

# Medical Operating Room Troffers: ML-OR-LED-TW

Tunable White 1x2, 1x4, 2x2 and 2x4 High Lumen LED Recessed Luminaires with RF Filtering



- **For use in Operating and Exam Rooms**
- **IP65 Rating**
- **RF filtered circuits standard**
- **Asymmetric distribution standard**
- **Antimicrobial finish standard**
- **B.A.A. & B.A.B.A Compliant & Made in the USA by a Family Owned US Corporation**
- **Available as Warm Dim or as Separately controlled intensity and CCT**
- **Tunable white LEDs allow a full range of CCTS from 2700K - 6500K CCT**



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## ORDERING GUIDE

Series	Material	Size	Row Qty.	LED Type	CCT/CRI	Control	Circuits	Green LED	Voltage	Mounting	Optics	Options								
ML-OR				LEDTW																
Series	Material	Size	Row Qty.	Light Source		Control	Circuits (white)	Green LED	Voltage	Mounting	Optics									
ML-OR	3 White 430 SS Hsg. & White AM 430 SS Door	1x2 1' x 2' Housing	1	LEDTW	80 CRI:	10VA 0-10V Analog Control	1/CIR	(optional)	120V	IND Individual	ASY Diffusing Optics Assembly With Linear Prismatic Asymmetric Distribution									
		1x4 1' x 4' Housing	2		827/865 2700K-6500K		2/CIR	1/GLED	277V		SYM P12 Prismatic Lens With Embedded RF Grid									
	4 White Alum Hsg. & White AM 430 SS Door	2x2 2' x 2' Housing	1		90+ CRI:	10VWD 0-10V Warm Dim Control	Specify Qty of RF Filtered Circuits for White Light		2/GLED	UNV	CRM Continuous Row Mount	FROST 0.125" Flat Diffusing Frost Acrylic (No RFI Grid)								
					927/965 2700K-6500K							LBW 0.125" Flat Diffused Acrylic with Linear Batwing Distribution (No RFI Grid)								
	5 White Alum Hsg. & White AM Alum Door	OR 2' x 2' Housing	2										GH85 0.125" Flat Diffused Acrylic with Glare Suppression Distribution (No RFI Grid)							
			3										AB20 0.125" Flat Diffused 20 Degree Asymmetric Distribution (No RFI Grid)							
	7 White Alum Hsg. & White AM CRS Door	2x4 2' x 4' Housing	4											Note*: ASY option is standard and will be provided when no other option is selected						

Ordering Notes, If Applicable

Options	
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 (One Supplied Per Circuit)
GTD	Generator Transfer Device
WHIP	Must Specify Length and Wire Qty
OCCMW	Internal Microwave OOC Sensor
FC	Fuse & Holder (One Supplied Per Circuit)
EM10	10W Integral LED EM (Specify Input Voltage)
EM20	20W Remote LED EM (Specify Input Voltage)
SSP	Satin Polished Stainless Steel Doorframe
GG	1/8" Thick Grid Gasket (Provided Loose)
Note*: Specify Value in Ordering Notes Below	

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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. Optional row mounting available must specify in options

**DOOR FRAME:** One-Piece Inset door frame regresses into the housing to allow the 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 Aluminum, 20Ga 430 Stainless Steel, or 20Ga 1008 CRS.

**GASKETS:** Closed microcellular Nitrile gasket with vulcanized corners making a one-piece oil and solvent resistant gasket system. GG option provides a loose 1/8" thick adhesive backed gasket intended to adhere to the top face of a suspended grid ceiling for grid profiles that do not already have gasket on them.

**OPTICS:** Standard ASY Lens is a 3 piece assembly consisting of a clear flat acrylic lens on the room side followed by a linear asymmetric lens and finished with a frost overlay on top. The clear flat room side lens is used to allow an easy to clean surface. The frosted diffusing top layer provides a more evenly illuminated surface. Center lens is an Asymmetric distribution pattern optimized for high visibility within the surgical field and is provided with a silkscreened RF grid to absorb radiated emissions. Symmetric lens with inverted pattern & RF filtering is also available in options.

**LEDS:** Commercially available minimum 80 or 90 CRI 2 channel LED modules use 2700K and 6500K chips to mix color in order to achieve a desired color temperature. Modules have rated lifetime of L70 > 50,000 hrs and efficacy of 165Lm/W. LEDs are controllable via 0-10v dimming, see next page for control options. Consult factory for lumen output configurations not listed on spec sheets.

**ELECTRICAL:** 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. Multiple internal circuits are available for scene settings, each specified circuit is provided with an RFI filter that is tested to meet MIL-STD-461. Fixtures available with 10w 90min Emergency battery backup and surge protection. Consult factory for additional options not listed.

