

Cleanroom TL-S Vivarium Troffers

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

- **Rated IP65**
- **Suitable for ISO 3-9 Cleanspaces**
- **Suitable for 209E class 100-100,000 Cleanspaces**
- **ETL listed for Wet Locations**
- **One piece Inset Doorframe**
- **Robotically seam welded housing**
- **0-10v 1% Dimming Standard**
- **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			
TL-S													
Series	Material	Size	Light Source				Voltage	Optics					
			Row Qty.	Red LED Wavelength	Row Qty.	White LED		CCT/CRI					
TL-S	1 White CRS Hsg. & White CRS Door	1x4 1' x 4' Housing 3 LED Rows Max	1	RLED630	1	LEDR	83 CRI:	120V	P12ACR	0.135" P12 Prismatic Impact Resistant Acrylic (Inverted)			
			2	RLED660	2	LEDH	830 3000K	277V	LEX	0.125" P12 Prismatic Polycarbonate (Inverted)			
	2 White CRS Hsg. & Polished 304 SS Door	2x2 2' x 2' Housing OR	1	RLED735		LEDHF	835 3500K	UNV	A19	0.156" A19 Prismatic Impact Resistant Acrylic (Inverted)			
			2				840 4000K	347V*	TG	0.156" Prismatic Tempered Glass (Inverted)			
	3 Polished 304 SS Hsg. & Polished 304 SS Door	2x4 2' x 4' Housing	2				3	3		850 5000K	*347V Available with 10% dimming, not all options are compatible with 347V	HIA	0.140" P12 Prismatic High Impact Resistant Acrylic (Inverted)
			3							90+ CRI:		FROST	0.125" Flat Diffusing Frost Acrylic
	4 White AL Hsg. & Polished 304 SS Door	5 LED Rows Max	4									935 3500K	2DBW
940 4000K												LBW	0.125" Flat Diffused Acrylic with Linear Batwing Distribution
950 5000K												GH85	0.125" Flat Diffused Acrylic with Glare Suppression Distribution
5 White AL Hsg. & White AL Door													
6 White CRS Hsg. & White AL Door													
7 White AL Hsg. & White CRS Door													

Ordering Notes, If Applicable

NOTE: Additionally available in 95+ CRI with Seoul Sun-Like LEDs. Consult factory for more information.

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

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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 304 Stainless Steel, or 20Ga 1008 Cold Rolled Steel.

DOOR FRAME: One piece inset door frame with seam welds regressing into housing to allowing the NSF approved microcellular 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, or 18Ga 1008 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 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)

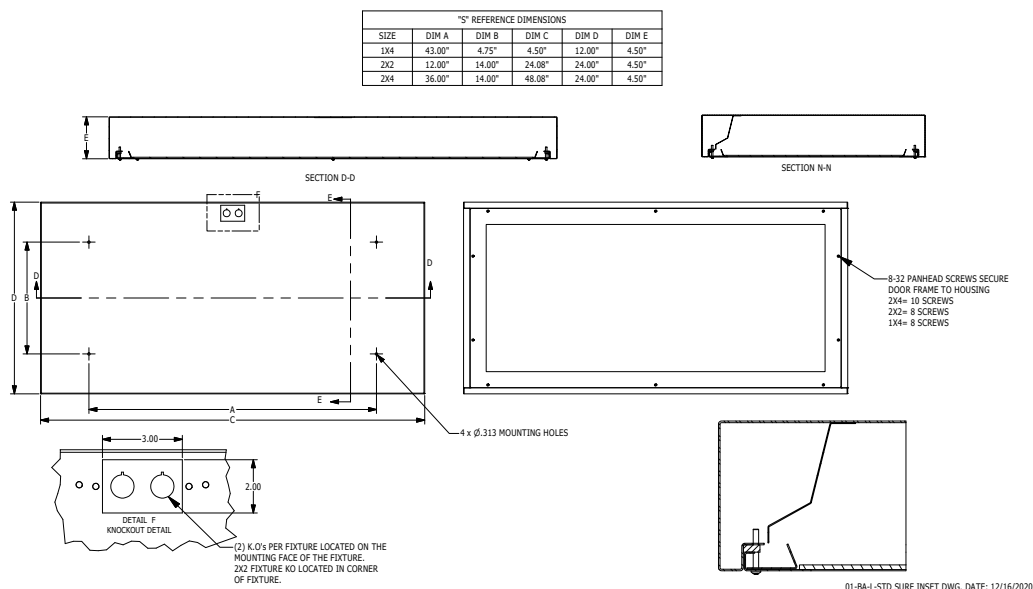
REFLECTOR: Die formed metal with high reflectance white polyester powder coat finish. Typical reflectivity 92%.

