

# Circadian Cleanroom KL Amber Troffers

1x4, 2x2 and 2x4 Amber/BIOS® LED 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**
- **Narrow Spectrum 590nm True Amber LEDs**
- **White / Amber separately controlled circuits**
- **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

KL

Series	Installation Type	Material	Size	Amber LED	Light Source			Voltage	Options
					Row Qty.	LED Type	CCT/Dim Type		
KL	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 7: White AL Hsg. & White CRS 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
			MAX 3 Arrays Total (2 Max Per Color)	2/YLED590	2	LED-XBL2	840BIOS-DY		
						LED-XBL3	835BIOS-ST		
							840BIOS-ST		
			2x2: 2' x 2' Housing	1/YLED590	1	LED-XBL1	835BIOS-DY		
			MAX 4 Arrays Total	2/YLED590	2	LED-XBL2	840BIOS-DY		
	S: Surface	1: White CRS Hsg. & White CRS Door 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 7: White AL Hsg. & White CRS Door	OR	3/YLED590	3	LED-XBL3	835BIOS-ST		
			2x4: 2' x 4' Housing	4/YLED590					
			MAX 4 Arrays Total						
			1x4: 1' x 4' Housing	1/YLED590	1	LED-XBL1	835BIOS-DY		
			MAX 2 Arrays Total	2/YLED590	2	LED-XBL2	840BIOS-DY		
						LED-XBL3	835BIOS-ST		
							840BIOS-ST		
			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		
			2x4: 2' x 4' Housing	4/YLED590					
			MAX 4 Arrays Total						

### 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 Cold Rolled 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 .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.

**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%.

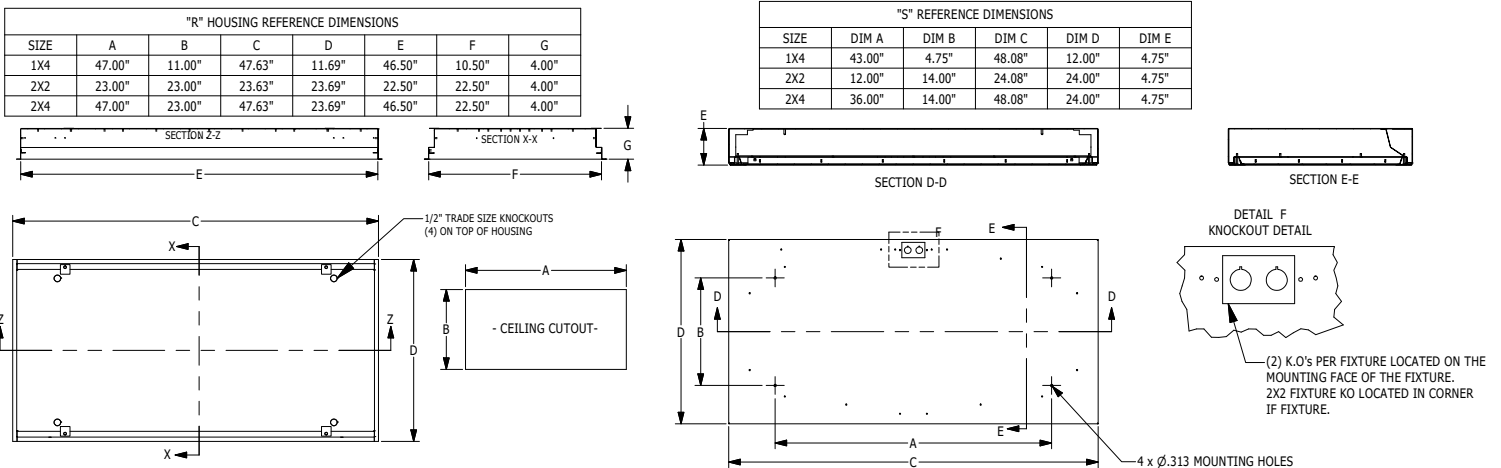
**INSTALL RECESSED:** 1 fixture suitable for Grid & Flanged installation. Accommodates 1" & 1.5" T-Bar Grid (Consult factory for 2" T-Bar Grid compatibility). 4 adjustable toggle arms with holes for seismic support wire attachment. Supply entry via 1/2" trade size flattened knockouts.

**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 & surface housings are satin polished unless option WHT is chosen.

