

# Circadian Cleanroom EL Amber Troffers

1x4, 2x2 and 2x4 Amber/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 590nm true Amber LEDs**
- **White/Amber 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**



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## ORDERING GUIDE

Series Installation Type Material Size Amber LED Row Qty. LED Type CCT/Dim Type Voltage Options

EL

Series	Installation Type	Material	Size	Amber LED	Light Source			Voltage	Options
					Row Qty.	LED Type	CCT/Dim Type		
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	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 OR 2x4: 2' x 4' Housing MAX 4 Arrays Total	2/YLED590 3/YLED590 4/YLED590	2 3	LED-XBL2 LED-XBL3		840BIOS-DY 835BIOS-ST 840BIOS-ST
EL	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	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 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 OR 2x4: 2' x 4' Housing MAX 4 Arrays Total	2/YLED590 3/YLED590 4/YLED590	2 3	LED-XBL2 LED-XBL3		840BIOS-DY 835BIOS-ST 840BIOS-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.

**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. 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.

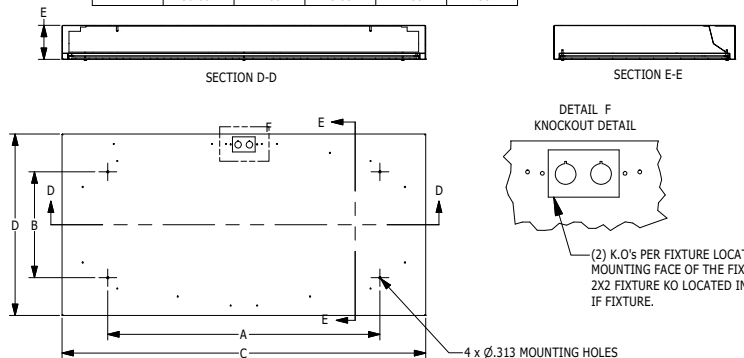
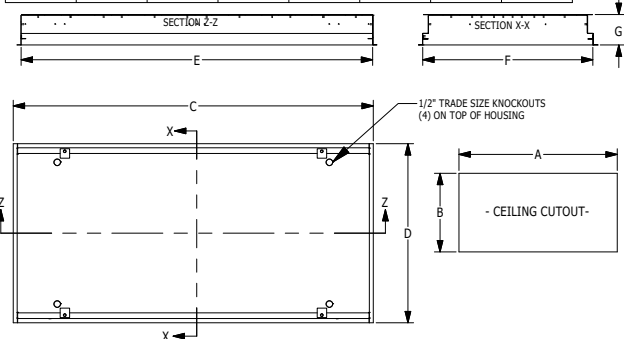
**FINISH:** Gloss white high reflectance 1000 hr. salt spray polyester powder coat finish standard for all housings. Stainless steel doorframes are satin polished unless option WHT is chosen.

**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	G
1X4	47.00"	11.00"	47.63"	11.69"	46.50"	4.00"
2X2	23.00"	23.00"	23.63"	23.69"	22.50"	4.00"
2X4	47.00"	23.00"	47.63"	23.69"	46.50"	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"



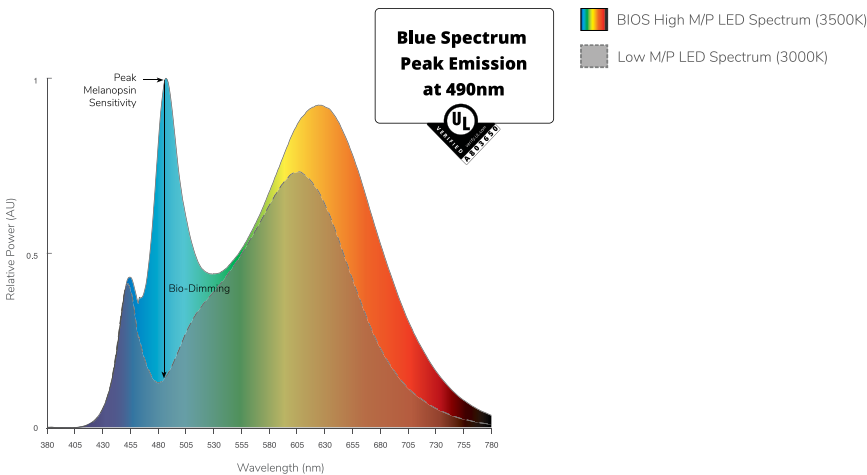
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1x4, 2x2 and 2x4 Amber/BIOS® LED Luminaires