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 & 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: IP65 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 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 TL-S Vivarium Troffers

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ENERGY DATA - WHITE LED

SURFACE & RECESSED INSET 2 CIRCUIT TROFFER (APPROX ¹ LUMENS DELIVERED)										
ENCLOSURE SIZE	LIGHT PACKAGE	80 CRI (3000K - 5000K)				90 CRI (3500K, 4000K)				STANDARD DIMMING
		LUMENS	WATTS ²	EFFICACY ³	MAX AMB TEMP	LUMENS	WATTS ²	EFFICACY ³	MAX AMB TEMP ⁴	
1X4	1LEDR	3,034	29	105	45°C (113°F)	2,924	29	101	45°C (113°F)	0-10V 1%
1X4	1LEDH	5,877	57	103	40°C (104°F)	5,614	57	98	40°C (104°F)	0-10V 1%
1X4	2LEDR	6,067	55	110	45°C (113°F)	5,848	56	105	45°C (113°F)	0-10V 1%
1X4	1LEDHF	8,673	77	113	40°C (104°F)	7,227	92	79	40°C (104°F)	0-10V 1%
1X4	2LEDH	11,754	109	108	35°C (95°F)	11,228	109	103	35°C (95°F)	0-10V 1%
1X4	EM10	1030-1130	4	NA	40°C (104°F)	790-1050	4	NA	40°C (104°F)	NA
2X2	1LEDR	1,493	15	100	45°C (113°F)	1,440	15	96	45°C (113°F)	0-10V 1%
2X2	1LEDH	2,937	29	101	40°C (104°F)	2,800	29	97	40°C (104°F)	0-10V 1%
2X2	2LEDR	2,990	29	103	45°C (113°F)	2,881	29	99	45°C (113°F)	0-10V 1%
2X2	1LEDHF	4,460	39	114	40°C (104°F)	3,691	46	80	40°C (104°F)	0-10V 1%
2X2	3LEDR	4,479	42	107	45°C (113°F)	4,321	42	103	45°C (113°F)	0-10V 1%
2X2	2LEDH	5,880	55	107	40°C (104°F)	5,601	55	102	40°C (104°F)	0-10V 1%
2X2	2LEDHF	8,920	77	116	40°C (104°F)	7,383	92	80	35°C (95°F)	0-10V 1%
2X2	3LEDH	8,813	80	110	40°C (104°F)	8,402	81	104	35°C (95°F)	0-10V 1%
2X2	3LEDHF	13,380	115	116	35°C (95°F)	11074	138	80	35°C (95°F)	0-10V 1%
2X2	EM10	1000-1160	4	NA	40°C (104°F)	800-1040	4	NA	40°C (104°F)	NA
2X4	1LEDR	3,359	29	116	45°C (113°F)	3,214	29	111	45°C (113°F)	0-10V 1%
2X4	1LEDH	6,630	57	116	40°C (104°F)	6,300	57	111	40°C (104°F)	0-10V 1%
2X4	2LEDR	6,718	55	122	45°C (113°F)	6,428	56	115	45°C (113°F)	0-10V 1%
2X4	1LEDHF	10,185	77	132	40°C (104°F)	8,836	93	95	40°C (104°F)	0-10V 1%
2X4	3LEDR	10,077	83	122	45°C (113°F)	9,642	83	116	45°C (113°F)	0-10V 1%
2X4	2LEDH	13,261	109	122	40°C (104°F)	12,601	109	116	40°C (104°F)	0-10V 1%
2X4	2LEDHF	20,370	153	133	40°C (104°F)	17,672	187	95	40°C (104°F)	0-10V 1%
2X4	3LEDH	19,892	165	121	40°C (104°F)	18,902	165	115	40°C (104°F)	0-10V 1%
2X4	3LEDHF	30,555	229	133	35°C (95°F)	26,508	280	95	35°C (95°F)	0-10V 1%
2X4	EM10	1180-1330	4	NA	40°C (104°F)	950-1190	4	NA	40°C (104°F)	NA

