

DESCRIPTION

The classic lines and sophisticated construction of Vision Site LED luminaire makes it an ideal complement to site design. Offering LED technology across the VXS and VXM, the Vision Site luminaire provides true family scaling in both physical form and lumen capability for architectural site lighting applications. UL/cUL listed for use in wet locations.

Catalog #		Type
Project		
Comments		Date
Prepared by		

SPECIFICATION FEATURES

Construction

HOUSING: Heavy-wall one-piece, die-cast aluminum housing has precise tolerance control and repeatability in manufacturing. Housing features a partition wall that isolates driver components for cooler operation. Integral aluminum heat sink provides superior thermal heat transfer in +40°C ambient environments. **DOOR:** One-piece, die-cast aluminum construction with tool-less release latch. Door swings down and is retained on two catch hinges. **GASKET:** Continuous gasket provided to seal housing to optic tray. **LENS:** Downlight lens is LED board integrated acrylic over-optics, each individually sealed for IP66 rating. **HARDWARE:** Tool-less release door latch is stainless steel/aluminum construction, painted to match housing and allows access to internal housing and electrical components.

Optics

Choice of twelve patented, high-efficiency AccuLED Optics™ distributions. Optics are precisely designed to shape the light output, maximizing efficiency and application spacing. AccuLED Optics technology creates consistent distributions with the scalability to meet customized application requirements. Offered Standard in 4000K (+/- 275K) CCT and minimum 70 CRI. Optional

3000K CCT and 5000K CCT. For the ultimate level of spill light control, an optional house-side shield accessory can be field or factory installed. The house-side shield is designed to seamlessly integrate with the SL2, SL3 or SL4 optics.

Electrical

LED drivers mount to die-cast aluminum back housing for optimal heat sinking, operation efficacy, and prolonged life. Standard drivers feature electronic universal voltage (120-277V 50/60Hz), 347V 60Hz or 480V 60Hz operation. 480V is compatible for use with 480V Wye systems only. Greater than 0.9 power factor, less than 20% harmonic distortion, and is suitable for operation in -40°C to 40°C ambient environments. All fixtures are shipped standard with 10kV/10kA common – and differential – mode surge protection. LightBARs feature and IP66 enclosure rating and maintain greater than 95% lumen maintenance at 60,000 hours per IESNA TM-21. Occupancy sensor and dimming options available.

Mounting

ARM: One-piece extruded aluminum arm available in standard 5" lengths (VXS) and 6" and 10" (VXM). Internal bolts guides allow easy positioning of fixture during installation to pole or wall surface. **STRUCTURAL**

MOUNT: Die-cast aluminum cleat factory mounted to luminaire and finished in luminaire color. Stainless steel structural rod measures 1/2" in diameter and is provided in luminaire finish color or optional natural finish. Product works in conjunction with dedicated accessory arms (order separately). Invue poles are provided pre-drilled when structural mount option drill pattern is specified. See Invue poles section for complete selection. Additional mounting accessories available.

Finish

Housing is finished in five-stage super premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. LightBAR cover plates are standard white and may be specified to match finish of luminaire housing. Standard colors include black, bronze, grey, white, dark platinum and graphite metallic. RAL and custom color matches available. Consult Outdoor Architectural Colors brochure for a complete selection.

Warranty

Five-year warranty.



VXS/VXM VISION SITE LED

1 - 6 LightBARs

Solid State LED

ARCHITECTURAL
AREA/SITE LUMINAIRE



CERTIFICATION DATA

UL/cUL Listed
ISO 9001
IP66 LightBARs
LM79 / LM80 Compliant
1.5G Vibration Tested
DesignLights Consortium® Qualified*

ENERGY DATA

Electronic LED Driver
>0.9 Power Factor
<20% Total Harmonic Distortion
120-277V/50 & 60Hz, 347V/60Hz,
480V/60Hz
-40°C Minimum Temperature
40°C Ambient Temperature Rating