## ENERGY DATA - WHITE LED

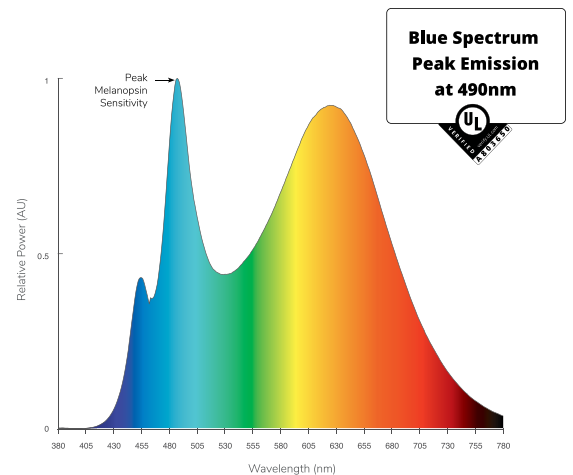
Energy Data Pending

### PHOTOMETRICS - DYNAMIC



Dynamic Board Spectral Power Distribution (3500K)

### PHOTOMETRICS - STATIC



Static Board Spectral Power Distribution (3500K)

# Circadian Cleanroom EL Amber Troffers

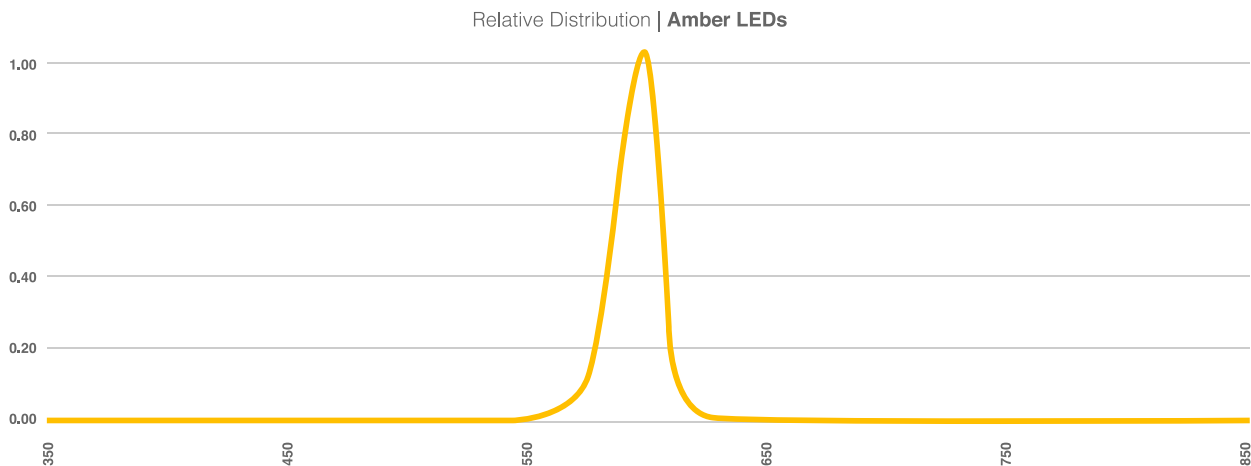
1x4, 2x2 and 2x4 Amber/BIOS® LED Luminaires

## ENERGY DATA - COLOR LED

CHANNEL-FGRS-AMBER LED TROFFER					
ENCLOSURE SIZE	LED SELECTION	590nm (AMBER)			MAX AMBIENT TEMP <sup>3</sup>
		LUMENS	WATTS	EFFICACY	
1X4	1YLED	2,119	43	49	40°C (104°F)
1X4	2YLED	4,237	86	49	40°C (104°F)
2X2	1YLED	1,168	22	53	40°C (104°F)
2X2	2YLED	2,337	43	54	40°C (104°F)
2X2	3YLED	3,505	65	54	40°C (104°F)
2X2	4YLED	4,673	86	54	40°C (104°F)
2X4	1YLED	2,482	44	56	40°C (104°F)
2X4	2YLED	4,964	87	57	40°C (104°F)
2X4	3YLED	7,446	130	57	40°C (104°F)
2X4	4YLED	9,928	173	57	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.