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

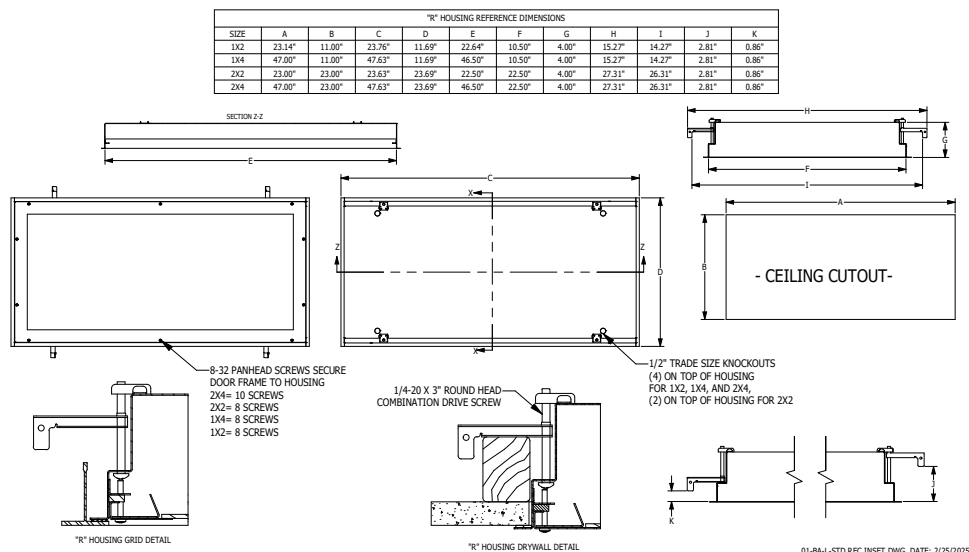
**INSTALLATION:** Suitable for recessed Non-IC installation into covered ceilings. Fixtures are supplied with .875" flattened knockouts for supply entry. Recessed housings have (4) swing out toggle arms that are used to draw the fixture in to the ceiling for hard lid installation without the need for a yoke hanger. The toggle arm adjuster bolts are accessible from the room side of the luminaire and the actual toggles can be used as means of establishing a seismic support for lay in ceiling installations.

**CRM:** Continuous Row Mounting (CRM) option provides a means of securing luminaires to each other end to end in straight rows only. While all recessed luminaires are suitable for thru wiring, the CRM option is only available for Hard lid installation. CRM fixtures come with flanges on 2 of the 4 sides so that the luminaires can mount to each other without the appearance of a larger gap between the two fixtures. Endcaps are factory installed based upon customer provided row configuration information and the ceiling cutouts can be determined as shown on the CRM installation instructions that can be found on our website.

**DOOR FINISH:** White Dupont Alesta using Agion silver ion antimicrobial powder coat finish standard. See options for polished stainless steel.

**LISTINGS:** Military Standard 461G compliant for conducted and radiated emissions. IP65 rated for dust and water ingress. Suitable for 1700 PSI high pressure hosesdowns. 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. NSF2 listed for non-food & splash zones. Drivers and LEDs are covered by a 5 year warranty, the remaining fixture is covered by a 10 year warranty. This product Series is both Build America Buy America (B.A.B.A.) & Buy American Act (B.A.A.) compliant.

## PRODUCT DRAWINGS



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## ENERGY DATA

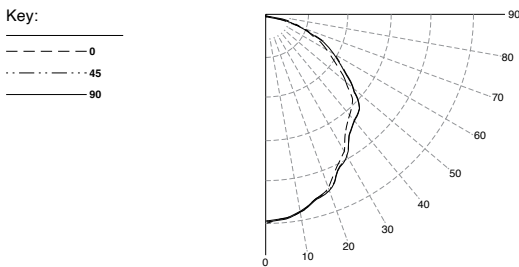
MEDICAL ASY INSET-FGRS-LED TROFFER (APPROX <sup>1</sup> LUMENS DELIVERED)						
ENCLOSURE SIZE	LIGHT PACKAGE	Tunable White 80 CRI (4000K)			AMBIENT TEMP	
		ASY	SYM	WATTS <sup>2</sup>	MINIMUM	MAXIMUM <sup>3</sup>
1X2	1LEDTW	1,416	1,596	17	-20°C (-4°F)	40°C (104°F)
1X2	2LEDTW	2,856	3,216	35	-20°C (-4°F)	40°C (104°F)
1X2	EM10	VARIES	VARIES	4	0°C (32°F)	40°C (104°F)
1X4	1LEDTW	2,950	3,325	34	-20°C (-4°F)	40°C (104°F)
1X4	2LEDTW	5,950	6,700	68	-20°C (-4°F)	40°C (104°F)
1X4	EM10	VARIES	VARIES	4	0°C (32°F)	40°C (104°F)
2X2	2LEDTW	2,850	3,350	35	-20°C (-4°F)	40°C (104°F)
2X2	3LEDTW	4,250	5,100	53	-20°C (-4°F)	40°C (104°F)
2X2	4LEDTW	5,500	6,350	68	-20°C (-4°F)	40°C (104°F)
2X2	EM10	VARIES	VARIES	4	0°C (32°F)	40°C (104°F)
2X4	2LEDTW	6,800	7,600	68	-20°C (-4°F)	40°C (104°F)
2X4	3LEDTW	10,250	11,450	103	-20°C (-4°F)	40°C (104°F)
2X4	4LEDTW	13,650	14,900	135	-20°C (-4°F)	40°C (104°F)
2X4	EM10	VARIES	VARIES	4	0°C (32°F)	40°C (104°F)

