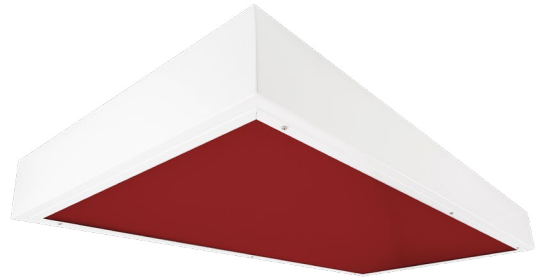


# Cleanroom EL-S Vivarium Troffers

1x4, 2x2 and 2x4 Red/White LED Surface Luminaires

- ETL Listed for Wet Locations
- IP55 Rated
- Suitable for ISO 5-9 Cleanspaces
- Suitable for FED Std 209E Class 100-100,000 Cleanspaces
- Channel inset door frame
- Robotically seam welded housing
- Narrow Spectrum 630nm, 660nm, and 735nm red non-filtered LEDs
- White / Red separately controlled circuits
- B.A.A. & B.A.B.A Compliant & Made in the USA by a Family Owned US Corporation



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## ORDERING GUIDE

| Series   | Material  | Size                                     | Row Qty.        | Red LED Wavelength | Row Qty. | White LED | CCT/CRI   | Voltage   | Optics   | Options                                    |   |      |  |
|--|---|--|-----------------|--------------------|----------|-----------|-----------|-----------|--|--|---|------|--|
| EL-S   |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| EL-S   | 2   | White CRS Hsg. & Polished 304 SS Door    | 1' x 4' Housing | 1                  | RLED630  | 1         | LEDR      | 83 CRI:   | 120V   | P12ACR                                     | 0.135" P12 Prismatic Impact Resistant Acrylic (Inverted)              |      |  |
|  |   |  | 3 LED Rows Max  | 2                  | RLED660  | 2         | LEDH      | 830 3000K | 277V   | LEX  | 0.125" P12 Prismatic Polycarbonate (Inverted)                         |      |  |
|  | 3   | White 430 SS Hsg. & Polished 304 SS Door | 2' x 2' Housing | 1                  | RLED735  |           | LEDHF     | 835 3500K | UNV  | A19  | 0.156" A19 Prismatic Impact Resistant Acrylic (Inverted)              |      |  |
|  |   |  | 2' x 2' Housing | 2                  |          |           | 840 4000K | 347V*     | TG   | 0.156" Prismatic Tempered Glass (Inverted) |   |      |  |
|  | 4   | White AL Hsg. & Polished 304 SS Door     | 2' x 4' Housing | 3                  |          |           |           | 850 5000K |  | HIA  | 0.140" P12 Prismatic High Impact Resistant Acrylic (Inverted)         |      |  |
|  |   |  | 2' x 4' Housing | 4                  |          |           |           |           |  | FROST                                      | 0.125" Flat Diffusing Frost Acrylic                                   |      |  |
|  | 5   | White AL Hsg. & White AL Door            | 5 LED Rows Max  |                    |          |           |           | 90+ CRI:  | *347V Available with 10% dimming, not all options are compatible with 347V | 2DBW                                       | 0.125" Flat Diffused Acrylic with Bi-Directional Batwing Distribution |      |  |
|  |   |  |                 |                    |          |           |           | 935 3500K |  |  |   | LBW  | 0.125" Flat Diffused Acrylic with Linear Batwing Distribution    |
|  | 6   | White CRS Hsg. & White AL Door           |                 |                    |          |           |           | 940 4000K |  |  |   | GH85 | 0.125" Flat Diffused Acrylic with Glare Suppression Distribution |
|  |   |  |                 |                    |          |           |           | 950 5000K |  |  |   |      |  |
|  | NOTE: P12ACR option is standard and will be provided when no other option is selected |  |                 |                    |          |           |           |           |  |  |   |      |  |
|  | Options   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| SW Wet Location Hub Supplied (not installed)                   |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| PxL * Programmed to User Specified Lumen Value.                |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| PxW * Programmed to User Specified Wattage Value.              |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| 10KV 10KV Parallel Surge Protection (One Supplied Per Circuit) |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| GTD Generator Transfer Device                                  |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| WHIP Must Specify Length and Wire Qty                          |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| OCCMW Internal microwave OCC Sensor                            |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| FC Fuse & Holder (One Supplied Per Circuit)                    |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| EM10 10W Integral LED EM (Specify Input Voltage)               |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| EM20 20W Remote LED EM (Specify Input Voltage)                 |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| EDL -40F Electronic Driver                                     |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| WHT White Finished Door & HSG                                  |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| AMW Anti-Microbial White Powdercoat                            |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| 2/EDR Two Circuits of Red Light                                |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| 2/EDW Two Circuits of White Light                              |   |  |                 |                    |          |           |           |           |  |  |   |      |  |
| Note*: Specify Value in Ordering Notes                         |   |  |                 |                    |          |           |           |           |  |  |   |      |  |

