

SHELL

LINEAR - SURFACE

STATIC WHITE, BIOS, SOLA, DUO

LUMENWERX

Project: _____

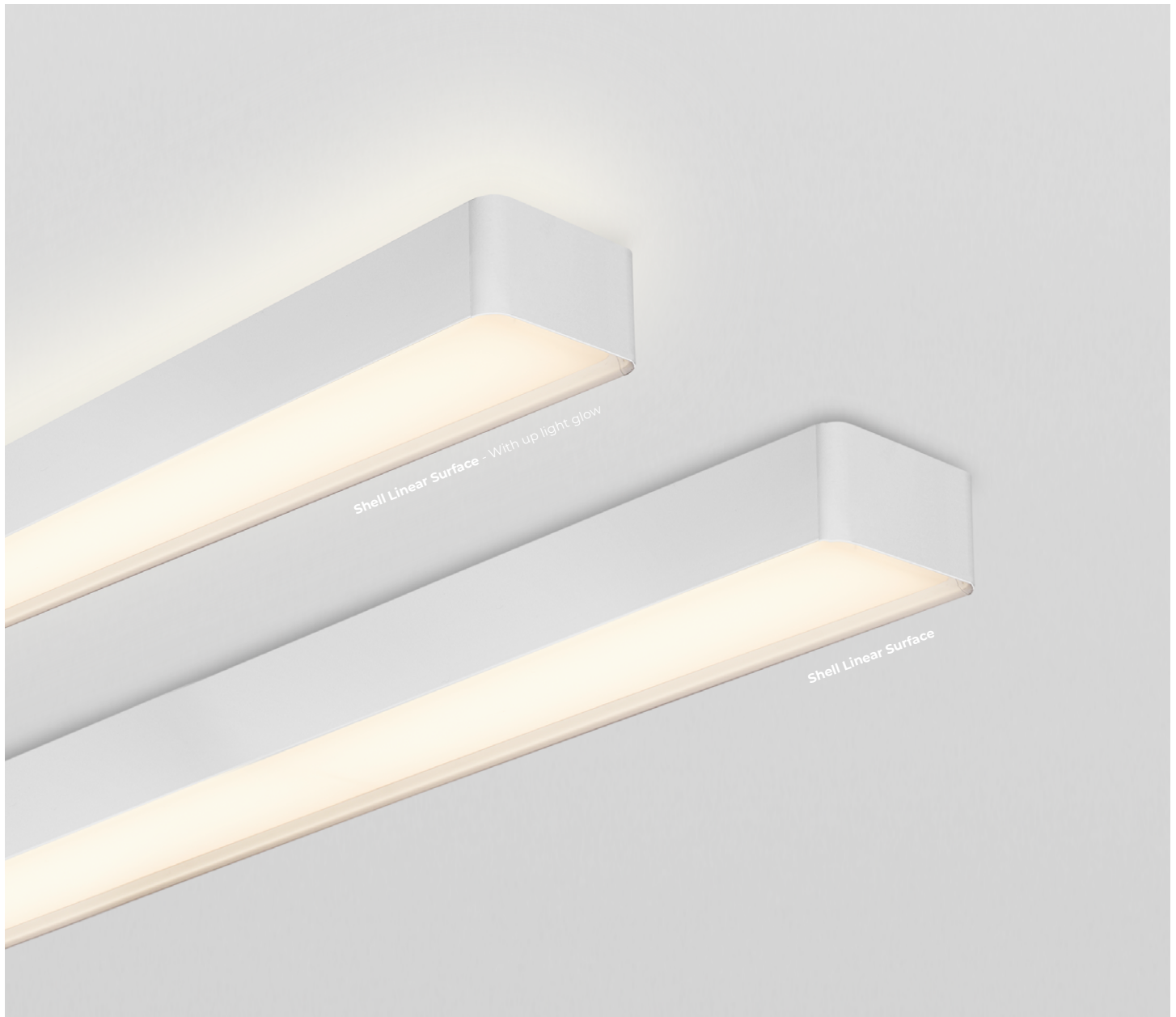
Type: _____

DESCRIPTION

Shell fixtures are sleek, balanced, and well detailed. Remarkably versatile, Shell complements general illumination in working spaces and provides functional illumination over conference tables, in break or lunch rooms, and in circulation spaces. Shell Linear Surface can offer a subtle circumference glow for added visual interest. Shell is available with Chromawerx Duo, Sola, and solid colors (red, green and blue), as well as Static White and BIOS. See additional specification sheets for other mounting and shape options.