MEDICAL ASYMMETRIC INSET-FGRS-LED TROFFER (APPROX <sup>1</sup> LUMENS DELIVERED)						
ENCLOSURE SIZE	LIGHT PACKAGE	STANDARD DIMMING	540nm GREED LED			CCT RANGE
			LUMENS	WATTS <sup>2</sup>	EFFICACY <sup>3</sup>	
1X2	1GLED	0-10V 1%	1,200	18	67	2700k - 6500k
1X2	2GLED	0-10V 1%	2,400	36	67	2700k - 6500k
1X4	1GLED	0-10V 1%	2,500	36	69	2700k - 6500k
1X4	2GLED	0-10V 1%	5,000	72	69	2700k - 6500k
2X2	1GLED	0-10V 1%	1,200	18	67	2700k - 6500k
2X2	2GLED	0-10V 1%	2,400	36	67	2700k - 6500k
2X4	1GLED	0-10V 1%	2,500	36	69	2700k - 6500k
2X4	2GLED	0-10V 1%	5,000	72	69	2700k - 6500k

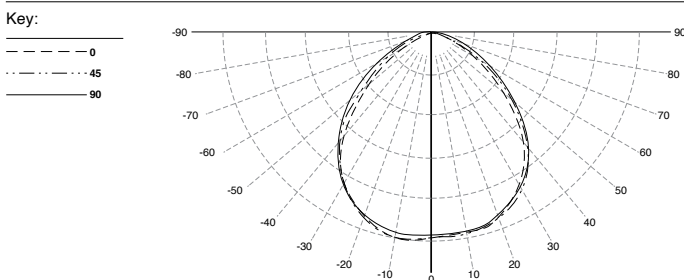
- 1 DELIVERED LUMEN DATA IS CALCULATED BASED ON STATIC WHITE PHOTOMETRY @ 4000K CCT
- 2 WATTAGE IS MEASURED WITH 4000K SELECTION @ 120vAC AND Tambient = 25C. WATTAGES MAY VARY WITH ALTERNATE CONFIGURATIONS
- 3 EFFICACY CALCULATED USING 4000K CCT DATA.
- 4 MAX AMBIENT TEMP RATING, NON-IC INSTALLATION. TEMP RATING MAY VARY WITH SPECIFIED DRIVERS OR ANY NON STANDARD SELECTION
- 5 90 MINUTE 10W EMERGENCY DRIVER; LUMENS CALCULATED BASED ON FIXTURE EFFICACY.
- 6 EM10 DELIVERED LUMENS = (DELIVERED LUMENS/LUMINAIRE WATTS)\*10
- 7 EM20 DELIVERED LUMENS = (DELIVERED LUMENS/LUMINAIRE WATTS)\*20

## PHOTOMETRICS

### SYMMETRIC

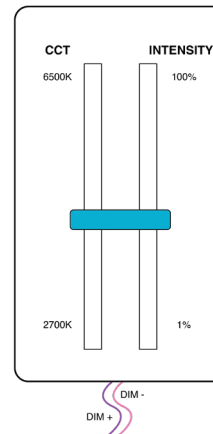


### ASYMMETRIC



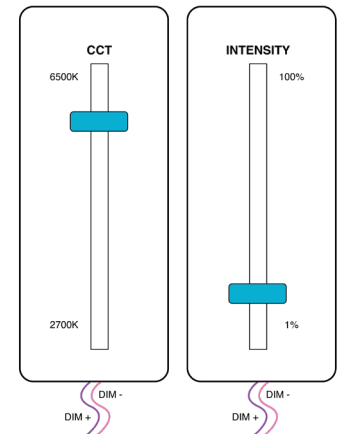
## CONTROL OPTIONS

### WARM DIM CONTROL



Only one set of dimming Leads are required. As Intensity is Increased so is the CCT. As intensity decreases the CCT decreases to warmer color Temperatures.

### CONTINUOUS CCT CONTROL



Two set of dimming leads are required. As Intensity and CCT of light are controlled independently from one another.