Ordering Notes, If Applicable

# Cleanroom EL-S Vivarium Troffers

1x4, 2x2 and 2x4 Red/White LED Surface Luminaires

## SPECIFICATIONS

**HOUSING:** One piece, hole free, robotically seam welded housing has flattened knockouts for a superior seal. Housings are available in .040" 3003 Aluminum, 20Ga 430 Stainless Steel, or 20Ga 1008 Cold Rolled Steel.

**DOOR FRAME:** Inset door frame made from welded channels regresses into the housing to allow the neoprene gasket to seal to the housing. Door frame is hinged by aircraft cables and secures to housing with captive stainless steel pan head screws. Available in .040" 3003 Powder coated Alum. , 20Ga 304 Polished SS.

**GASKETS:** Closed cell 100% pure neoprene gasket with vulcanized corners making a one-piece oil and solvent resistant gasket system.

**OPTICS:** Standard P12 prismatic acrylic lens is provided when no other options are selected. All prismatic lensing options come with an inverted lens so the smooth side faces the room for easy cleaning. All optics are sealed to the door with NSF listed RTV silicone sealant. Other optics are available, consult factory for more information or options not listed.

**LEDs:** Fixture available with Red only or Red & White LEDs, each color will be supplied with its own driver for dual switching. Red LED's provide a narrow 630nm, 660nm, or 735nm spectrum light for wavelength sensitive applications. White high efficiency LEDs are commercially available and available in a wide variety of CRI and CCT. All boards have Zhaga recognized hole patterns and come with a 5 year warranty.

**DRIVERS:** Standard Universal Voltage Class 2 drivers are 0-10v Dimmable to 1% and rated -20C (-4F). They come with at least 2.5Kv surge protection, have less than 10% THD at max load, Ballast Factor Greater than .95 and are programmable to match specific lumen or wattage requirements. Drivers with higher input voltage ratings are available, consult factory for driver specifications. (each color LED comes standard with its own driver)

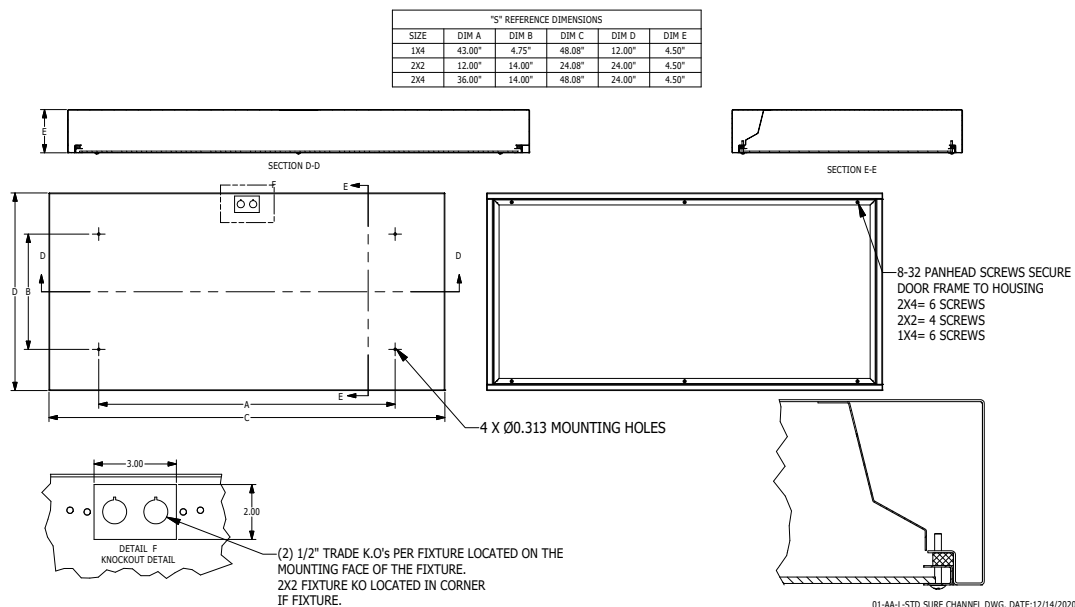
**REFLECTOR:** Die formed metal with high reflectance white polyester powder coat finish. Typical reflectivity 92%.