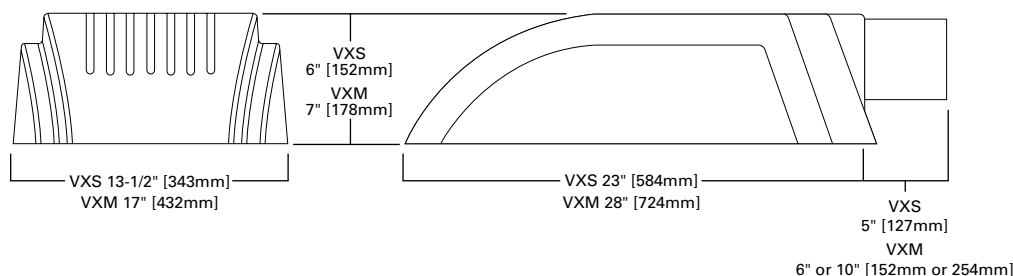
EPA

Effective Projected Area: (Sq. Ft.)
VXS Single: 1.18 w/Arm
VXS Single Structural: 1.27 w/Arm
VXM Single: 1.89 w/Arm
VXM Single Structural: 2.09 w/Arm

SHIPPING DATA

Approximate Net Weight:
VXS: 35 lbs. (15.91 kgs.)
VXM: 51 lbs. (23.18 kgs.)

DIMENSIONS



POWER AND LUMENS BY BAR COUNT (21 LED LIGHTBAR)

Number of LightBARs		E01	E02	E03	E04	E05	E06
Drive Current		350mA Drive Current					
Power (Watts)		25W	52W	75W	97W	127W	150W
Current @ 120V (A)		0.22	0.44	0.63	0.82	1.07	1.26
Current @ 277V (A)		0.10	0.20	0.28	0.36	0.48	0.56
Power (Watts)		31W	58W	82W	99W	132W	159W
Current @ 347V (A)		0.11	0.19	0.28	0.29	0.39	0.48
Current @ 480V (A)		0.09	0.15	0.20	0.21	0.30	0.36
T2	Lumens	3,064	6,128	9,192	12,255	15,319	18,383
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
T3	Lumens	3,084	6,168	9,252	12,336	15,420	18,504
	BUG Rating	B1-U0-G1	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G3
T4	Lumens	3,022	6,044	9,066	12,088	15,110	18,132
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3
5MQ	Lumens	3,224	6,448	9,672	12,896	16,120	19,344
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
5WQ	Lumens	3,184	6,368	9,551	12,735	15,919	19,103
	BUG Rating	B2-U0-G1	B3-U0-G1	B4-U0-G2	B4-U0-G2	B4-U0-G2	B5-U0-G3
5XQ	Lumens	3,181	6,361	9,542	12,722	15,903	19,083
	BUG Rating	B2-U0-G2	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G4	B4-U0-G4
SL2	Lumens	3,055	6,110	9,165	12,220	15,275	18,331
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3
SL3	Lumens	3,036	6,072	9,108	12,145	15,181	18,217
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3
SL4	Lumens	2,954	5,908	8,862	11,816	14,771	17,725
	BUG Rating	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3	B3-U0-G3
RW	Lumens	3,124	6,248	9,372	12,496	15,620	18,744
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4	B4-U0-G4
SLL/SLR	Lumens	2,782	5,565	8,347	11,130	13,912	16,695
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3	B2-U0-G4

