# KURTZON
### SPECIFICATION GRADE LIGHTING
### ILLUMINATING YOUR WORLD

PROJECT

DATE     TYPE

NOTES

REV: 06/09/2021

# Cleanroom **KL-S Vivarium Troffers: KL-S-LED-VIVARIUM-TW**

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

-    **Rated IP66**

-    **Suitable for ISO 3-9 Cleanspaces**

-    **Suitable for 209E Class 1-100,000 Cleanspaces**

-    **ETL listed for Wet Locations**

-    **One piece overlapping doorframe**

-    **Robotically seam welded housing**

-    **0-10v 1% Dimming Standard for most configurations.**

-    **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**

-    **Available as Warm Dim or as Separately controlled intensity and CCT**

-    **Tunable white LEDs allow a full range of CCTS from 2700K - 6500K CCT.**

2700K **TW** 6500K

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**Icons:** K 5/10 YEAR WARRANTY | NSF | c ETL us LISTED Intertek | ISO 3-9 ISO 14644-1 CLASS 3 | IP66 IEC 60529 | BSL 3&4 BIO SAFETY LEVELS | 209E 1 FED STD 209E CLASS 1 | 1700 PSI HOSEDOWN | MADE IN THE USA | BAA COMPLIANT | BABA COMPLIANT | 2700K TW 6500K

## ORDERING GUIDE

| Series | Material | Size | Row Qty. | Red LED Wavelength | Row Qty. | White LED | CCT/CRI | Control | Voltage | Optics | Options |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **KL-S** | | | | | | **LEDTW** | | | | | |

| Series | Material | Size | Light Source | | | | Control | Voltage | Optics |
|---|---|---|---|---|---|---|---|---|---|
| | | | Row Qty. | Red LED Wavelength | Row Qty. | White LED | CCT/CRI | | |
| KL-S | **1** White CRS Hsg. & White CRS Door | **1x4** 1' x 4' Housing | 1 | RLED630 | 1 | LEDTW | **80 CRI:** | **10VA** 0-10V Analog Control | **120V** | **P12ACR** 0.135" P12 Prismatic Impact Resistant Acrylic (Inverted) |
| | | 3 LED Rows Max | 2 | RLED660 | 2 | | **827/ 865** 2700K-6500K | | **277V** | **LEX** 0.125" P12 Prismatic Polycarbonate (Inverted) |
| | **2** White CRS Hsg. & Polished 304 SS Door | | | RLED735 | | | | | **UNV** | **A19** 0.156" A19 Prismatic Impact Resistant Acrylic (Inverted) |
| | | **2x2** 2' x 2' Housing | 2 | | 1 | | **90+ CRI:** | **10VWD** 0-10V Warm Dim Control | | **TG** 0.156" Prismatic Tempered Glass (Inverted) |
| | **3** Polished 304 SS Hsg. & Polished 304 SS Door | **OR** | 3 | | 2 | | **927/965** 2700K-6500K | | | **HIA** 0.140" P12 Prismatic High Impact Resistant Acrylic (Inverted) |
| | | **2x4** 2' x 4' Housing | 4 | | 3 | | | | | **FROST** 0.125" Flat Diffusing Frost Acrylic |
| | **4** White AL Hsg. & Polished 304 SS Door | 5 LED Rows Max | | | | | | | | **2DBW** 0.125" Flat Diffused Acrylic with Bi-Directional Batwing Distribution |
| | **5** White AL Hsg. & White AL Door | | | | | | | | | **LBW** 0.125" Flat Diffused Acrylic with Linear Batwing Distribution |
| | **6** White CRS Hsg. & White AL Door | | | | | | | | | **GH85** 0.125" Flat Diffused Acrylic with Glare Suppression Distribution |
| | **7** White AL Hsg. & White CRS Door | | | | | | | | | 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-Microbrial 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 **KL-S Vivarium Troffers: KL-S-LED-VIVARIUM-TW**

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 .050" 3003 Aluminum, 18Ga 304 Stainless Steel, or 20Ga Cold Rolled Steel.

**DOOR FRAME:** One piece door frame with welded corners overlaps the fixture allowing the NSF approved microcellular gasket to seal to the housing. Door frame is hinged by aircraft cables and is supplied with captive stainless steel flush head screws to allow easy wiping of the surface. Available in .050" 3003 Powder coated Alum., 20Ga 304 Polished SS, or 18Ga Powder coated CRS.