**INSTALL SURFACE:** Four .312" dia. mounting holes and a removable gasketed wiring access plate with Supply entry via 1/2" trade size flattened knockouts. Suitable for surface installation onto covered ceilings only.

**FINISH:** Stainless steel door frames are satin polished unless WHT or AMW options are selected. All other materials are provided with gloss high reflectance white polyester powder coat with 1000hr salt spray test per ASTM B117. AMW option provides a white anti-microbial polyester powder coat to all exposed surfaces.

**LISTINGS:** IP55 rated for dust and water ingress. ETL listed per UL\_1598 for wet locations. Certified ISO-14644-1 for class 5 through class 9 cleanspaces. Certified Fed Std 209E for Class 100 through Class 100,000 cleanspaces. NSF2 Listed for Non-Food & Splash Zones. Drivers and LEDs are covered by a 5 year warranty, the remaining fixture is covered by a 10 year warranty. This product Series is both Build America Buy America (B.A.B.A.) & Buy American Act (B.A.A.) compliant.

## PRODUCT DRAWINGS



# Cleanroom EL-S Vivarium Troffers

1x4, 2x2 and 2x4 Red/White LED Surface Luminaires

## ENERGY DATA - WHITE LED

| SURFACE & RECESSED CHANNEL 2 CIRCUIT TROFFER (APPROX <sup>1</sup> LUMENS DELIVERED) |               |                        |                    |                       |              |                       |                    |                       |                           |                  |
|---|---------------|------------------------|--------------------|-----------------------|--------------|-----------------------|--------------------|-----------------------|---------------------------|------------------|
| ENCLOSURE SIZE  | LIGHT PACKAGE | 80 CRI (3000K - 5000K) |                    |                       |              | 90 CRI (3500K, 4000K) |                    |                       |                           | STANDARD DIMMING |
|   |               | LUMENS                 | WATTS <sup>2</sup> | EFFICACY <sup>3</sup> | MAX AMB TEMP | LUMENS                | WATTS <sup>2</sup> | EFFICACY <sup>3</sup> | MAX AMB TEMP <sup>4</sup> |                  |
| 1X4   | 1LEDR         | 3,215                  | 29                 | 111                   | 45°C (113°F) | 3,100                 | 29                 | 107                   | 45°C (113°F)              | 0-10V 1%         |
| 1X4   | 1LEDH         | 6,220                  | 55                 | 113                   | 40°C (104°F) | 5,950                 | 57                 | 104                   | 40°C (104°F)              | 0-10V 1%         |
| 1X4   | 2LEDR         | <b>6,430</b>           | <b>55</b>          | <b>117</b>            | 45°C (113°F) | <b>6,199</b>          | <b>56</b>          | <b>111</b>            | 45°C (113°F)              | 0-10V 1%         |
| 1X4   | 1LEDHF        | 9,380                  | 78                 | 120                   | 35°C (95°F)  | 8,030                 | 92                 | 87                    | 35°C (95°F)               | 0-10V 1%         |
| 1X4   | 2LEDH         | <b>12,446</b>          | <b>109</b>         | <b>114</b>            | 35°C (95°F)  | <b>11,915</b>         | <b>109</b>         | <b>109</b>            | 35°C (95°F)               | 0-10V 1%         |
| 1X4   | EM10          | 1110-1200              | 4                  | NA                    | 40°C (104°F) | 870-1110              | 4                  | NA                    | 40°C (104°F)              | NA               |
|   |               |                        |                    |                       |              |                       |                    |                       |                           |                  |
| 2X2   | 1LEDR         | 1,630                  | 15                 | 109                   | 45°C (113°F) | 1,630                 | 15                 | 109                   | 45°C (113°F)              | 0-10V 1%         |
| 2X2   | 1LEDH         | 3,200                  | 29                 | 110                   | 40°C (104°F) | 3,060                 | 29                 | 106                   | 40°C (104°F)              | 0-10V 1%         |