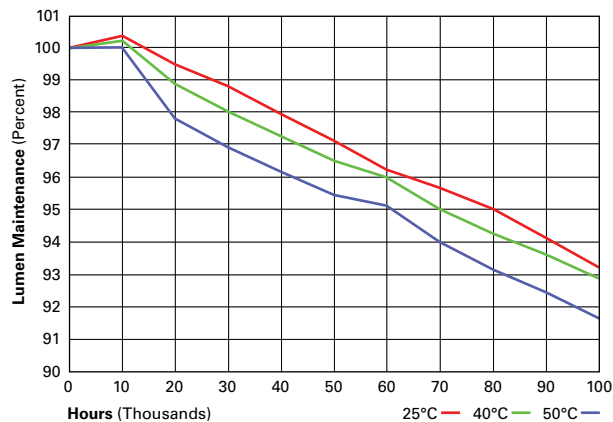
LUMEN MAINTENANCE

Ambient Temperature	25,000 Hours*	50,000 Hours*	60,000 Hours*	100,000 Hours	Theoretical L70 (Hours)
25°C	> 99%	> 97%	> 96%	> 93%	> 450,000
40°C	> 98%	> 97%	> 96%	> 92%	> 425,000
50°C	> 97%	> 96%	> 95%	> 91%	> 400,000

* Per IESNA TM-21 data.

LUMEN MULTIPLIER

Ambient Temperature	Lumen Multiplier
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.99



POWER AND LUMENS BY BAR COUNT (7 LED LIGHTBAR)

Number of LightBARs		F01	F02	F03	F04	F05	F06
Drive Current		1A Drive Current					
Power (Watts)		26W	55W	78W	102W	133W	157W
Current @ 120V (A)		0.22	0.46	0.66	0.86	1.12	1.31
Current @ 277V (A)		0.10	0.21	0.29	0.37	0.50	0.58
Power (Watts)		32W	60W	85W	105W	137W	164W
Current @ 347V (A)		0.11	0.19	0.28	0.30	0.41	0.49
Current @ 480V (A)		0.09	0.15	0.21	0.22	0.31	0.37
T2	Lumens	2,529	5,059	7,588	10,117	12,646	15,176
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
T3	Lumens	2,546	5,092	7,638	10,183	12,729	15,275
	BUG Rating	B1-U0-G1	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3
T4	Lumens	2,495	4,990	7,484	9,979	12,474	14,969
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3
5MQ	Lumens	2,662	5,323	7,985	10,646	13,308	15,969
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2
5WQ	Lumens	2,628	5,257	7,885	10,513	13,142	15,770
	BUG Rating	B2-U0-G1	B3-U0-G1	B3-U0-G2	B4-U0-G2	B4-U0-G2	B4-U0-G2
5XQ	Lumens	2,626	5,251	7,877	10,502	13,128	15,754
	BUG Rating	B2-U0-G1	B3-U0-G2	B3-U0-G3	B4-U0-G3	B4-U0-G3	B4-U0-G4
SL2	Lumens	2,522	5,044	7,566	10,088	12,610	15,132
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3
SL3	Lumens	2,506	5,013	7,519	10,026	12,532	15,039
	BUG Rating	B1-U0-G1	B1-U0-G1	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3
SL4	Lumens	2,439	4,877	7,316	9,755	12,193	14,632
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G3
RW	Lumens	2,579	5,158	7,737	10,316	12,894	15,473
	BUG Rating	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B4-U0-G4	B4-U0-G4
SLL/SLR	Lumens	2,297	4,594	6,891	9,188	11,485	13,782
	BUG Rating	B1-U0-G1	B1-U0-G2	B1-U0-G2	B1-U0-G3	B2-U0-G3	B2-U0-G3

