



# Circadian Cleanroom TL Troffers

1x4, 2x2 and 2x4 BIOS® LED Luminaires

## 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 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.

**LENS:** Impact resistant .135" thick virgin acrylic with P12 prismatic pattern inverted. Sealed to door with NSF listed RTV silicone. See "Options" for other choices.

**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.

**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.

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

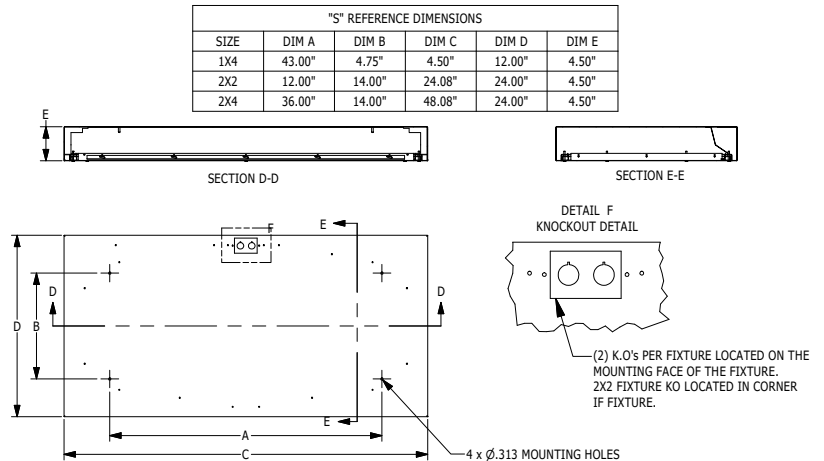
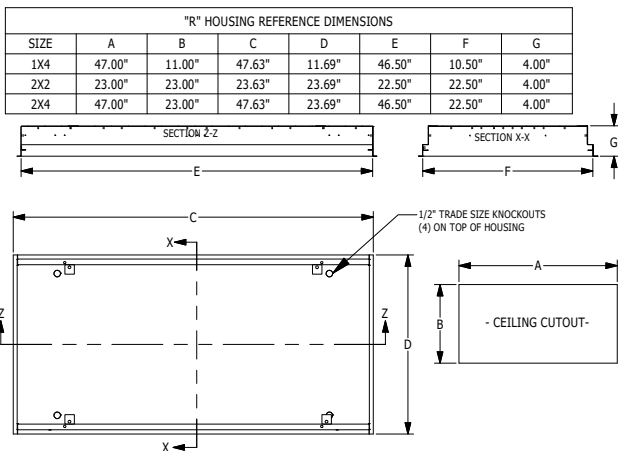
**INSTALL RECESSED:** One fixture suitable for Grid and Flanged installation. Accommodates 1" and 1.5" T-Bar Grid (Consult factory for 2" T-Bar Grid compatibility). Four adjustable toggle arms with holes for seismic support wire attachment. Supply entry via 1/2" trade size flattened knockouts.

**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 recessed housings. Stainless steel doorframes and surface housings are satin polished unless option WHT is chosen.

**LISTINGS:** IP65 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 100 through Class 100,000 cleanspaces. 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



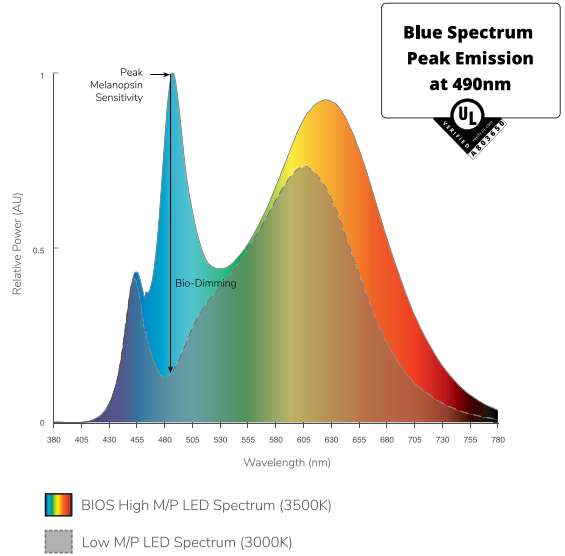
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## ENERGY DATA - BIOS® LED

