

Medical Operating Room Troffers: ML-OR-LED

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**
- **Green/white switching available**
- **Asymmetric distribution standard**
- **Antimicrobial finish standard**
- **Lutron controls available**
- **B.A.A. Compliant & Made in the USA by a Family Owned US Corporation**



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ORDERING GUIDE

Series	Material	Size	Row Qty.	LED Type	CCT/CRI	Circuits	Green LED	Voltage	Mounting	Optics	Options
ML-OR											
Series	Material	Size	Row Qty.	Light Source	CCT/CRI	Circuits (white)	Green LED	Voltage	Mounting	Optics	Options
ML-OR	3 White 430 SS Hsg. & White AM 430 SS Door	1x4 1' x 4' Housing	1	LEDR	83 CRI:	1/CIR 2/CIR	(optional) 1/GLED 2/GLED	120V 277V UNV 347V*	IND Individual	ASY Diffusing Optics Assembly With Linear Prismatic Asymmetric Distribution SYM P12 Prismatic Lens With Embedded RF Grid FROST 0.125" Flat Diffused Frost Acrylic (No RFI Grid) LBW 0.125" Flat Diffused Acrylic with Linear Batwing Distribution (No RFI Grid) GH85 0.125" Flat Diffused Acrylic with Glare Suppression Distribution (No RFI Grid) AB20 0.125" Flat Diffused 20 Degree Asymmetric Distribution (No RFI Grid)	Note*: ASY option is standard and will be provided when no other option is selected.
			2	LEDH	830 3000K						
	4 White Alum Hsg. & White AM 430 SS Door	2x2 2' x 2' Housing	1	LEDHF	835 3500K						
					840 4000K						
	5 White Alum Hsg. & White AM Alum Door	OR 2x4 2' x 4' Housing	2		850 5000K						
					90+ CRI:						
	7 White Alum Hsg. & White AM CRS Door				935 3500K						
					940 4000K						
					950 5000K						

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
OCMW	Internal microwave OCC Sensor
FC	Fuse & Holder (One Supplied Per Circuit)
EM10	10W Integral LED EM (Specify Input Voltage)
EM20	20W Remote LED EM (Specify Input Voltage)
LDE1	Lutron Hi-Lume 1% Ecosystem LED Driver SOFTB
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 in a wide variety of Color Temperature (CCT), FLUX, and CRI. Highly efficient and consistent color maintained to 3 SDMC for color critical applications. B50/L70 and compliant with Zhaga recognized hole patterns. See options for available 540nm Green LEDs. Consult factory for LED options or configurations not listed below.

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.

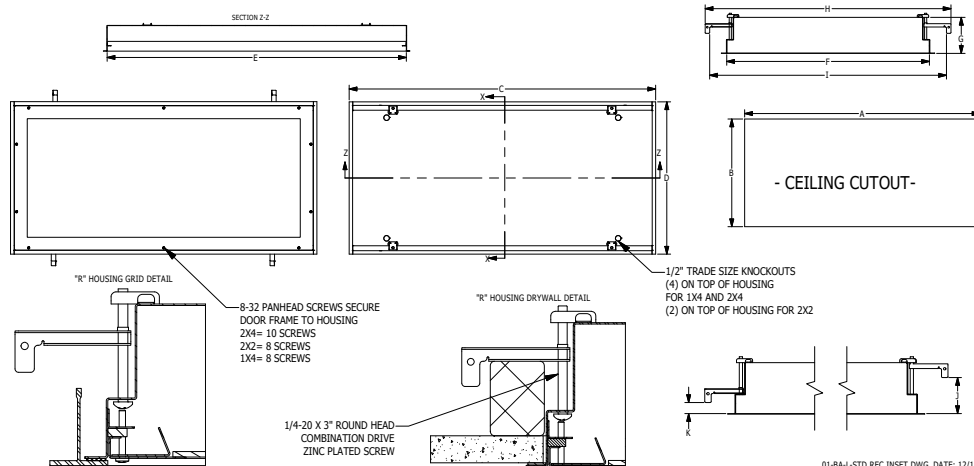
CRM: Continuous Row Mounting (CRM) option provides a means of securing luminaires to each other end to end in straight rows only. While all recessed luminaires are suitable for thru wiring, the CRM option is only available for Hard lid installation. CRM fixtures come with flanges on 2 of the 4 sides 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 is Buy American Act (B.A.A.) compliant.

PRODUCT DRAWINGS

"R" HOUSING REFERENCE DIMENSIONS											
SIZE	A	B	C	D	E	F	G	H	I	J	K
1X4	47.00"	11.00"	47.63"	11.69"	46.50"	10.50"	4.00"	15.27"	14.27"	2.81"	0.86"
2X2	23.00"	23.00"	23.63"	23.69"	22.50"	22.50"	4.00"	27.31"	26.31"	2.81"	0.86"
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ENERGY DATA