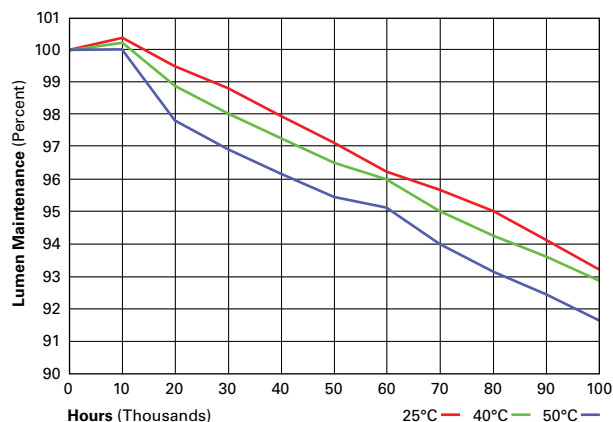
LUMEN MAINTENANCE

Ambient Temperature	25,000 Hours*	50,000 Hours*	60,000 Hours*	100,000 Hours	Theoretical L70 (Hours)
25°C	> 99%	> 97%	> 96%	> 93%	> 450,000
40°C	> 98%	> 97%	> 96%	> 92%	> 425,000
50°C	> 97%	> 96%	> 95%	> 91%	> 400,000

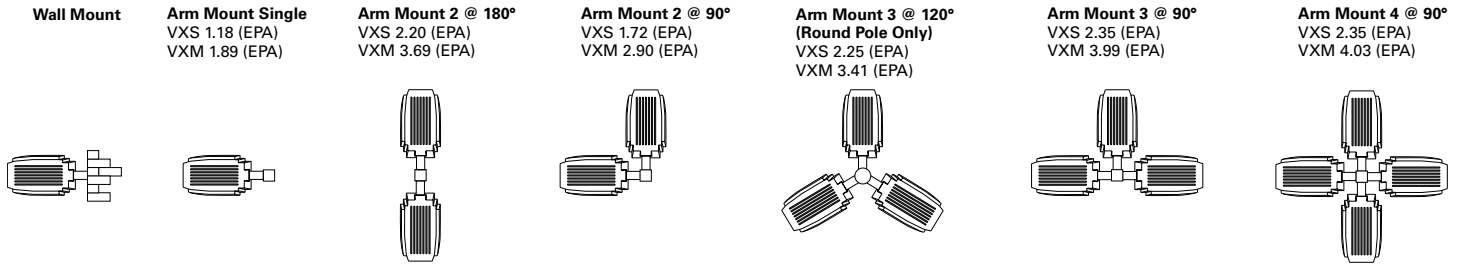
* Per IESNA TM-21 data.

LUMEN MULTIPLIER

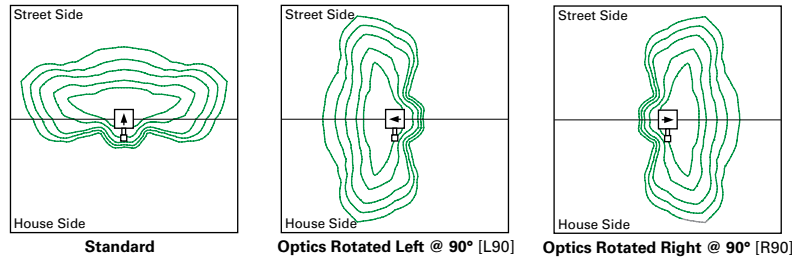
Ambient Temperature	Lumen Multiplier
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.99



