

Cleanroom KL-R Vivarium Troffers

1x2, 1x4, 2x2 and 2x4 Red/White LED Recessed 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**
- **Recessed Housing suitable for Tbar Grid AND Hardlid Installations**
- **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			
KL-R													
Series	Material	Size	Light Source					Voltage	Optics				
			Row Qty.	Red LED Wavelength	Row Qty.	White LED	CCT/CRI						
KL-R	3	White 430 SS Hsg. & Polished 304 SS Door	1x2	1' x 2' Housing	1	RLED630	1	LEDR	83 CRI:	120V	P12ACR	0.135" P12 Prismatic Impact Resistant Acrylic (Inverted)	
			1x4	1' x 4' Housing	2	RLED660	2	LEDH	830 3000K	277V	LEX	0.125" P12 Prismatic Polycarbonate (Inverted)	
	4	White AL Hsg. & Polished 304 SS Door	3 LED Rows Max			RLED735		LEDHF	835 3500K	UNV	A19	0.156" A19 Prismatic Impact Resistant Acrylic (Inverted)	
			2x2	2' x 2' Housing	1		1		840 4000K	347V*	TG	0.156" Prismatic Tempered Glass (Inverted)	
	5	White AL Hsg. & White AL Door	OR		2		2		850 5000K		HIA	0.140" P12 Prismatic High Impact Resistant Acrylic (Inverted)	
			2x4	2' x 4' Housing	3		3				FROST	0.125" Flat Diffusing Frost Acrylic	
	7	White AL Hsg. & White CRS Door	5 LED Rows Max		4							2DBW	0.125" Flat Diffused Acrylic with Bi-Directional Batwing Distribution
										90+ CRI:		LBW	0.125" Flat Diffused Acrylic with Linear Batwing Distribution
										935 3500K		GH85	0.125" Flat Diffused Acrylic with Glare Suppression Distribution
										940 4000K		NOTE: P12ACR option is standard and will be provided when no other option is selected	
										950 5000K			
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/EDG		Two Circuits of Green Light											
2/EDW		Two Circuits of White Light											
GG		1/8" Thick Grid Gasket (Provided Loose)											
Note*: Specify Value in Ordering Notes Below													

Ordering Notes, If Applicable

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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 or 20Ga 430 Stainless Steel.

DOOR FRAME: One piece door frame with welded corners overlaps the fixture allowing the NSF approved microcellular gasket to seal to the mounting surface. 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. GG option provides a loose 1/8" thick adhesive backed gasket intended to adhere to the top face of a suspended grid ceiling for grid profiles that do not already have gasket on them.

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 & 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)

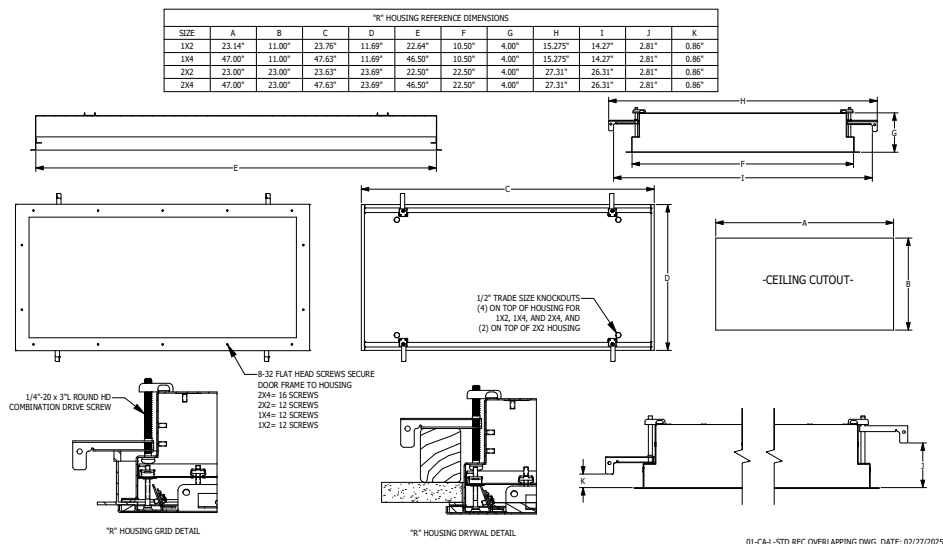
REFLECTOR: Die formed metal with high reflectance white polyester powder coat finish. Typical reflectivity 92%.