| 2X2   | 2LEDR         | 3,260                  | 29                 | 112                   | 45°C (113°F) | 3,270                 | 29                 | 113                   | 45°C (113°F)              | 0-10V 1%         |
| 2X2   | 1LEDHF        | 4,690                  | 39                 | 120                   | 40°C (104°F) | 4,190                 | 46                 | 91                    | 40°C (104°F)              | 0-10V 1%         |
| 2X2   | 3LEDR         | <b>4,887</b>           | <b>42</b>          | <b>116</b>            | 45°C (113°F) | <b>4,902</b>          | <b>42</b>          | <b>117</b>            | 45°C (113°F)              | 0-10V 1%         |
| 2X2   | 2LEDH         | 6,410                  | 55                 | 117                   | 40°C (104°F) | 6,130                 | 55                 | 111                   | 40°C (104°F)              | 0-10V 1%         |
| 2X2   | 2LEDHF        | 9,390                  | 77                 | 122                   | 40°C (104°F) | 8,380                 | 92                 | 91                    | 35°C (95°F)               | 0-10V 1%         |
| 2X2   | 3LEDH         | <b>9,608</b>           | <b>80</b>          | <b>120</b>            | 40°C (104°F) | <b>9,186</b>          | <b>81</b>          | <b>113</b>            | 35°C (95°F)               | 0-10V 1%         |
| 2X2   | 3LEDHF        | 14,080                 | 115                | 122                   | 35°C (95°F)  | 12,570                | 138                | 91                    | 35°C (95°F)               | 0-10V 1%         |
| 2X2   | EM10          | 1090-1220              | 4                  | NA                    | 40°C (104°F) | 910-1170              | 4                  | NA                    | 40°C (104°F)              | NA               |
|   |               |                        |                    |                       |              |                       |                    |                       |                           |                  |
| 2X4   | 1LEDR         | 3,470                  | 29                 | 120                   | 45°C (113°F) | 3,320                 | 29                 | 114                   | 45°C (113°F)              | 0-10V 1%         |
| 2X4   | 1LEDH         | 6,820                  | 57                 | 120                   | 40°C (104°F) | 6,490                 | 57                 | 114                   | 40°C (104°F)              | 0-10V 1%         |
| 2X4   | 2LEDR         | 6,942                  | 55                 | 126                   | 45°C (113°F) | 6,640                 | 56                 | 119                   | 45°C (113°F)              | 0-10V 1%         |
| 2X4   | 1LEDHF        | 10,150                 | 77                 | 132                   | 40°C (104°F) | 8,950                 | 93                 | 96                    | 40°C (104°F)              | 0-10V 1%         |
| 2X4   | 3LEDR         | <b>10,412</b>          | <b>83</b>          | <b>125</b>            | 45°C (113°F) | <b>9,954</b>          | <b>83</b>          | <b>120</b>            | 45°C (113°F)              | 0-10V 1%         |
| 2X4   | 2LEDH         | 13,650                 | 109                | 125                   | 40°C (104°F) | 12,990                | 109                | 119                   | 40°C (104°F)              | 0-10V 1%         |
| 2X4   | 2LEDHF        | 20,300                 | 153                | 133                   | 40°C (104°F) | 17,900                | 187                | 96                    | 40°C (104°F)              | 0-10V 1%         |
| 2X4   | 3LEDH         | <b>20,464</b>          | <b>164</b>         | <b>125</b>            | 40°C (104°F) | <b>19,482</b>         | <b>164</b>         | <b>119</b>            | 40°C (104°F)              | 0-10V 1%         |
| 2X4   | 3LEDHF        | 30,450                 | 229                | 133                   | 35°C (95°F)  | 26,850                | 280                | 96                    | 35°C (95°F)               | 0-10V 1%         |
| 2X4   | EM10          | 1200-1330              | 4                  | NA                    | 40°C (104°F) | 960-1200              | 4                  | NA                    | 40°C (104°F)              | NA               |