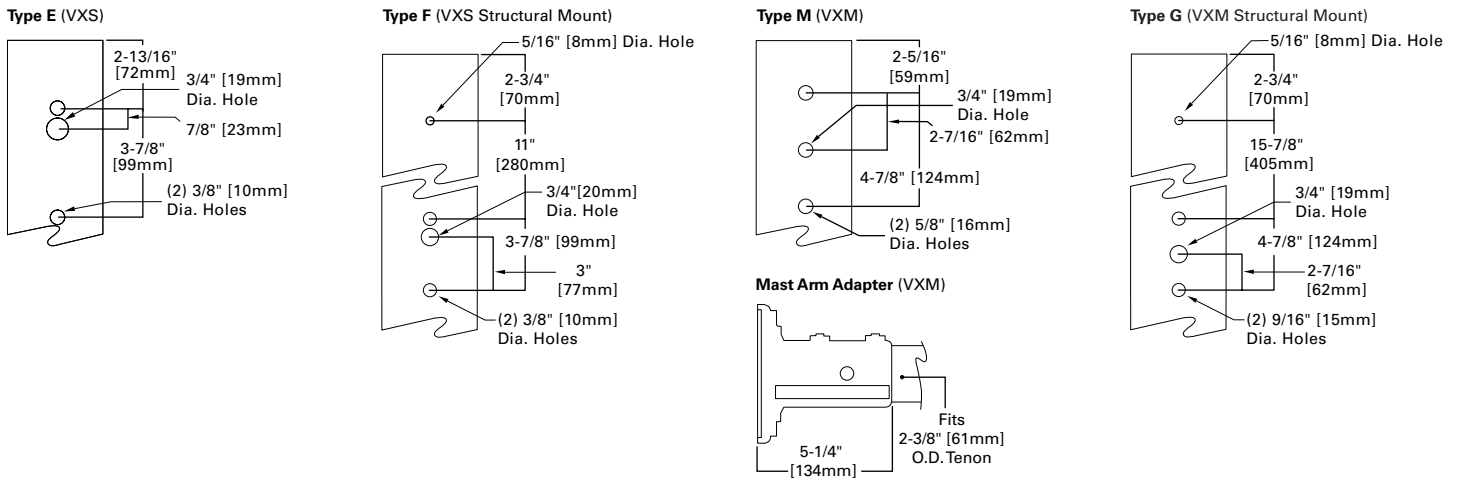
MOUNTING VARIATIONS AND EPAS



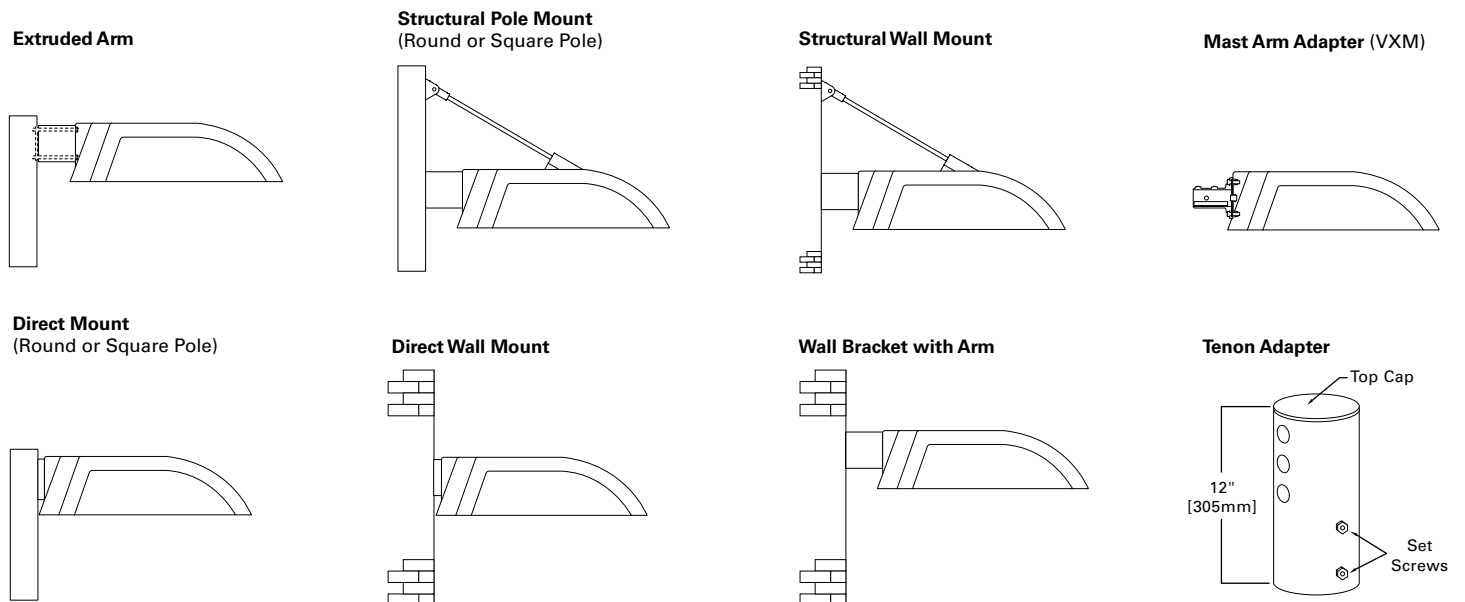
OPTIC ORIENTATION



POLE DRILLING PATTERNS AND MOUNTING OPTIONS



MOUNTING OPTIONS AND ACCESSORIES



CONTROL OPTIONS

0-10V (DIM)

The DIM option provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

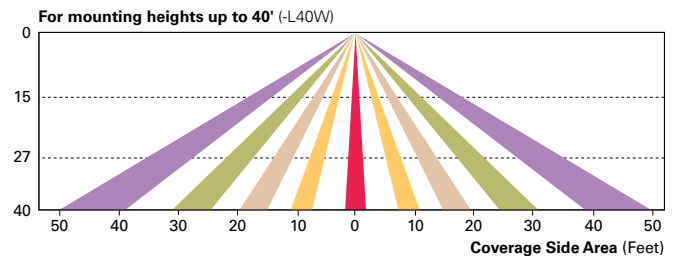