Up to 97 lm/W performance



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Order Guide

| LUMINAIRE ID | LENGTH ¹ | OPTICS | LIGHT SOURCE | CRI | LUMEN PACKAGE | | | | | | | | |
|--------------------------------------|---|---|---|--|---|-----|---------------------|-------------------|------------------|--|----------------------------------|------------------|--------------------------|
| SHELLS | | HLO | | | | | | | | | | | |
| SHELLS - Shell Linear Surface | 4FT - 4' 8FT - 8' ¹ For installation space requirements, see page 2. | HLO - High-Efficiency Lambertian Optic | SW - Static white BIOSST - Static biologically-optimized lighting BIOSDY - Dynamic biologically-optimized lighting SOLA - Dim-to-warm single channel control 22K to 35K DUO - Tunable white 2-channel control 27K to 65K RS - Red solid GS - Green solid BS - Blue solid | 80 - 80CRI 90 ² - 90CRI ² Not available with BIOS. | <u>SW, BIOSST, BIOSDY, SOLA, DUO</u> <table border="1"> <tr> <td>Low</td> <td>Medium ³</td> <td>High ³</td> </tr> <tr> <td>4 feet 8 feet</td> <td>L1000lm M1600lm M3200lm</td> <td>H2000lm H4000lm</td> </tr> </table> <u>Solid colors (RS, GS, BS)</u> <table border="1"> <tr> <td>4 feet 8 feet</td> <td>18W 36W</td> </tr> </table> ³ Not available with BIOS. | Low | Medium ³ | High ³ | 4 feet 8 feet | L1000lm M1600lm M3200lm | H2000lm H4000lm | 4 feet 8 feet | 18W 36W |
| Low | Medium ³ | High ³ | | | | | | | | | | | |
| 4 feet 8 feet | L1000lm M1600lm M3200lm | H2000lm H4000lm | | | | | | | | | | | |
| 4 feet 8 feet | 18W 36W | | | | | | | | | | | | |

| COLOR TEMP | VOLTAGE | DRIVER ⁶ | DRIVER BOX | ELECTRICAL |
|--|---|---|--|--------------------------------------|
| 27 ⁴ - 2700K 30 - 3000K 35 - 3500K 40 - 4000K ⁴ Not available with BIOS. | 120 - 120V 277 - 277V UNV - 120V-277V 347 ⁵ - 347V ⁵ Available with static white and D1 only. | <u>SW, BIOS</u> D1 - 1% 0-10V DA ⁷ - DALI LDE1 ⁷ - Lutron Hi-lume 1% Eco ELD1 - eldoLED 1% ECOdrive ELDO - eldoLED 0.1% SOLOdrive <u>SOLA</u> SD1 - Single 0-10V input ⁶ PoE (Power-over-Ethernet) compatible. Consult factory for details. ⁷ On-site commissioning is required. | RDB RDB - Remote Driver Box | 1 1 - 1 circuit |
| | | <u>DUO</u> DD1 - Dual 0-10V input for CCT/intensity DMX ⁷ - DMX, to specify see pages 7 to 10 DA ⁷ - DALI PSQ0 ⁷ - Lutron T-Series 1% Tunable White <u>Solid Colors</u> D1 - 0-10V | | |

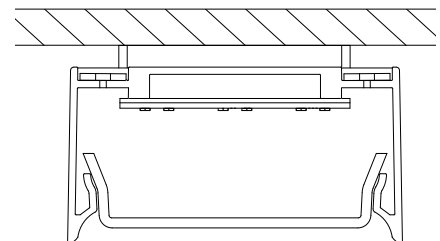
| FINISH | UP LIGHT GLOW ⁸ |
|--|--|
| W - Matte white AL - Aluminum B - Matte black RAL1028 - Yellow RAL2004 - Orange RAL3020 - Red RAL4010 - Magenta RAL5002 - Blue RAL6018 - Green CF# - Custom finish specify RAL# | WHS - White glow BLS - Blue glow RES - Red glow GRS - Green glow ORS - Orange glow ##S - Custom glow NG - No glow ⁸ For solid colors, glow will be the same color as the specified solid color. |