<sup>1</sup> DELIVERED LUMEN DATA IS EXTRAPOLATED FROM MEASURED DATA @ 25C WITH NO EXTRA OPTIONS. VARIANCES WILL OCCUR WHEN OPTIONS ARE CHOSEN

<sup>2</sup> WATTAGE IS MEASURED WITH 4000K SELECTION @ 120VAC AND Tambient = 25C. WATTAGES MAY VARY WITH ALTERNATE CONFIGURATIONS

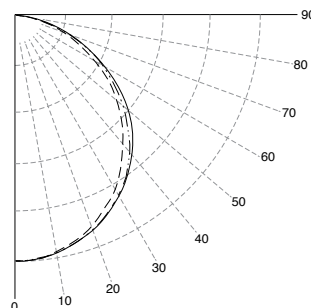
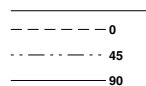
<sup>3</sup> EFFICACY CALCULATED USING 4000K CCT DATA.

<sup>4</sup> MAX AMBIENT TEMP RATING, NON-IC INSTALLATION. TEMP RATING MAY VARY WITH SPECIFIED DRIVERS OR ANY NON-STANDARD SELECTION

## PHOTOMETRICS

### P12 PRISMATIC

Key:



## Cleanroom EL-S Vivarium Troffers

1x4, 2x2 and 2x4 Red/White LED Surface Luminaires

### ENERGY DATA - COLOR LED

| SURFACE & RECESSED CHANNEL - RED LED TROFFER |               |          |             |       |          |             |       |          |                     |                      |
|--|---------------|----------|-------------|-------|----------|-------------|-------|----------|---------------------|----------------------|
| ENCLOSURE SIZE                               | LED SELECTION | DIMMING  | 630nm (RED) |       |          | 660nm (RED) |       |          | AMBIENT TEMP RATING |                      |
|  |               |          | LUMENS      | WATTS | EFFICACY | LUMENS      | WATTS | EFFICACY | MINIMUM             | MAXIMUM <sup>1</sup> |
| 1X4  | 1RLED         | 0-10V 1% | 1,122       | 27    | 42       | 1,167       | 44.5  | 26.2     | -20°C (-4°F)        | 40°C (104°F)         |
| 1X4  | 2RLED         | 0-10V 1% | 2,068       | 53    | 39       | 2,320       | 88.9  | 26.1     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X2  | 1RLED         | 0-10V 1% | 549         | 14    | 39       | 567         | 22.2  | 25.5     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X2  | 2RLED         | 0-10V 1% | 1011        | 27    | 37       | 1,127       | 44.5  | 25.4     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X2  | 3RLED         | 0-10V 1% | 1560        | 41    | 38       | 1,695       | 66.7  | 25.4     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X2  | 4RLED         | 0-10V 1% | 2022        | 53    | 38       | 2,254       | 88.9  | 25.4     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X4  | 1RLED         | 0-10V 1% | 1247        | 27    | 46       | 1,281       | 44.5  | 28.8     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X4  | 2RLED         | 0-10V 1% | 2298        | 53    | 43       | 2,547       | 89    | 28.6     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X4  | 3RLED         | 0-10V 1% | 3545        | 80    | 44       | 3,828       | 133.5 | 28.7     | -20°C (-4°F)        | 40°C (104°F)         |
| 2X4  | 4RLED         | 0-10V 1% | 4596        | 106   | 43       | 5,095       | 178   | 28.6     | -20°C (-4°F)        | 40°C (104°F)         |

\* View previous page for energy data notes.

NOTE: 735nm Far Red light is measured in radiometric power since the wavelengths are so close to the human non-visible light spectrums. Each module of 735nm LEDs generates ≈ 7,000 mW of radiometric power.

### COLOR LED RELATIVE DISTRIBUTION