INSTALLATION RECESSED: Suitable for recessed Non-IC installation into covered ceilings. Fixtures are supplied with .875" flattened knockouts for supply entry. Recessed housings have (4) swing out toggle arms that are used to draw the fixture in to the ceiling for hard lid installation without the need for a yoke hanger. The toggle arm adjuster bolts are accessible from the room side of the luminaire and the actual toggles can be used as means of establishing a seismic support for lay in ceiling installations. Confirm ceiling compatibility with dimension drawings below.

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 powdercoat 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. Chicago Plenum Rated. 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 zones & 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 KL-R Vivarium Troffers

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

ENERGY DATA - WHITE LED

SURFACE & RECESSED OVERLAP 2 CIRCUIT TROFFER (APPROX ¹ LUMENS DELIVERED)										
ENCLOSURE SIZE	LIGHT PACKAGE	83 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	
1X2	1LEDR	1,428	15	95	45°C (113°F)	1,377	15	92	45°C (113°F)	0-10V 1%
1X2	1LEDH	2,755	29	95	40°C (104°F)	2,635	29	91	40°C (104°F)	0-10V 1%
1X2	2LEDR	2,855	29	98	45°C (113°F)	2,753	29	95	45°C (113°F)	0-10V 1%
1X2	1LEDHF	4,330	39	111	35°C (95°F)	3,731	46	81	35°C (95°F)	0-10V 1%
1X2	2LEDH	5,517	55	100	35°C (95°F)	5,270	55	96	35°C (95°F)	0-10V 1%
1X2	EM10	950-1110	4	NA	40°C (104°F)	810-960	4	NA	40°C (104°F)	NA
1X4	1LEDR	2,974	29	103	45°C (113°F)	2,868	29	99	45°C (113°F)	0-10V 1%
1X4	1LEDH	5,740	57	101	40°C (104°F)	5,490	57	96	40°C (104°F)	0-10V 1%
1X4	2LEDR	5,948	55	108	45°C (113°F)	5,736	56	103	45°C (113°F)	0-10V 1%
1X4	1LEDHF	9,020	77	117	35°C (95°F)	7,773	92	84	35°C (95°F)	0-10V 1%
1X4	2LEDH	11,493	109	106	35°C (95°F)	10,980	109	101	35°C (95°F)	0-10V 1%
1X4	EM10	1010-1170	4	NA	40°C (104°F)	850-1030	4	NA	40°C (104°F)	NA
2X2	1LEDR	1,808	15	121	45°C (113°F)	1,521	15	101	45°C (113°F)	0-10V 1%
2X2	1LEDH	3,106	29	107	40°C (104°F)	2,964	29	102	40°C (104°F)	0-10V 1%
2X2	2LEDR	3,165	29	109	45°C (113°F)	3,042	29	105	45°C (113°F)	0-10V 1%
2X2	1LEDHF	4,630	39	119	40°C (104°F)	4,106	46	89	40°C (104°F)	0-10V 1%
2X2	3LEDR	4,747	42	113	45°C (113°F)	4,563	42	109	45°C (113°F)	0-10V 1%
2X2	2LEDH	6,213	55	113	40°C (104°F)	5,928	55	108	40°C (104°F)	0-10V 1%
2X2	2LEDHF	9,260	77	120	40°C (104°F)	8,212	92	89	35°C (95°F)	0-10V 1%
2X2	3LEDH	9,319	80	116	40°C (104°F)	8,892	81	110	35°C (95°F)	0-10V 1%
2X2	3LEDHF	13,890	115	121	35°C (95°F)	12,319	138	89	35°C (95°F)	0-10V 1%
2X2	EM10	1070-1210	4	NA	40°C (104°F)	890-1110	4	NA	40°C (104°F)	NA
2X4	1LEDR	3,431	29	118	45°C (113°F)	3,280	29	113	45°C (113°F)	0-10V 1%
2X4	1LEDH	6,744	57	118	40°C (104°F)	6,408	57	112	40°C (104°F)	0-10V 1%
2X4	2LEDR	6,864	55	125	45°C (113°F)	6,567	56	117	45°C (113°F)	0-10V 1%
2X4	1LEDHF	9,840	77	128	40°C (104°F)	8,872	93	95	40°C (104°F)	0-10V 1%
2X4	3LEDR	10,295	83	124	45°C (113°F)	9,851	83	119	45°C (113°F)	0-10V 1%
2X4	2LEDH	13,488	109	124	40°C (104°F)	12,816	109	118	40°C (104°F)	0-10V 1%
2X4	2LEDHF	19,680	153	129	40°C (104°F)	17,744	187	95	40°C (104°F)	0-10V 1%
2X4	3LEDH	20,233	165	123	40°C (104°F)	19,224	165	117	40°C (104°F)	0-10V 1%
2X4	3LEDHF	29,520	229	129	35°C (95°F)	26,616	280	95	35°C (95°F)	0-10V 1%
2X4	EM10	1180-1290	4	NA	40°C (104°F)	950-1190	4	NA	40°C (104°F)	NA