Accessories

Optional, order separately

| DMX WALL CONTROLLER ⁹ |
|---|
| WCW - Wall controller white WBW - Wall controller black ⁹ For more information, see pages 7 to 10, or consult factory. |

SECTION VIEW



SHELLS - Surface with up light glow

SHELL

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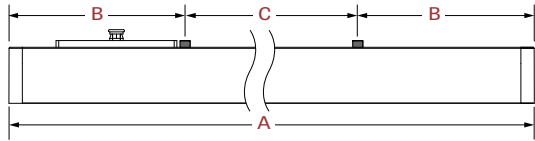
LUMENWERX

Project: _____

Type: _____

Dimensions

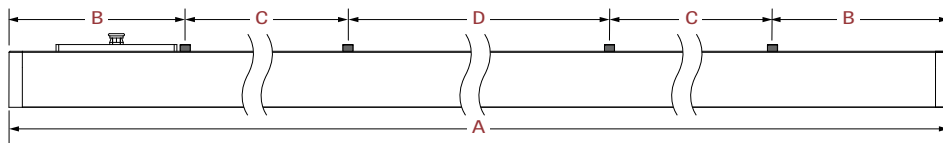
Mounting Dimensions



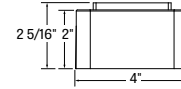
SHELS - 4FT - 2 mounting points

| NOMINAL LENGTH | FIXTURE LENGTH | END OF FIXTURE TO FIRST MOUNTING POINT | BETWEEN MOUNTING POINTS (CENTER TO CENTER) | |
|-----------------|----------------|--|--|----------|
| | A | B | C | D |
| 4' ¹ | 48" | 6 9/16" | 34 7/8" | - |
| 8' ² | 95 19/32" | | 23 17/32" | 35 7/16" |

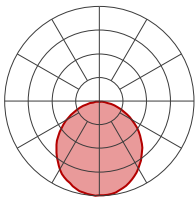
¹ For Shell 4FT, a minimum 50" of clearance space is required on one end for the installation.
² For Shell 8FT, a minimum 50" of clearance space is required on both ends for the installation.



SHELS - 8FT - 4 mounting points

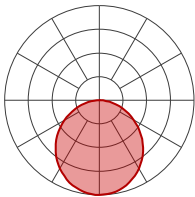


Photometrics



Performance for 4 Feet - Delivered Lumens at 35K at 80 CRI

| LED OUTPUT | LUMENS PER FOOT | TOTAL LUMENS PER 4FT | INPUT WATTAGE | EFFICACY LPW |
|---------------|-----------------|----------------------|---------------|--------------|
| Low output | 250 | 1000 | 10.3 | 97 |
| Medium output | 400 | 1600 | 16.9 | 95 |
| High output | 500 | 2000 | 21.6 | 93 |



Performance for 8 Feet - Delivered Lumens at 35K at 80 CRI

| LED OUTPUT | LUMENS PER FOOT | TOTAL LUMENS PER 8FT | INPUT WATTAGE | EFFICACY LPW |
|---------------|-----------------|----------------------|---------------|--------------|
| Low output | 250 | 2000 | 20.5 | 97 |
| Medium output | 400 | 3200 | 33.7 | 95 |
| High output | 500 | 4000 | 43.2 | 93 |

Multiplier - CCT/CRI

| CCT (K) | WATTS | | LPW | |
|---------|-------|-------|-------|-------|
| | CRI80 | CRI90 | CRI80 | CRI90 |
| 2700 | 1.05 | 1.13 | 0.95 | 0.88 |
| 3000 | 1.01 | 1.09 | 0.99 | 0.92 |
| 3500 | 1 | 1.08 | 1 | 0.93 |
| 4000 | 1 | 1.08 | 1 | 0.93 |

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Technical Specifications

OPTICS

High-Efficiency Lambertian Optic (HLO) - Shielding of 0.1" thick, thermoformed diffusing acrylic with up to 70% transmission and excellent source obscuration. Vertical return edge illuminates inside of housing. Luminaire brightness is controlled by the flux-to-shielding area ratio.