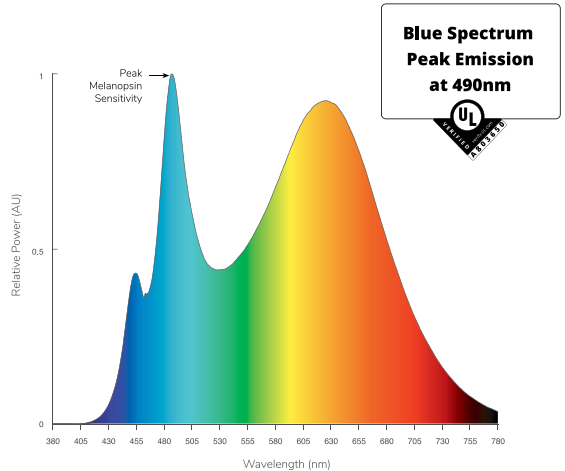
BIOS® INSET DOOR FRAME TROFFERS						
ENCLOSURE SIZE	LIGHT PACKAGE	PERFORMANCE SPECS			AMBIENT TEMP	
		LUMENS	WATTS	EFFICACY	MIN	MAX
1X4	1/LED-XBL1	2,632	44	60	-20C (-4F)	40C (104F)
1X4	1/LED-XBL2	3,578	58	62	-20C (-4F)	40C (104F)
1X4	2/LED-XBL1	5,265	88	60	-20C (-4F)	40C (104F)
1X4	1/LED-XBL3	5,441	88	62	-20C (-4F)	40C (104F)
1X4	2/LED-XBL2	7,156	115	62	-20C (-4F)	40C (104F)
1X4	2/LED-XBL3	10,882	175	62	-20C (-4F)	40C (104F)
2X2	1/LED-XBL1	1,388	22	63	-20C (-4F)	40C (104F)
2X2	1/LED-XBL2	1,891	29	65	-20C (-4F)	40C (104F)
2X2	2/LED-XBL1	2,776	44	63	-20C (-4F)	40C (104F)
2X2	1/LED-XBL3	2,803	44	64	-20C (-4F)	40C (104F)
2X2	2/LED-XBL2	3,781	58	65	-20C (-4F)	40C (104F)
2X2	3/LED-XBL1	4,164	66	63	-20C (-4F)	40C (104F)
2X2	4/LED-XBL1	5,552	89	63	-20C (-4F)	40C (104F)
2X2	2/LED-XBL3	5,605	88	64	-20C (-4F)	40C (104F)
2X2	3/LED-XBL2	5,672	87	65	-20C (-4F)	40C (104F)
2X2	4/LED-XBL2	7,562	116	65	-20C (-4F)	40C (104F)
2X2	3/LED-XBL3	8,408	132	64	-20C (-4F)	40C (104F)
2X2	4/LED-XBL3	11,210	175	64	-20C (-4F)	40C (104F)
2X4	1/LED-XBL1	3,094	44	70	-20C (-4F)	40C (104F)
2X4	1/LED-XBL2	4,243	58	73	-20C (-4F)	40C (104F)
2X4	2/LED-XBL1	6,187	88	70	-20C (-4F)	40C (104F)
2X4	1/LED-XBL3	6,481	88	74	-20C (-4F)	40C (104F)
2X4	2/LED-XBL2	8,487	116	73	-20C (-4F)	40C (104F)
2X4	3/LED-XBL1	9,281	132	70	-20C (-4F)	40C (104F)
2X4	4/LED-XBL1	12,374	176	70	-20C (-4F)	40C (104F)
2X4	3/LED-XBL2	12,730	174	73	-20C (-4F)	40C (104F)
2X4	2/LED-XBL3	12,961	176	74	-20C (-4F)	40C (104F)
2X4	4/LED-XBL2	16,974	231	74	-20C (-4F)	40C (104F)
2X4	3/LED-XBL3	19,442	264	74	-20C (-4F)	40C (104F)
2X4	4/LED-XBL3	25,922	351	74	-20C (-4F)	40C (104F)

## PHOTOMETRICS - DYNAMIC



Dynamic Board Spectral Power Distribution (3500K)

## PHOTOMETRICS - STATIC



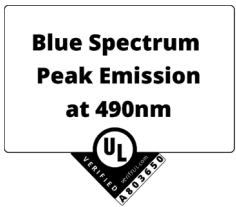
Static Board Spectral Power Distribution (3500K)

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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.