900	5400	110
high output	3000K	48	4500	900	5400	112
high output	3500K	46.5	4500	900	5400	116
high output	4000K	45	4500	900	5400	120
high output	5000K	43	4500	900	5400	125
high output	6500K	43.5	4500	900	5400	124

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POP CORE SQUARE 2x2 LED

PENDANT DIRECT/INDIRECT - CHROMAWERX TUNABLE WHITE AND DIM TO WARM
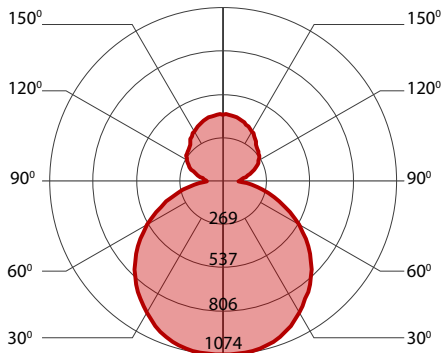
PERFORMANCE AT INDIRECT 1100 LUMEN

2500 LUMEN AT 80CRI - LOW OUTPUT
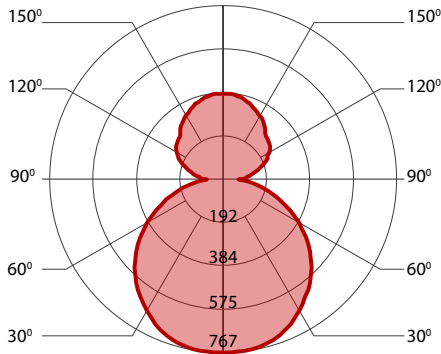
PERFORMANCE

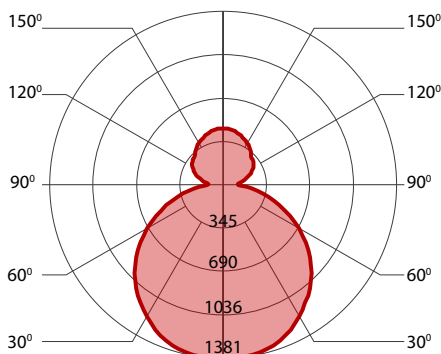| LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
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low output	3000K	31	2500	1100	3600	116
low output	3500K	30	2500	1100	3600	120
low output	4000K	29	2500	1100	3600	124
low output	5000K	28	2500	1100	3600	129
low output	6500K	28	2500	1100	3600	129

3500 LUMEN AT 80CRI - MEDIUM OUTPUT

PERFORMANCE

LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
medium output	2700K	42	3500	1100	4600	110
medium output	3000K	40.5	3500	1100	4600	113
medium output	3500K	39.5	3500	1100	4600	116
medium output	4000K	38.5	3500	1100	4600	120
medium output	5000K	37	3500	1100	4600	125
medium output	6500K	37	3500	1100	4600	125

4500 LUMEN AT 80CRI - HIGH OUTPUT

PERFORMANCE

LED output	Color Temp	Watts	Direct Lumens	Indirect Lumens	Total Nominal Delivered Lumens	Efficacy LPW
high output	2700K	51	4500	1100	5600	110
high output	3000K	50	4500	1100	5600	112
high output	3500K	48.5	4500	1100	5600	116
high output	4000K	46.5	4500	1100	5600	120
high output	5000K	45	4500	1100	5600	125
high output	6500K	45	4500	1100	5600	124

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