LIGHT SOURCE - STATIC WHITE

Custom array of mid-power LEDs mounted directly to the fixture housing for optimal thermal performance. Available in 2700K, 3000K, 3500K and 4000K with a minimum 80 CRI and an option for 90 CRI with elevated R9 value. Color consistency is maintained to within 3 SDCM. LEDs operate at a reduced drive current to optimize efficacy and lumen maintenance. All LEDs have been tested in accordance with IESNA LM-80-08 and results have shown L80 lumen maintenance is greater than 60,000 hours. Absolute product photometry is measured and presented in accordance with IESNA LM-79, unless otherwise indicated.

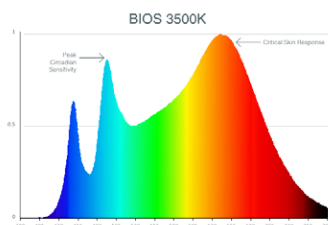
LIGHT SOURCE - SOLA / DUO

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 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 3 SDCM. LEDs are operated 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.



BIOS SkyBlue™ Technology is designed to provide the specific circadian stimulus to improve overall sleep quality, recovery during the night, and overall feelings of well-being.

The non-visual light signals that stimulate our circadian system have peak intensity in the "sky blue" region. As the diagram below illustrates, BIOS SkyBlue technology shifts the peak LED spectral intensity (460 nm) to align better with the peak response of circadian stimulus. Also note the enhanced deep-red (near 660 nm) spectrum.



WELL for Light - The WELL building standard focuses on light quality in several features. There are three categories that are fully attributed to the construction and features of a luminaire. In WELL V1, it's Feature 54 Circadian Lighting, Feature 55 Glare Control, and Feature 58 Color Quality. In WELL V2, it's Feature L03 Circadian Lighting, Feature L04 Glare Control, and Feature L07 Electric Light Quality.

This fixture meets Features:

- Feature 54 or L03 when BIOS LED or Duo is selected
- Feature 55 or L04 meets WELL glare category (c-d)
- Feature 58 or L07 when 90CRI is selected

All LED drivers used at Lumenwerx are deemed to have a low risk level of flicker, of 5 % or less below 90Hz operational as defined by IEEE standard 1789-2015 LED.



WELL for Mind -This luminaire meets WELL for mind as it is a human centric luminaire offering quality light, excellent color, and smooth optics. If any of these features are incorporated in a luminaire, it can improve the ability to focus, concentrate, and persist longer on a given task. This fixture harmoniously operates in a space to assist the mind.

For more information please contact well@lumenwerx.com.

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CHROMAWERX

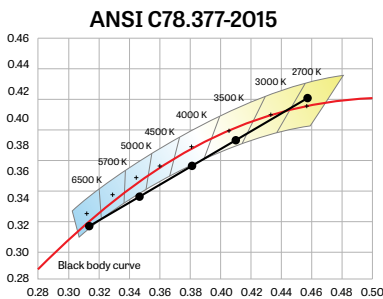
A custom array of alternating color temperature LEDs mounts directly to the housing for optimal thermal performance. Mid-flux LEDs operate at reduced drive current to optimize efficacy and lumen maintenance.

Chromawerx Sola

Chromawerx Sola dims output while warming the color temperature in a pre-determined relationship. Dimming range is programmable, but the default option runs from 3500K at 100% full power to 2200K at 5% full power.

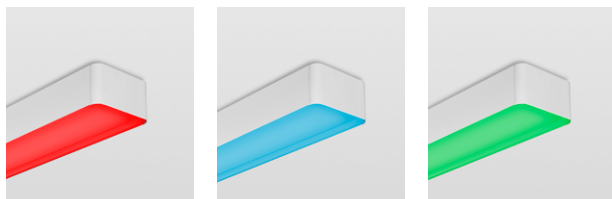
Chromawerx Duo

Chromawerx Duo enables the user to set color temperature and light output independently. Commonly called "tunable white", Chromawerx Duo provides the range from warm to cool color that can be useful for helping to entrain circadian rhythms, stimulate alertness, 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.