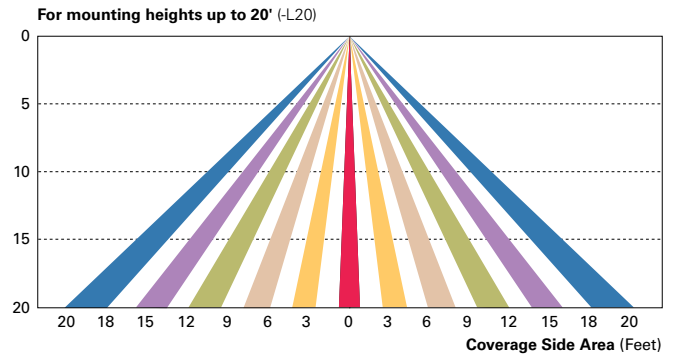
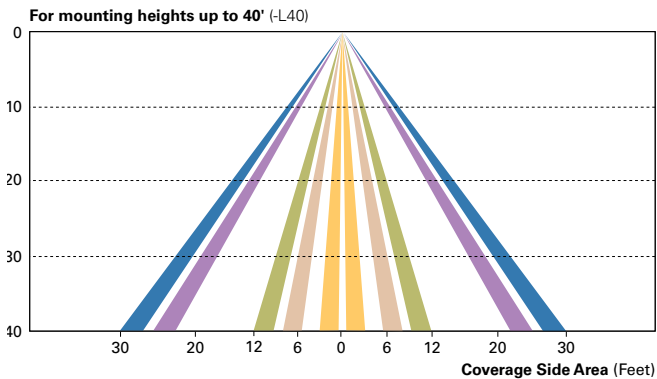
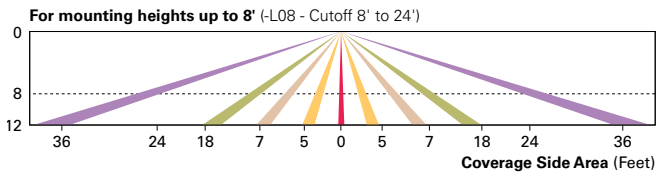
Photocontrol (PC, R and PER7)

Optional button-type photocontrol (PC) and photocontrol receptacles (R and PER7) provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-pin standards can be utilized with the PER7 receptacle.