¹ DELIVERED LUMEN DATA IS EXTRAPOLATED FROM MEASURED DATA @25°C 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.

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ENERGY DATA - COLOR LED

SURFACE & RECESSED OVERLAP RED LED TROFFER										
ENCLOSURE SIZE	LED SELECTION	DIMMING	630nm (RED)			660nm (RED)			AMBIENT TEMP RATING	
			LUMENS	WATTS	EFFICACY	LUMENS	WATTS	EFFICACY	MINIMUM	MAXIMUM ³
1X2	1RLED	0-10V 1%	539	14	38	577	22.2	27	-20°C (-4°F)	40°C (104°F)
1X2	2RLED	0-10V 1%	993	27	37	1,154	44.5	27	-20°C (-4°F)	40°C (104°F)
1X4	1RLED	0-10V 1%	1,122	27	42	1,202	44.5	27	-20°C (-4°F)	40°C (104°F)
1X4	2RLED	0-10V 1%	2,068	53	39	2,405	88.9	27	-20°C (-4°F)	40°C (104°F)
2X2	1RLED	0-10V 1%	549	14	39	593	22.2	26.7	-20°C (-4°F)	40°C (104°F)
2X2	2RLED	0-10V 1%	1,011	27	37	1,185	44.5	26.7	-20°C (-4°F)	40°C (104°F)
2X2	3RLED	0-10V 1%	1,560	51	31	1,778	66.7	26.7	-20°C (-4°F)	40°C (104°F)
2X2	4RLED	0-10V 1%	2,022	53	38	2,371	88.9	26.7	-20°C (-4°F)	40°C (104°F)
2X4	1RLED	0-10V 1%	1,247	27	46	1,281	44.5	28.8	-20°C (-4°F)	40°C (104°F)
2X4	2RLED	0-10V 1%	2,298	53	43	2,562	89	28.8	-20°C (-4°F)	40°C (104°F)
2X4	3RLED	0-10V 1%	3,545	80	44	3,844	133.5	28.8	-20°C (-4°F)	40°C (104°F)
2X4	4RLED	0-10V 1%	4,596	106	43	5,125	178	28.8	-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 $\approx 7,000$ mW of radiometric power.

COLOR LED RELATIVE DISTRIBUTION