Chromawerx Solid colors

For dramatic coloration, Shell offers Chromawerx options for solid colors like red, green, or blue. Consult Lumenwerx for implementations of Chromawerx Duo with white and solid color LEDs, enabling muted colors or the ability to switch between white and colored light



RS - Red solid

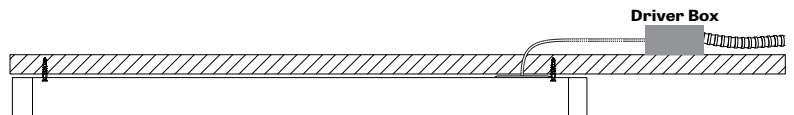
BS - Blue solid

GS - Green solid

ELECTRICAL

Factory-set, adjustable output current LED driver with universal (120-277VAC) input. Dimmable from 100% to 1% with 0-10V dimming control. Rated life (90% survivorship) of 50,000 hours at 50°C max. ambient (and 70°C max. case) temperature. At maximum driver load: Efficiency>84%, PF>0.9, THD<20%. Other specifiable options include Lutron Hi-Lume 1%, DMX (RDM compatible), eldoLED 1% ECOdrive, eldoLED 0.1% SOLOdrive, and DALI protocol drivers. All of our standard 0-10V drivers are NEMA 410 compliant.

REMOTE DRIVER BOX (RDB)



Driver is recessed with brackets for mounting to ceiling joists or other supporting members.

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.

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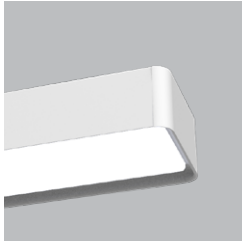
Type: _____

FINISH

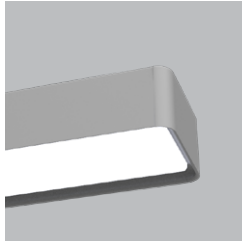
Interior - 95% reflective, matte white powder coating.

Exterior - powder coating in a range of vibrant colors.

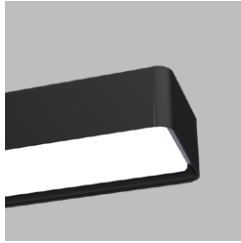
HOUSING COLOR OPTIONS



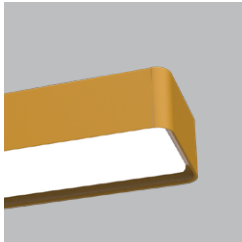
W - Matte white



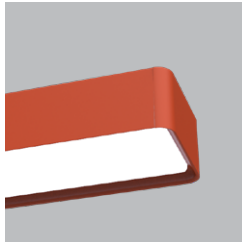
AL - Aluminum



B - Matte black



RAL1028 - Yellow



RAL2004 - Orange



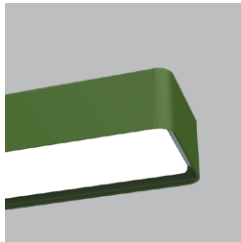
RAL3020 - Red



RAL4010 - Magenta



RAL5002 - Blue



RAL6018 - Green

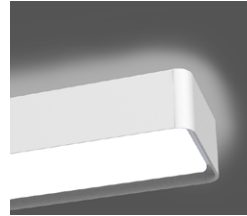
CONSTRUCTION

Housing - Die-cast aluminum ring with light-weight die-cast backplate

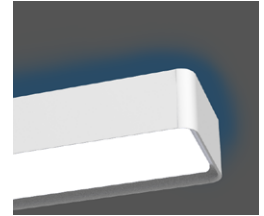
Diffuser - High-Efficiency Lambertian Optic, thermoformed acrylic

UP LIGHT GLOW

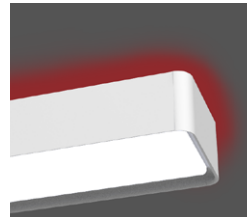
Subtle up light glow is emitted at the upper edge of the housing. Optional acrylic filters add a touch of color.



