

Circadian Cleanroom TL Amber Troffers

1x4, 2x2 and 2x4 Amber/BIOS® LED 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**
- **Narrow Spectrum 590nm True Amber LEDs**
- **White / Amber LED Switching**
- **Recessed Housing suitable for Tbar Grid AND Hardlid Installations**
- **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**



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ORDERING GUIDE

Series	Installation Type	Material	Size	Amber LED	Row Qty.	LED Type	CCT/Dim Type	Voltage	Options
TL									
Series	Installation Type	Material	Size	Amber LED	Light Source			Voltage	Options
					Row Qty.	LED Type	CCT/Dim Type		
TL	R: Recessed (Suitable for Flange & Grid Installations)	3: White 430 SS Hsg. & Polished 304 SS Door	1x4: 1' x 4' Housing	1/YLED590	1	LED-XBL1	835BIOS-DY	UNV	FC: Fuse & Holder (One Supplied Per Circuit) 2/EDW: Two Circuits of White Light 2/EDY: Two Circuits of Amber 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
		4: White AL Hsg. & Polished 304 SS Door	MAX 3 Arrays Total	2/YLED590	2	LED-XBL2	840BIOS-DY		
		5: White AL Hsg. & White AL Door	(2 Max Per Color)			LED-XBL3	835BIOS-ST		
	S: Surface	7: White AL Hsg. & White CRS Door	2x2: 2' x 2' Housing	1/YLED590	1	LED-XBL1	835BIOS-DY		
			MAX 4 Arrays Total	2/YLED590	2	LED-XBL2	840BIOS-DY		
			OR	3/YLED590	3	LED-XBL3	835BIOS-ST		
TL	S: Surface	2x4: 2' x 4' Housing	MAX 4 Arrays Total	4/YLED590					
		1: White CRS Hsg. & White CRS Door	1x4: 1' x 4' Housing	1/YLED590	1	LED-XBL1	835BIOS-DY		
		2: White CRS Hsg. & Polished 304 SS Door	MAX 2 Arrays Total	2/YLED590	2	LED-XBL2	840BIOS-DY		
	S: Surface	3: Polished 304 SS Hsg. & Polished 304 SS Door				LED-XBL3	835BIOS-ST		
		4: White AL Hsg. & Polished 304 SS Door	2x2: 2' x 2' Housing	1/YLED590	1	LED-XBL1	835BIOS-DY		
		5: White AL Hsg. & White AL Door	MAX 4 Arrays Total	2/YLED590	2	LED-XBL2	840BIOS-DY		
TL	S: Surface	6: White CRS Hsg. & White AL Door	OR	3/YLED590	3	LED-XBL3	835BIOS-ST		
		7: White AL Hsg. & White CRS Door	2x4: 2' x 4' Housing	4/YLED590					
			MAX 4 Arrays Total						
	S: Surface								

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 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.

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.

AMBER LEDs: Amber LEDs provide a "True amber" 590nm narrow spectrum for wavelength sensitive applications. Amber chips are not phosphor converted LEDs so there is no risk of white light leaking through deteriorated phosphor over time. Amber LEDs are switched independent of white LEDs.

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)

AMBER 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. Amber 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%.

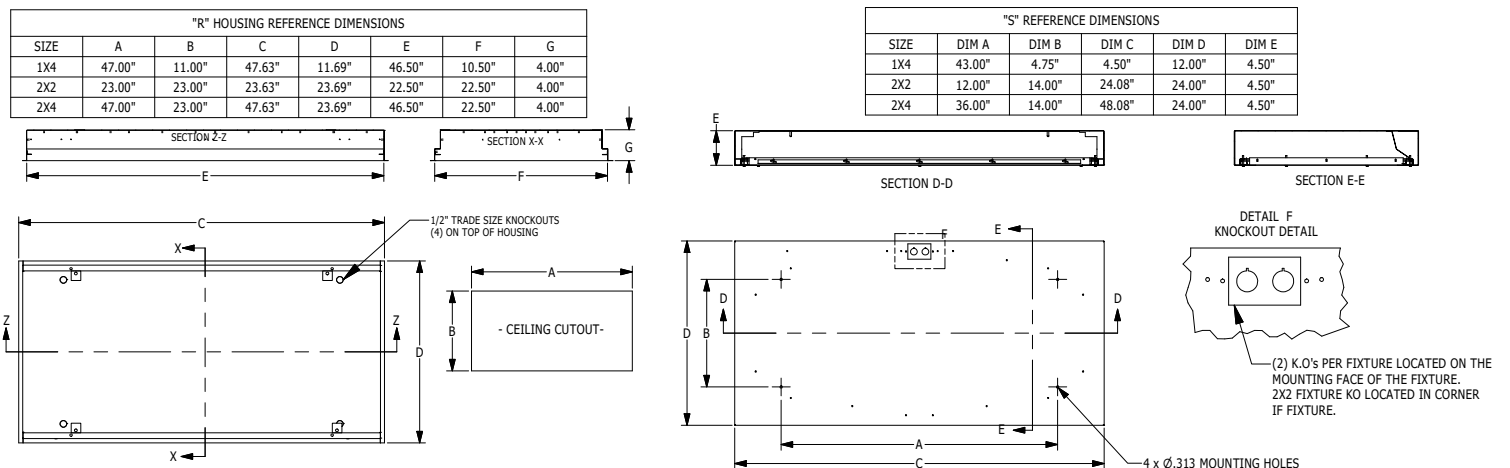
INSTALL RECESSED: One fixture suitable for Grid and Flanged installation. Accommodates 1" and 1.5" T-Bar Grid (Consult factory for 2" T-Bar Grid compatibility). Four adjustable toggle arms with holes for seismic support wire attachment. Supply entry via 1/2" trade size flattened knockouts.