**GASKETS:** NSF Listed closed cell microcellular extruded KleanLock SealPro 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 minimum 80 or 90 CRI 2 channel LED modules and use 2700K and 6500K chips to mix color in order to achieve a desired color temperature. Modules have rated lifetime of L70 > 50,000 hrs and efficacy of 165Lm/W. LEDs are controllable via 0-10v dimming, see next page for control options. Consult factory for lumen output configurations not listed on spec sheets.. 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)
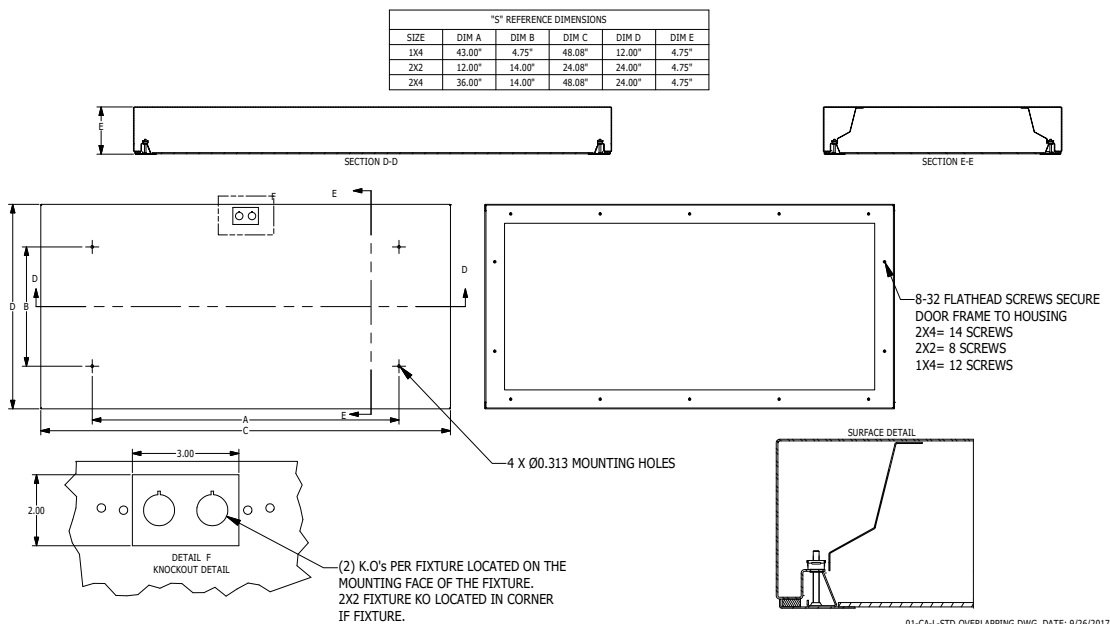
**REFLECTOR:** Die formed metal with high reflectance white polyester powder coat finish. Typical reflectivity 92%.

**INSTALLATION:** 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 & housings 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:** IP66 rated for dust and water ingress. Suitable for 1700 PSI high pressure hosedowns. ETL listed per UL_1598 for wet locations. Certified ISO-14644-1 for class 3 through class 9 cleanspaces. Certified Fed Std 209E for Class 1 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

| "S" REFERENCE DIMENSIONS | | | | | |
|------|-------|-------|--------|--------|--------|
| SIZE | DIM A | DIM B | DIM C | DIM D | DIM E |
| 1X4 | 43.00" | 4.75" | 48.08" | 12.00" | 4.75" |
| 2X2 | 12.00" | 14.00" | 24.08" | 24.00" | 4.75" |
| 2X4 | 36.00" | 14.00" | 48.08" | 24.00" | 4.75" |



SECTION D-D

SECTION E-E

8-32 FLATHEAD SCREWS SECURE DOOR FRAME TO HOUSING
2X4= 14 SCREWS
2X2= 8 SCREWS
1X4= 12 SCREWS

4 X Ø0.313 MOUNTING HOLES

3.00

2.00

DETAIL  F
KNOCKOUT DETAIL

(2) K.O's PER FIXTURE LOCATED ON THE MOUNTING FACE OF THE FIXTURE.
2X2 FIXTURE KO LOCATED IN CORNER IF FIXTURE.

SURFACE DETAIL

01-CA-L-STD OVERLAPPING DWG. DATE: 9/26/2017

# Cleanroom **KL-S Vivarium Troffers: KL-S-LED-VIVARIUM-TW**

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

## ENERGY DATA - WHITE LED

| OVERLAP-FGRS-RED LED TROFFER | | | | | | |
|---|---|---|---|---|---|---|
| ENCLOSURE SIZE | LED SELECTION | 80 CRI (3000K - 5000K) | | | AMBIENT TEMP RATING | |
| | | LUMENS | WATTS | EFFICACY | MAXIMUM³ | CCT RANGE |
| 1X4 | 1LEDTW | 3,450 | 34 | 101 | 40°C (104°F) | 2700k - 6500k |
| 1X4 | 2LEDTW | 7,050 | 68 | 104 | 40°C (104°F) | 2700k - 6500k |
| 2x2 | 1LEDTW | 1,900 | 18 | 106 | 40°C (104°F) | 2700k - 6500k |
| 2x2 | 2LEDTW | 3,750 | 35 | 107 | 40°C (104°F) | 2700k - 6500k |
| 2x2 | 3LEDTW | 5,650 | 53 | 107 | 40°C (104°F) | 2700k - 6500k |
| 2X2 | 4LEDTW | 7,550 | 68 | 111 | 40°C (104°F) | 2700k - 6500k |
| 2X4 | 1LEDTW | 3,900 | 34 | 115 | 40°C (104°F) | 2700k - 6500k |
| 2X4 | 2LEDTW | 7,800 | 68 | 115 | 40°C (104°F) | 2700k - 6500k |
| 2X4 | 3LEDTW | 11,700 | 103 | 114 | 40°C (104°F) | 2700k - 6500k |
| 2X4 | 4LEDTW | 15,600 | 135 | 116 | 40°C (104°F) | 2700k - 6500k |