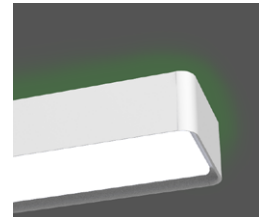
WHG - White glow



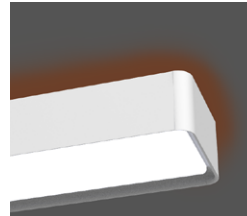
BLG - Blue glow



REG - Red glow



ORG - Orange glow



GRG - Green glow

WEIGHT

SHELLS 4' - 7 lbs

SHELLS 8' - 14 lbs

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

Lumenwerx provides a five-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.

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 fixture

1x Driver / 50W per side

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 costs and equipment will be required. ✓

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

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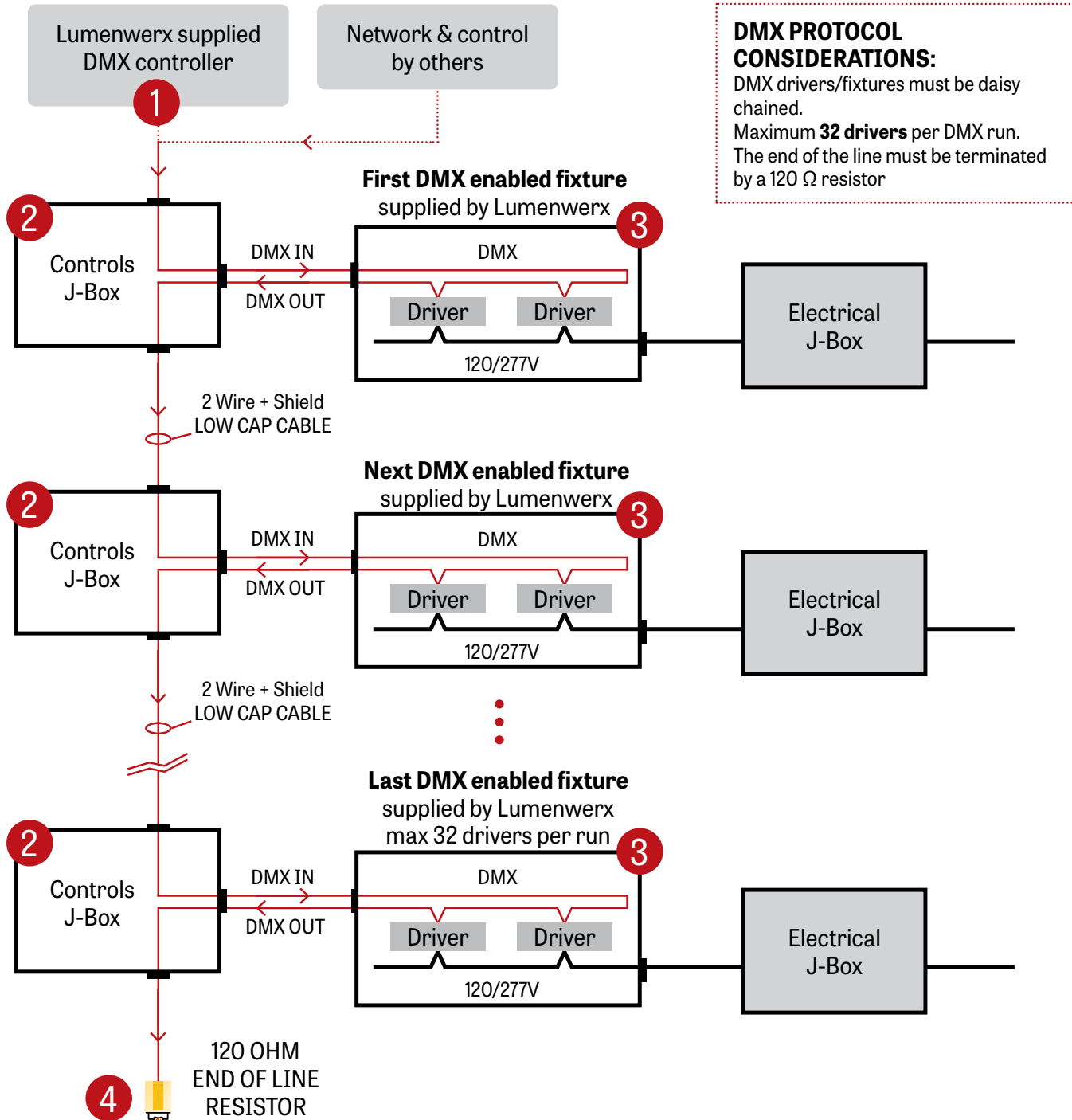
STATIC WHITE, BIOS, SOLA, DUO