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. Drivers and LEDs are covered by a 5 year warranty, the remaining fixture is covered by a 10 year warranty.

PRODUCT DRAWINGS



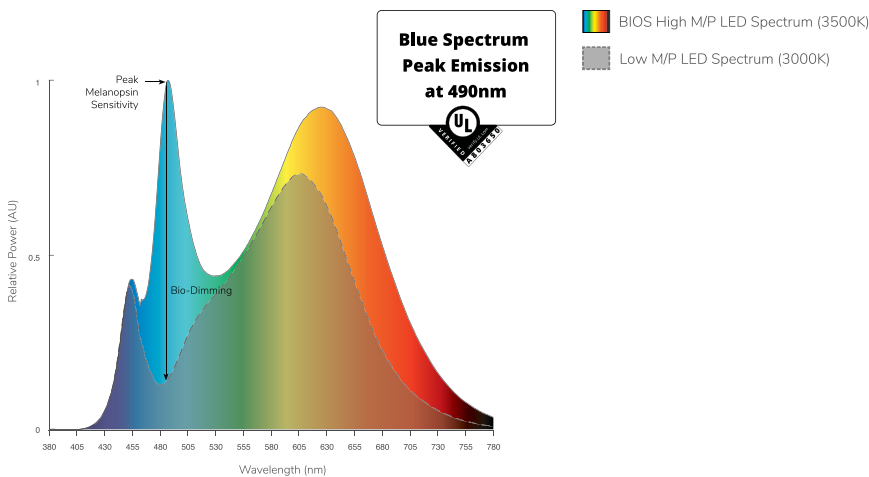
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ENERGY DATA - WHITE LED

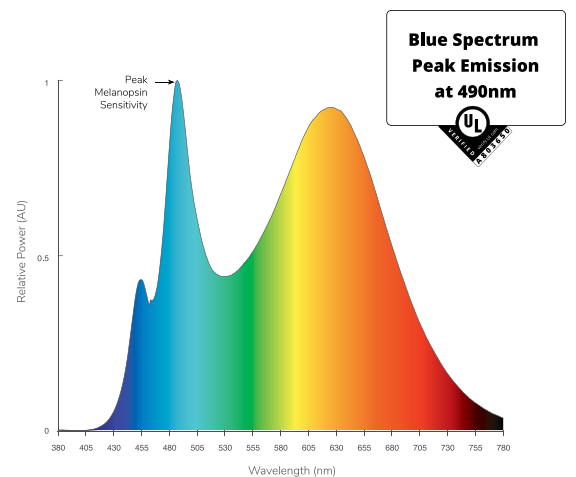
Energy Data Pending

PHOTOMETRICS - DYNAMIC



Dynamic Board Spectral Power Distribution (3500K)

PHOTOMETRICS - STATIC



Static Board Spectral Power Distribution (3500K)

Circadian Cleanroom TL Amber Troffers

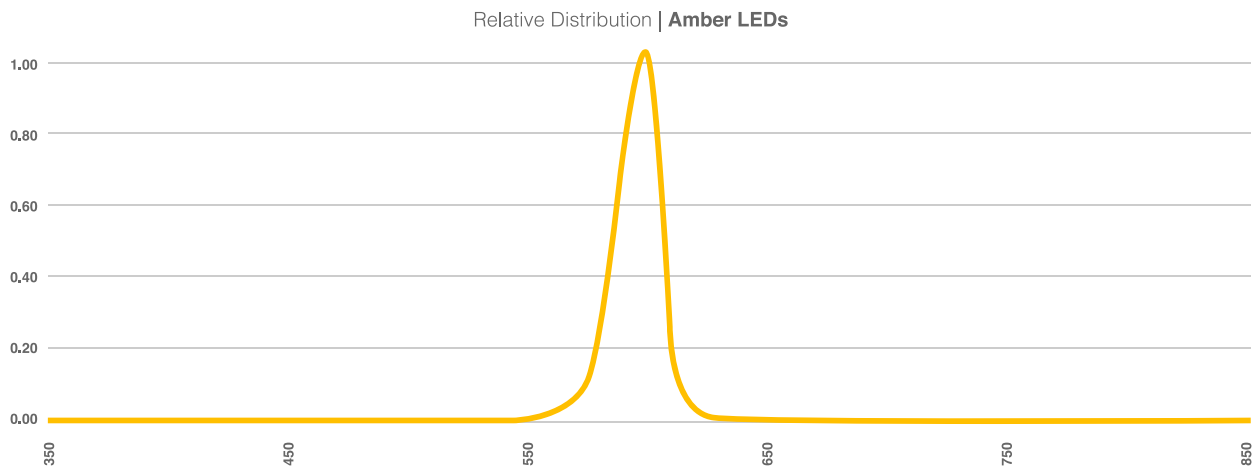
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ENERGY DATA - COLOR LED

INSET-FGRS-AMBER LED TROFFER					
ENCLOSURE SIZE	LED SELECTION	590nm (Amber)			MAX AMBIENT TEMP ³
		LUMENS	WATTS	EFFICACY	
1X4	1YLED	1,885	43	44	40°C (104°F)
1X4	2YLED	3,770	86	44	40°C (104°F)
2X2	1YLED	1,066	22	48	40°C (104°F)
2X2	2YLED	2,132	43	50	40°C (104°F)
2X2	3YLED	3,197	65	49	40°C (104°F)
2X2	4YLED	4,263	86	50	40°C (104°F)
2X4	1YLED	2,390	44	54	40°C (104°F)
2X4	2YLED	4,779	87	55	40°C (104°F)
2X4	3YLED	7,169	130	55	40°C (104°F)
2X4	4YLED	9,558	173	55	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.

**Blue Spectrum
Peak Emission
at 490nm**



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.