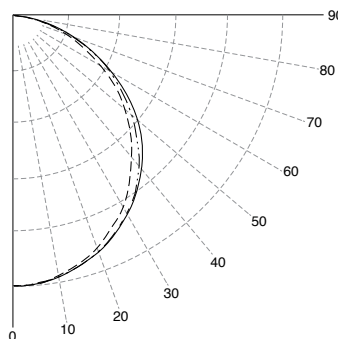
- ¹ DELIVERED LUMEN DATA IS EXTRAPOLATED FROM MEASURED DATA @ 25C WITH NO EXTRA OPTIONS. VARIANCES WILL OCCUR WHEN OPTIONS ARE CHOSEN
- ² WATTAGE IS MEASURED WITH 4000K SELECTION @ 120vAC AND Tambient = 25C. WATTAGES MAY VARY WITH ALTERNATE CONFIGURATIONS
- ³ EFFICACY CALCULATED USING 4000K CCT DATA.
- ⁴ MAX AMBIENT TEMP RATING, NON-IC INSTALLATION. TEMP RATING MAY VARY WITH SPECIFIED DRIVERS OR ANY NON-STANDARD SELECTION
- ⁵ 90 MINUTE 10W EMERGENCY DRIVER; LUMENS CALCULATED BASED ON FIXTURE EFFICACY.

PHOTOMETRICS

P12 PRISMATIC

Key:

- 0
- - - - - 45
- 90



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ENERGY DATA - COLOR LED

SURFACE & RECESSED INSET RED LED TROFFER										
ENCLOSURE SIZE	LED SELECTION	DIMMING	630nm (RED)			660nm (RED)			AMBIENT TEMP RATING	
			LUMENS	WATTS	EFFICACY	LUMENS	WATTS	EFFICACY	MINIMUM	MAXIMUM ³
1X4	1RLED	0-10V 1%	1,105	27	41	1,149	44.5	25.8	-20°C (-4°F)	40°C (104°F)
1X4	2RLED	0-10V 1%	2,048	53	39	2,298	88.9	25.8	-20°C (-4°F)	40°C (104°F)
2X2	1RLED	0-10V 1%	540	14	39	558	22.2	25.1	-20°C (-4°F)	40°C (104°F)
2X2	2RLED	0-10V 1%	1001	27	37	1,116	44.5	25.1	-20°C (-4°F)	40°C (104°F)
2X2	3RLED	0-10V 1%	1541	41	38	1,674	66.7	25.1	-20°C (-4°F)	40°C (104°F)
2X2	4RLED	0-10V 1%	2002	53	38	2,232	88.9	25.1	-20°C (-4°F)	40°C (104°F)
2X4	1RLED	0-10V 1%	1228	27	45	1,261	44.5	28.3	-20°C (-4°F)	40°C (104°F)
2X4	2RLED	0-10V 1%	2275	53	43	2,522	89	28.3	-20°C (-4°F)	40°C (104°F)
2X4	3RLED	0-10V 1%	3503	80	44	3,783	133.5	28.3	-20°C (-4°F)	40°C (104°F)
2X4	4RLED	0-10V 1%	4550	106	43	5,044	178	28.3	-20°C (-4°F)	40°C (104°F)

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