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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

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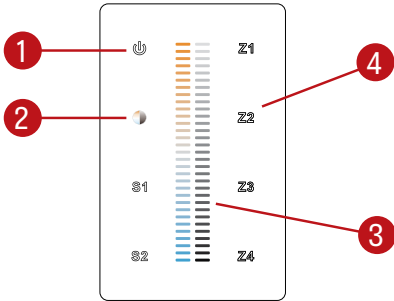
Type: _____

DMX WALL CONTROLLER - TUNABLE WHITE

Default DMX Addresses:

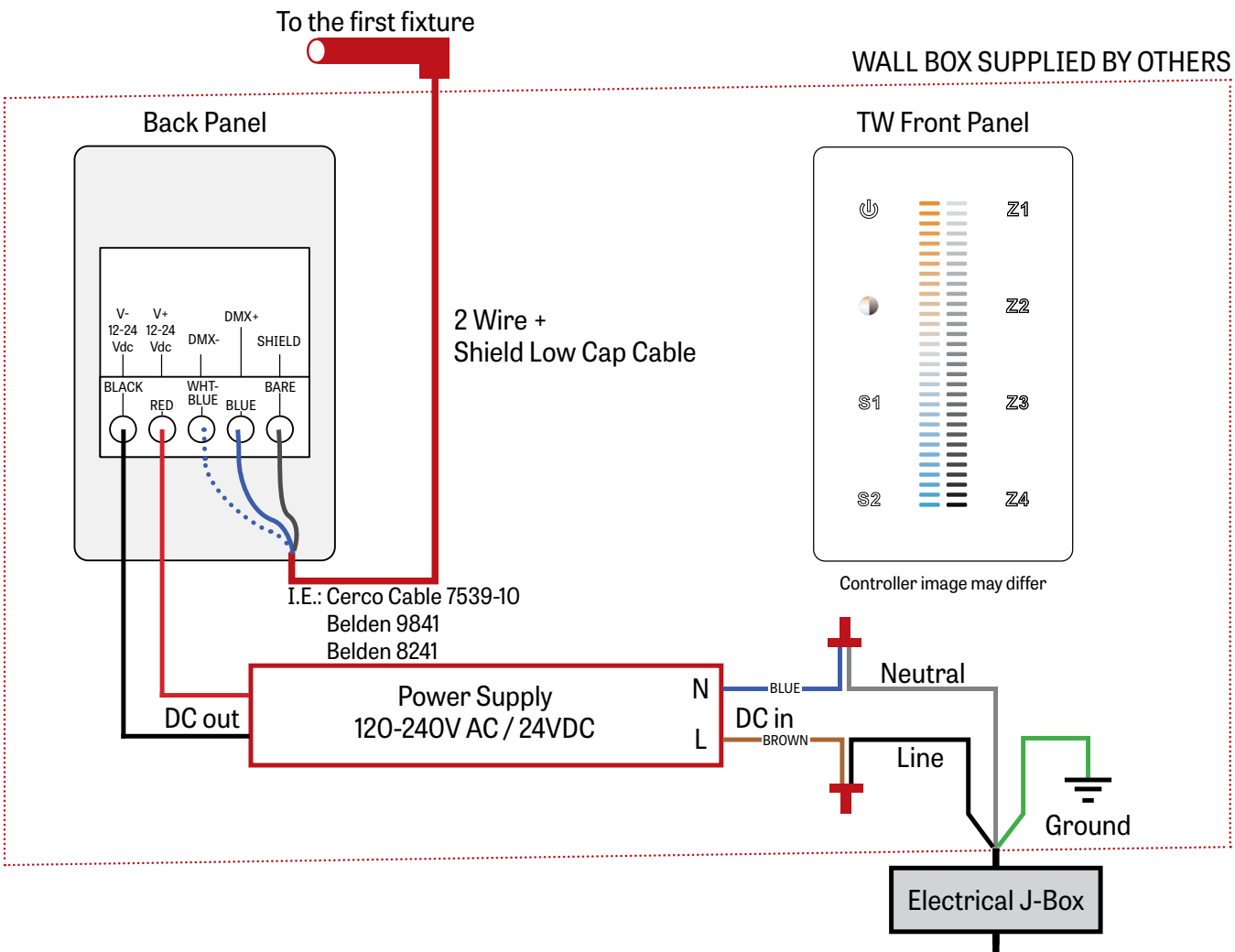
1. WARM | 2. COOL

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 chose between color/brightness. When blue: brightness is selected; when yellow: color is selected.