1   DELIVERED LUMEN DATA IS CALCULATED BASED ON STATIC WHITE PHOTOMETRY @ 4000K CCT

2   WATTAGE IS MEASURED WITH 4000K SELECTION @ 120vAC AND Tambient = 25C. WATTAGES MAY VARY WITH ALTERNATE CONFIGURATIONS

3   EFFICACY CALCULATED USING 4000K CCT DATA.

4   MAX AMBIENT TEMP RATING, NON-IC INSTALLATON. TEMP RATING MAY VARY WITH SPECIFIED DRIVERS OR ANY NON STANDARD SELECTION

5   90 MINUTE 10W EMERGENCY DRIVER; LUMENS CALCULATED BASED ON FIXTURE EFFICACY.

6   EM10 DELIVERED LUMENS = (DELIVERED LUMENS/LUMINAIRE WATTS)*10

## CONTROL OPTIONS

**WARM DIM CONTROL**

CCT    INTENSITY
6500K    100%

2700K    1%

DIM -
DIM +
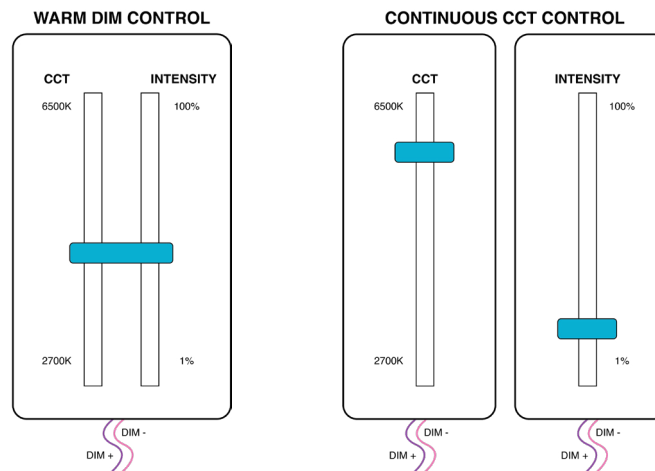
Only one set of dimming Leads are required. As Intensity is Increased so is the CCT. As intensity decreases the CCT decreases to warmer color Temperatures.

**CONTINUOUS CCT CONTROL**

CCT
6500K

2700K

INTENSITY
100%

1%

DIM -
DIM +

DIM -
DIM +

Two set of dimming leads are required. Intensity and CCT of light are controlled independently from one another.

# Cleanroom **KL-S Vivarium Troffers: KL-S-LED-VIVARIUM-TW**

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

## ENERGY DATA - COLOR LED

| OVERLAP-FGRS-RED LED TROFFER | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ENCLOSURE SIZE | LED SELECTION | 630nm (RED) | | | 660nm (RED) | | | AMBIENT TEMP RATING |
| | | LUMENS | WATTS | EFFICACY | LUMENS | WATTS | EFFICACY | MAXIMUM³ |
| 1X4 | 1RLED | 1,122 | 27 | 42 | 1,202 | 44.5 | 27 | 40°C (104°F) |
| 1X4 | 2RLED | 2,068 | 53 | 39 | 2,405 | 88.9 | 27 | 40°C (104°F) |
| 2X2 | 1RLED | 549 | 14 | 39 | 593 | 22.2 | 26.7 | 40°C (104°F) |
| 2X2 | 2RLED | 1,011 | 27 | 37 | 1,185 | 44.5 | 26.7 | 40°C (104°F) |
| 2X2 | 3RLED | 1,560 | 51 | 31 | 1,778 | 66.7 | 26.7 | 40°C (104°F) |
| 2X2 | 4RLED | 2,022 | 53 | 38 | 2,371 | 88.9 | 26.7 | 40°C (104°F) |
| 2X4 | 1RLED | 1,247 | 27 | 46 | 1,281 | 44.5 | 28.8 | 40°C (104°F) |
| 2X4 | 2RLED | 2,298 | 53 | 43 | 2,562 | 89 | 28.8 | 40°C (104°F) |
| 2X4 | 3RLED | 3,545 | 80 | 44 | 3,844 | 133.5 | 28.8 | 40°C (104°F) |
| 2X4 | 4RLED | 4,596 | 106 | 43 | 5,125 | 178 | 28.8 | 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

Relative Distribution | **Red 630 LEDs**



Relative Distribution | **Red 660 LEDs**