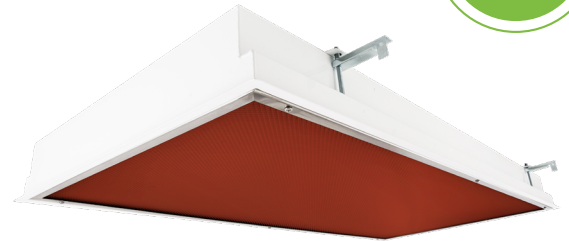


Circadian Cleanroom EL Vivarium Troffers

1x4, 2x2 and 2x4 Red/BIOS® LED Luminaires



- **IP55 Rated**
- **Suitable for ISO 5-9 Cleanspaces**
- **Suitable for 209E Class 100-100,000 cleanspaces**
- **ETL listed for Wet Locations**
- **Channel Inset Door Frame**
- **Robotically seam welded housing**
- **Narrow spectrum non-filtered Red LEDs**
- **Available in 630nm and 660nm LEDs**
- **White/Red separately controlled circuits**
- **Made in the USA by a Family Owned US Corporation**
- **This Kurtzon product is illuminated by BIOS® to provide healthy, low energy lighting that promotes improved sleep, better health and well-being**



DISCLAIMER: Although KURTZON has prepared the information contained in this document with all due care, KURTZON does not warrant or represent that the information is free from errors or omission. While the information is considered to be true and correct at the date of publication, changes in circumstances after the time of publication may impact on the accuracy of the information. The information may change without notice and KURTZON is not in any way liable for the accuracy of any information printed and stored or in any way interpreted or used.

ORDERING GUIDE

Series	Installation	Material	Size	Red LED	Wavelength	Row Qty.	LED Type	CCT/Dim Type	Voltage	Options
EL	R: Recessed (Suitable for Flange & Grid Installations)	3: White 430 SS Hsg. & Polished 304 SS Door 4: White AL Hsg. & Polished 304 SS Door 5: White AL Hsg. & White AL Door	1x4: 1' x 4' Housing MAX 3 Arrays Total <i>(2 Max Per Color)</i>	1/RLED	630: 630nm	1	LED-XBL1	835BIOS-DY	UNV	FC: Fuse & Holder (One Supplied Per Circuit) 2/EDW: Two Circuits of White Light 2/EDR: Two Circuits of Red Light EM10: 10W Integral LED EM (Specify Input Voltage) EM20: 20W External LED EM (Specify Input Voltage) WHT: White Finished Door & HSG LEX: .125" Prismatic Polycarbonate A19: .156" Prismatic P19 Pattern Clear Acrylic HIA: .140" High Impact P12 Pattern Clear Acrylic TG: .156" Prismatic Tempered Glass 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 (1 Per Circuit) WHIP: Must Specify Length and Wire Qty .125 FROST: 1/8" Frost Acrylic Lens OCCMW: Internal microwave OCC Sensor
				2/RLED	660: 660nm	2	LED-XBL2	840BIOS-DY		
			2x2: 2' x 2' Housing MAX 4 Arrays Total OR	1/RLED	630: 630nm	1	LED-XBL1	835BIOS-DY		
				2/RLED	660: 660nm	2	LED-XBL2	840BIOS-DY		
			2x4: 2' x 4' Housing MAX 4 Arrays Total	3/RLED		3	LED-XBL3	835BIOS-ST		
				4/RLED		4	LED-XBL3	835BIOS-ST		
	S: Surface	2: White CRS Hsg. & Polished 304 SS Door 3: Polished 304 SS Hsg. & Polished 304 SS Door 4: White AL Hsg. & Polished 304 SS Door 5: White AL Hsg. & White AL Door 6: White CRS Hsg. & White AL Door	1x4: 1' x 4' Housing MAX 2 Arrays Total	1/RLED	630: 630nm	1	LED-XBL1	835BIOS-DY		
				2/RLED	660: 660nm	2	LED-XBL2	840BIOS-DY		
			2x2: 2' x 2' Housing MAX 4 Arrays Total OR	1/RLED	630: 630nm	1	LED-XBL1	835BIOS-DY		
				2/RLED	660: 660nm	2	LED-XBL2	840BIOS-DY		
			2x4: 2' x 4' Housing MAX 4 Arrays Total	3/RLED		3	LED-XBL3	835BIOS-ST		
				4/RLED		4	LED-XBL3	835BIOS-ST		

Notes: BIOS-DY - Dynamic dimming module BIOS-ST - Static dimming module

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SPECIFICATIONS

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

LENS: Impact resistant .135" thick virgin acrylic with P12 prismatic pattern inverted. See "Options" for other choices.