- (3) Slider: Depending on the mode chosen in 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.

1 LUMENWERX SUPPLIED DMX CONTROLLER



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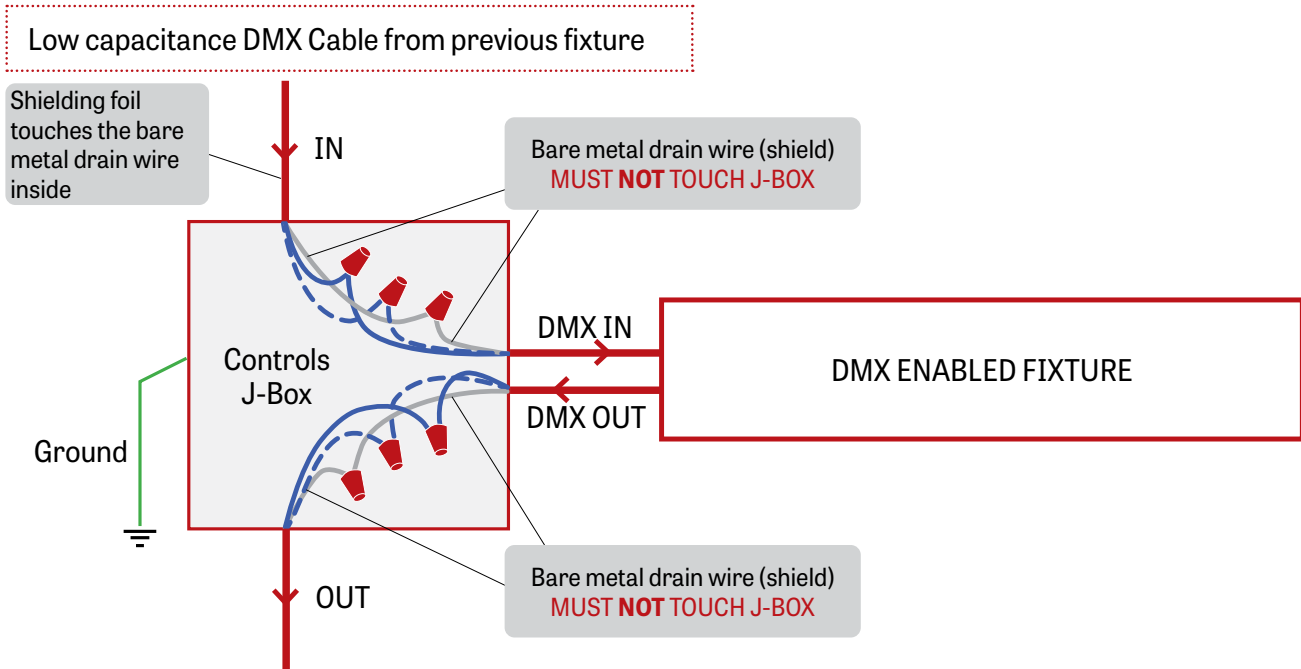
STATIC WHITE, BIOS, SOLA, DUO

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2 J-BOX DMX DAISY CHAIN DETAIL



Low capacitance DMX cable to next fixture

3 DMX CONNECTION RECESSED & SURFACE