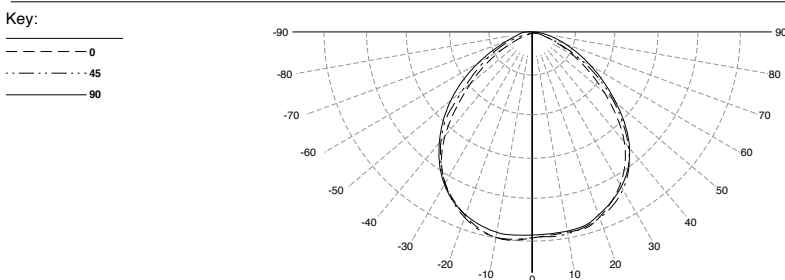
MEDICAL ASY INSET-FGRS-LED TROFFER (APPROX ³ LUMENS DELIVERED)														
ENCLOSURE SIZE	LIGHT PACKAGE	STANDARD DIMMING	LUMENS 83 CRI (3000K - 5000K)			MAX AMB TEMP ⁴	EFFICACY (LM/W)		LUMENS 90+ CRI (3500K, 4000K)			MAX AMB TEMP ⁴	EFFICACY (LM/W)	
			ASY	SYM	WATTS ²		ASY	SYM	ASY	SYM	WATTS ²		ASY	SYM
1X4	1LEDR	0-10V 1%	2,276	3,034	29	45°C (113°F)	78	105	2,193	2,924	29	45°C (113°F)	76	101
1X4	2LEDR	0-10V 1%	4,550	6,067	55	45°C (113°F)	83	110	4,386	5,848	56	45°C (113°F)	78	104
1X4	2LEDH	0-10V 1%	8,816	11,754	109	35°C (95°F)	81	108	8,421	11,228	109	35°C (95°F)	77	103
1X4	2LEDHF	0-10V 1%	13,010	17,346	153	35°C (95°F)	85	113	10,841	14,454	183	35°C (95°F)	59	79
1X4	EM10	NA	780-850	1050-1130	4	40°C (104°F)	NA	NA	590-780	790-1040	4	40°C (104°F)	NA	NA
2X2	2LEDR	0-10V 1%	2,508	2,986	29	45°C (113°F)	86	103	2,420	2,881	29	45°C (113°F)	83	99
2X2	3LEDR	0-10V 1%	3,762	4,479	42	45°C (113°F)	90	107	3,630	4,321	42	45°C (113°F)	86	103
2X2	2LEDH	0-10V 1%	4,935	5,875	55	40°C (104°F)	90	107	4,705	5,601	55	40°C (104°F)	86	102
2X2	4LEDR	0-10V 1%	5,016	5,972	55	45°C (113°F)	91	109	4,839	5,761	56	45°C (113°F)	86	103
2X2	3LEDH	0-10V 1%	7,403	8,813	80	40°C (104°F)	93	110	7,058	8,402	81	35°C (95°F)	87	104
2X2	4LEDH	0-10V 1%	9,870	11,750	109	40°C (104°F)	91	108	9,410	11,202	109	35°C (95°F)	86	103
2X2	4LEDHF	0-10V 1%	14,994	17,850	153	35°C (95°F)	98	117	12,403	14,766	184	35°C (95°F)	67	80
2X2	EM10	NA	860-980	1030-1170	4	40°C (104°F)	NA	NA	670-860	80-1040	4	40°C (104°F)	NA	NA
2X4	2LEDR	0-10V 1%	5,777	6,718	55	45°C (113°F)	105	122	5,528	6,428	56	45°C (113°F)	99	115
2X4	3LEDR	0-10V 1%	8,666	10,077	83	45°C (113°F)	104	121	8,292	9,642	83	45°C (113°F)	100	116
2X4	2LEDH	0-10V 1%	11,404	13,261	109	40°C (104°F)	105	122	10,837	12,601	109	40°C (104°F)	99	116
2X4	4LEDR	0-10V 1%	11,555	13,436	111	45°C (113°F)	104	121	11,056	12,856	113	45°C (113°F)	98	114
2X4	3LEDH	0-10V 1%	17,107	19,892	164	40°C (104°F)	104	121	16,256	18,902	164	40°C (104°F)	99	115
2X4	4LEDH	0-10V 1%	22,809	26,522	220	40°C (104°F)	104	121	21,674	25,202	220	40°C (104°F)	99	115
2X4	4LEDHF	0-10V 1%	35,036	40,740	305	35°C (95°F)	115	134	30,396	35,344	373	35°C (95°F)	81	95
2X4	EM10	NA	1040-1150	1210-1340	4	40°C (104°F)	NA	NA	810-1000	950-1160	4	40°C (104°F)	NA	NA

- 1 DELIVERED LUMEN DATA IS EXTRAPOLATED FROM MEASURED DATA @ 25C WITH NO EXTRA OPTIONS. VARIANCES WILL OCCUR WHEN OPTIONS ARE CHOSEN
- 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 = (LUMINAIRE EFFICACY) x10
- 7 EM20 DELIVERED LUMENS = (LUMINAIRE EFFICACY) x20

MEDICAL ASYMMETRIC INSET-FGRS-LED TROFFER (APPROX ³ LUMENS DELIVERED)					
ENCLOSURE SIZE	LIGHT PACKAGE	STANDARD DIMMING	540nm GREEN LED		
			LUMENS	WATTS ²	EFFICACY ³
1X4	1GLED	0-10V 1%	2,500	36	69
1X4	2GLED	0-10V 1%	5,000	72	69
2X2	1GLED	0-10V 1%	1,200	18	67
2X2	2GLED	0-10V 1%	2,400	36	67
2X4	1GLED	0-10V 1%	2,500	36	69
2X4	2GLED	0-10V 1%	5,000	72	69

PHOTOMETRICS

ASYMMETRIC



SYMMETRIC