BIOS® LEDs: Provided with BIOS® LED modules that are available in 3 different luminous flux intensities. When Dynamic dimming is specified, a bio dimmer is included with each driver inside the fixture. BIOS® LEDs have been expertly crafted to perform as advertised. Engineered to only include the highest quality components, the LEDs are backed by a limited 5 year warranty. See last page for more information on how BIOS® works.

RED LEDs: Red LEDs provide a narrow 630nm spectrum light for wavelength sensitive applications. Alternately available are 660nm narrow spectrum LEDs for a wider range of applications.

DRIVERS: Standard Universal Voltage Class 2 drivers are 0-10v Dimmable to 1% for most LED configurations. 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)

RED DRIVERS: Standard Universal Voltage Class 2 drivers are 0-10v Dimmable to 1% . 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. Red LEDs come with their own driver so they can be switched separately from the white LEDs.

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

INSTALL RECESSED: One fixture suitable for Grid and Flanged installation. Accommodates 1" and 1.5" T-Bar Grid (Consult factory for 2" T-Bar Grid compatibility). Four adjustable toggle arms with holes for seismic support wire attachment. Supply entry via 1/2" trade size flattened knockouts. Non-IC installation

INSTALL SURFACE: Four .312" dia. mounting holes and a removable gasketed wiring access plate with Supply entry via 1/2" trade size flattened knockouts.

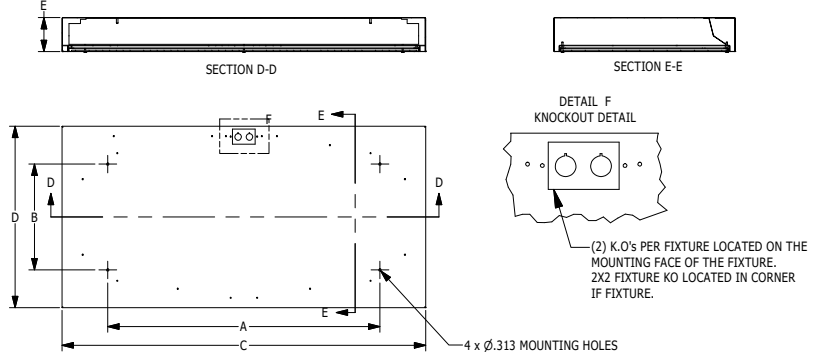
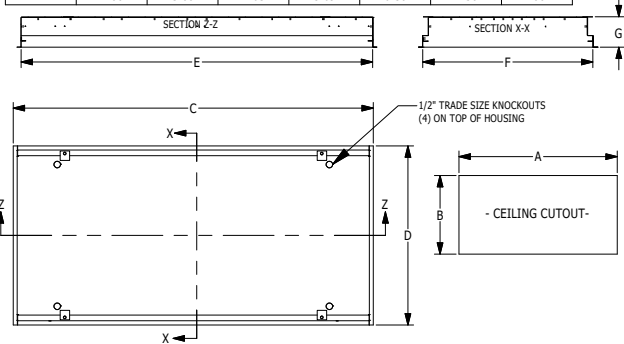
FINISH: Gloss white high reflectance 1000 hr. salt spray polyester powder coat finish standard for all housings. Stainless steel doorframes are satin polished unless option WHT is chosen.

LISTINGS: IP55 rated for dust and water ingress. ETL listed per UL_1598 for wet locations. Chicago Plenum Rated. Certified ISO-14644-1 for class 5 through class 9 cleanspaces. Certified Fed Std 209E for Class 100 through Class 100,000 cleanspaces. Optionally NSF2 Listed for Non-Food Zones. Drivers and LEDs are covered by a 5 year warranty, the remaining fixture is covered by a 10 year warranty.