Dimming Occupancy Sensor (MS/DIM-LXX)

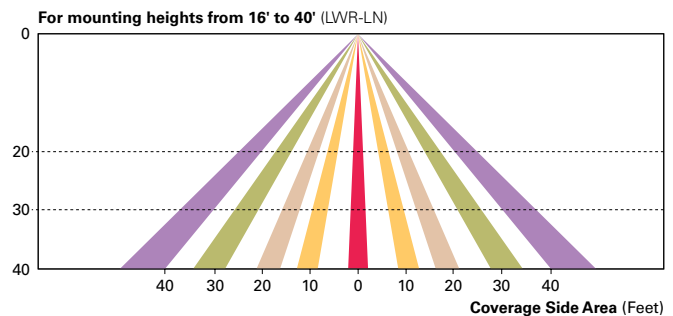
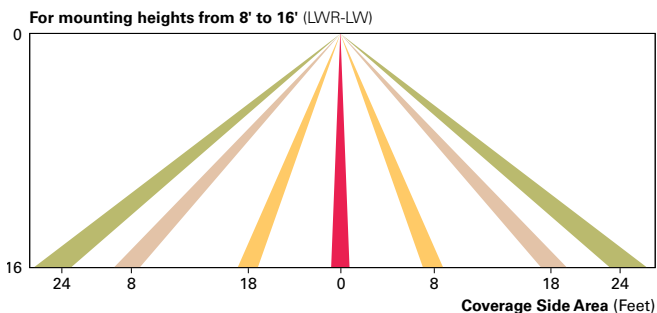
These sensors are factory installed in the luminaire housing. When the MS/DIM-LXX sensor option is selected, the occupancy sensor is connected to a dimming driver and the entire luminaire dims when there is no activity detected. When activity is detected, the luminaire returns to full light output. The MS/DIM sensor is factory preset to dim down to approximately 50 percent power with a time delay of five minutes.

These occupancy sensors includes an integral photocell that can be activated with the FSIR-100 accessory for “dusk-to-dawn” control or daylight harvesting - the factory preset is OFF. The FSIR-100 is a wireless tool utilized for changing the dimming level, time delay, sensitivity and other parameters. A variety of sensor lens are available to optimize the coverage pattern for mounting heights from 8'-40'.



LumaWatt Pro Wireless Control and Monitoring System (LWR-LW and LWR-LN)

The Cooper Lighting Solutions' LumaWatt Pro powered by Enlighted is a connected lighting solution that combines a broad selection of energy-efficient LED luminaires with a powerful integrated wireless sensor system. The sensor controls the lighting system in compliance with the latest energy codes and collects valuable data about building performance and use. Software applications turn the granular data into information through energy dashboards and specialized apps that make it simple and help optimize the use of building resources, beyond lighting.



WaveLinX Wireless Outdoor Lighting Control Module (WOLC-7P-10A)

The 7-pin wireless outdoor lighting control module enables WaveLinX to control outdoor area, site and flood lighting. WaveLinX controls outdoor lighting using schedules to provide ON, OFF and dimming controls based on astronomic or time schedules based on a 7 day week.