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

## PRODUCT DRAWINGS



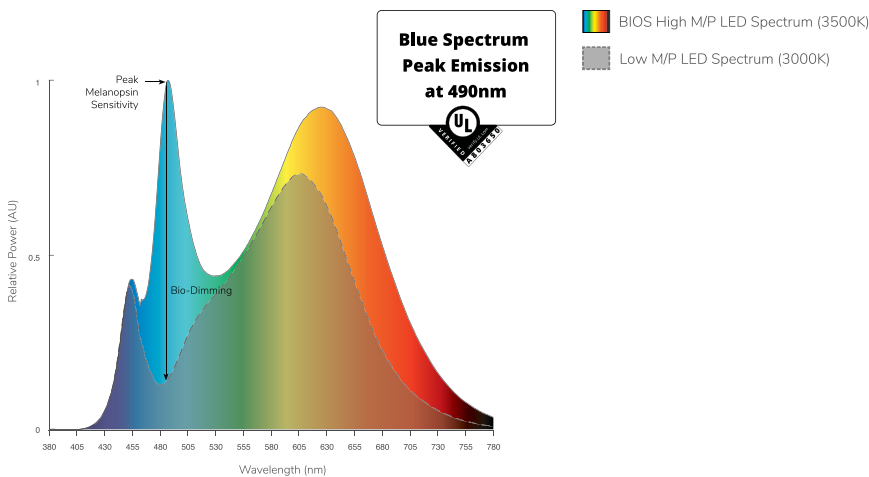
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### ENERGY DATA - WHITE LED

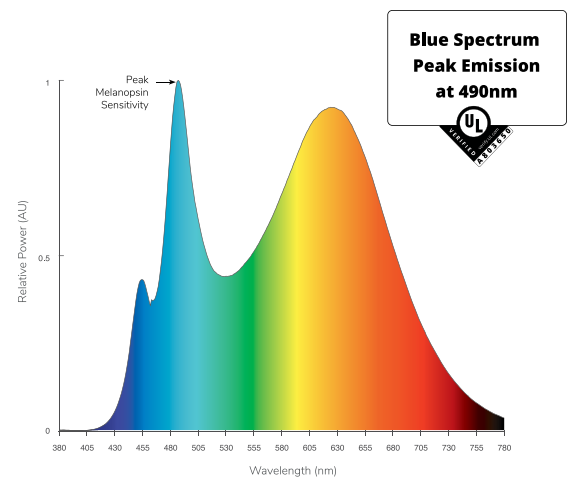
Energy Data Pending

### PHOTOMETRICS - DYNAMIC



Dynamic Board Spectral Power Distribution (3500K)

### PHOTOMETRICS - STATIC



Static Board Spectral Power Distribution (3500K)

## Circadian Cleanroom **KL Amber Troffers**

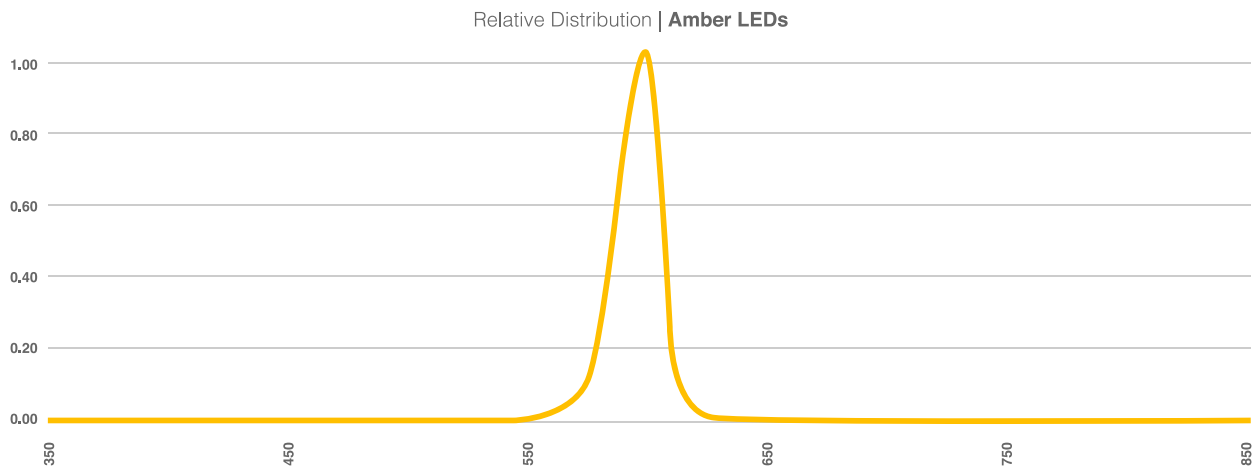
1x4, 2x2 and 2x4 Amber/BIOS® LED Luminaires

### ENERGY DATA - COLOR LED

OVERLAP-FGRS-AMBER LED TROFFER					
ENCLOSURE SIZE	LED SELECTION	590nm (Amber)			MAX AMBIENT TEMP <sup>3</sup>
		LUMENS	WATTS	EFFICACY	
1X4	1YLED	1,972	43	46	40°C (104°F)
1X4	2YLED	3,945	86	46	40°C (104°F)
2X2	1YLED	1,132	22	51	40°C (104°F)
2X2	2YLED	2,264	43	53	40°C (104°F)
2X2	3YLED	3,396	65	52	40°C (104°F)
2X2	4YLED	4,528	86	53	40°C (104°F)
2X4	1YLED	2,428	44	55	40°C (104°F)
2X4	2YLED	4,856	87	56	40°C (104°F)
2X4	3YLED	7,283	130	56	40°C (104°F)
2X4	4YLED	9,711	173	56	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.