PRODUCT DRAWINGS

"R" HOUSING REFERENCE DIMENSIONS							
SIZE	A	B	C	D	E	F	G
1X4	47.00"	11.00"	47.63"	11.69"	46.50"	10.50"	4.00"
2X2	23.00"	23.00"	23.63"	23.69"	22.50"	22.50"	4.00"
2X4	47.00"	23.00"	47.63"	23.69"	46.50"	22.50"	4.00"

"S" REFERENCE DIMENSIONS					
SIZE	DIM A	DIM B	DIM C	DIM D	DIM E
1X4	43.00"	4.75"	48.08"	12.00"	4.50"
2X2	12.00"	14.00"	24.08"	24.00"	4.50"
2X4	36.00"	14.00"	48.08"	24.00"	4.50"



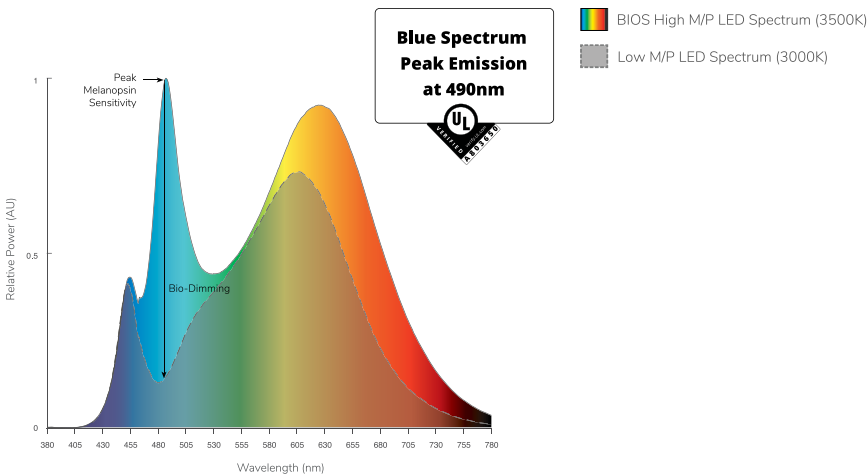
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ENERGY DATA - WHITE LED

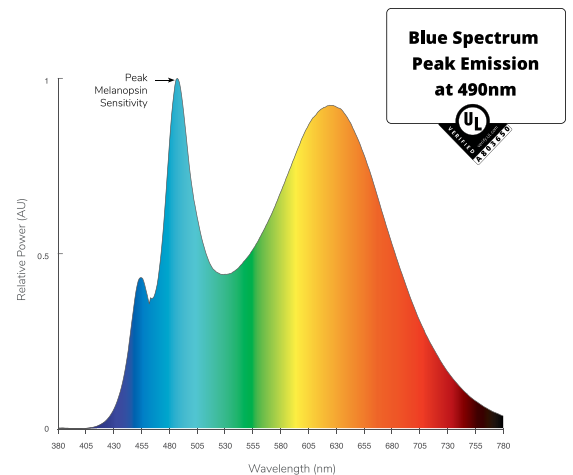
Energy Data Pending

PHOTOMETRICS - DYNAMIC



Dynamic Board Spectral Power Distribution (3500K)

PHOTOMETRICS - STATIC



Static Board Spectral Power Distribution (3500K)

Circadian Cleanroom EL Vivarium Troffers

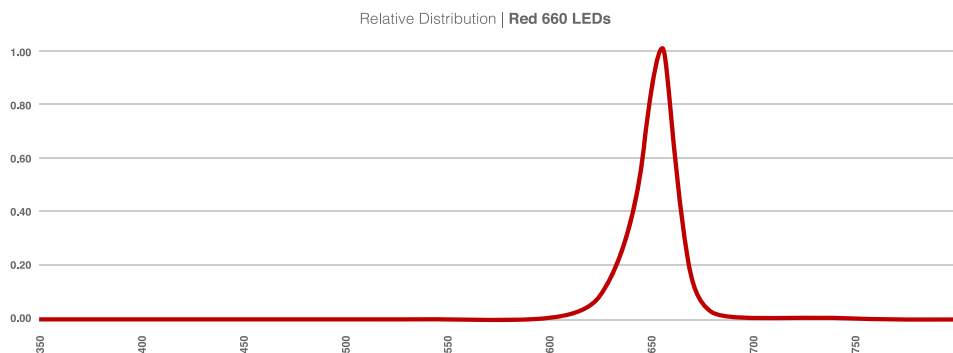
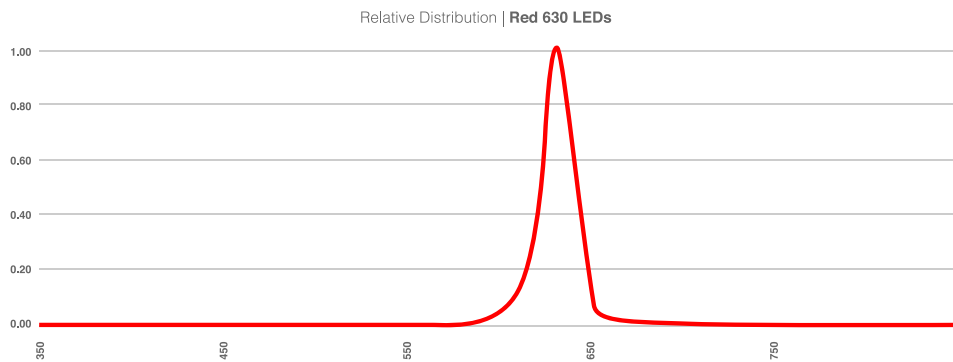
1x4, 2x2 and 2x4 Red/BIOS® LED Luminaires

ENERGY DATA - COLOR LED

CHANNEL-FGRS-RED LED TROFFER								
ENCLOSURE SIZE	LED SELECTION	630nm (RED)			660nm (RED)			MAX AMBIENT TEMP ³
		LUMENS	WATTS	EFFICACY	LUMENS	WATTS	EFFICACY	
1X4	1RLED	1,122	27	42	1,167	44.5	26.2	40°C (104°F)
1X4	2RLED	2,068	53	39	2,320	88.9	26.1	40°C (104°F)
2X2	1RLED	549	14	39	567	22.2	25.5	40°C (104°F)
2X2	2RLED	1,011	27	37	1,127	44.5	25.4	40°C (104°F)
2X2	3RLED	1,560	41	38	1,695	66.7	25.4	40°C (104°F)
2X2	4RLED	2,022	53	38	2,254	88.9	25.4	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	2,547	89	28.6	40°C (104°F)
2X4	3RLED	3,545	80	44	3,828	133.5	28.7	40°C (104°F)
2X4	4RLED	4,596	106	43	5,095	178	28.6	40°C (104°F)

* View previous page for energy data notes.

COLOR LED RELATIVE DISTRIBUTION



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HOW BIOS® WORKS

Production of melatonin, the hormone that helps us to sleep, is regulated by the ipRGC, a non-visual photoreceptor in the human eye. The wavelength of blue sky light at 490nm, present in sunlight, prevents melatonin production during the day. These signals are crucial in allowing humans to distinguish between day and night, promoting better sleep, health and well-being.



DYNAMIC LIGHT ENGINE

The SkyBlue® Dynamic Light Engine automatically calibrates the light level, reducing melanopic lux while keeping photopic lux at a constant. Dynamic light engines are paired with the current sensing smart BIOS® Bio-Dimming module allowing it operate using any single channel CC LED driver, using any dimming interface. Available in 3500K (dim to 3000K), and 4000K (dim to 3500K).

STATIC LIGHT ENGINE

The SkyBlue® Static Spectrum Light Engine delivers the industry’s best melanopic-to-photopic (m/p) ratio, with R9 greater than 90 at each color temperature. Easily integrated into existing LED fixtures and compatible with all LED drivers, the SkyBlue® Static Spectrum Light Engine is the ideal replacement for static color light fixtures. Static light engines have the full output of BIOS® SkyBlue® all the time and the peak cannot be adjusted.

DIMMER SETTINGS WITH BIOS® DYNAMIC DIMMING TECHNOLOGY

	DIMMER SETTING	BIOS® SKYBLUE®	LIGHT OUTPUT
	100% (full on)	100%	100%
	99%-51%	100%-0%	100%-90%
	50%	No BIOS®	~90%
	49%-0%	No BIOS®	Linear Dimming

BIOS® SkyBlue® operates at 100% when the light output is at 100%, for maximum circadian impact. As the light is dimmed, BIOS® SkyBlue® dims until 50% is reached when the BIOS® SkyBlue® is no longer present.