ORDERING INFORMATION

Sample Number: VXS-E04-LED-E-T3-GM

Product Family ^{1,2,3}	Number of LightBARs ^{4,5}	Lamp Type	Voltage	Distribution	Color ⁸
VXS=Vision Site Small VXM=Vision Site Medium	E01=(1) 21 LED LightBAR E02=(2) 21 LED LightBARs E03=(3) 21 LED LightBARs E04=(4) 21 LED LightBARs E05=(5) 21 LED LightBARs ⁶ E06=(6) 21 LED LightBARs ⁶ F01=(1) 7 LED LightBAR F02=(2) 7 LED LightBARs F03=(3) 7 LED LightBARs F04=(4) 7 LED LightBARs F05=(5) 7 LED LightBARs ⁶ F06=(6) 7 LED LightBARs ⁶	LED=Solid State Light Emit- ting Diode	E1=Universal (120-277V) 347=347V 480=480V ⁷	T2=Type II T3=Type III T4=Type IV 5MQ=Type V Square Medium 5WQ=Type V Square Wide 5XQ=Type V Square Extra Wide RW=Rectangular Wide SL2=Type II with Spill Control SL3=Type III with Spill Control SL4=Type IV with Spill Control SLL=90° Spill Light Eliminator Left SLR=90° Spill Light Eliminator Right	AP=Grey BZ=Bronze BK=Black DP=Dark Platinum GM=Graphite Metallic WH=White
Structural Options ^{3,9}		Options (Add as Suffix)			
<p>Pole Mount PRCPS=Strut Rod and Clevis Set for Square Pole (Painted to match fixture. Does not include arm) ¹⁰ PRCCS=Stainless Strut Rod and Clevis Set for Square Pole (Clevis painted to match fixture. Does not include arm) ¹⁰ PRCPR=Strut Rod and Clevis Set for Round Pole (Painted to match fixture. Does not include arm) ¹¹ PRCCR=Stainless Strut Rod and Clevis Set for Round Pole (Clevis painted to match fixture. Does not include arm) ¹¹</p> <p>Wall Mount WRCP=Strut Rod and Clevis Set (Painted to match fixture. Does not include arm) ¹² WRCS=Stainless Steel Strut Rod and Clevis Set (Clevis painted to match fixture. Does not include arm) ¹²</p>		<p>PC=Button Type Photocontrol (Specify Voltage) R=NEMA Twistlock Photocontrol Receptacle PER7=NEMA 7-Pin Twistlock Photocontrol Receptacle 2L=Two Circuits ¹³ LCF=LightBAR Cover Plate Matches Housing Finish 7030=70 CRI / 3000K CCT ¹⁴ 7050=70 CRI / 5000K CCT ¹⁴ 8030=80 CRI / 3000K CCT ¹⁴ L90=Optics Rotated Left 90° R90=Optics Rotated Right 90° ICB=Integral Cold Weather Battery Pack (Specify 120 or 277V) ¹⁵ LWR-LW=LumaWatt Pro Wireless Sensor, Wide Lens for 8' - 16' Mounting Height ¹⁶ LWR-LN=LumaWatt Pro Wireless Sensor, Narrow Lens for 16' - 40' Mounting Height ¹⁶ HSS=Factory Installed House Side Shield ¹⁷ MS/DIM-L08=Motion Sensor for Dimming Operation, Maximum 8' Mounting Height ^{18, 19, 20, 21, 22} MS/DIM-L20=Motion Sensor for Dimming Operation, 9' - 20' Mounting Height ^{18, 19, 20, 21, 23} MS/DIM-L40=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height ^{18, 19, 20, 21, 24} MS/DIM-L40W=Motion Sensor for Dimming Operation, 21' - 40' Mounting Height (Wide Range) ^{18, 19, 20, 21, 25}</p>			
Accessories (Order Separately) ²⁶					
OA/RA1016=NEMA Photocontrol - Multi-Tap OA/RA1027=NEMA Photocontrol - 480V OA/RA1201=NEMA Photocontrol - 347V MA1253=10kV Circuit Module Replacement LB/HSS=Field Installed House Side Shield ²⁷ VXS Mounting Accessories (Order Separately) MA1071-XX=5" Arm for Square Pole MA1073-XX=Direct Mount for Square Pole MA1074-XX=5" Arm for Round Pole MA1076-XX=Direct Mount for Round Pole MA1077-XX=Wall Bracket with 5" Arm MA1200-XX=Direct Wall Mount Kit MA1101-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon MA1102-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon MA1103-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon MA1104-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1105-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1106-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1107-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon		MA1108-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon MA1109-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon MA1110-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon MA1111-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1112-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1113-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1114-XX=2@120° Tenon Adapter for 3-1/2" O.D. Tenon VXM Mounting Accessories (Order Separately) MA1050-XX=6" Arm for Square Pole MA1051-XX=10" Arm for Square Pole ²⁸ MA1052-XX=6" Arm for Round Pole MA1053-XX=10" Arm for Round Pole ²⁸ MA1054-XX=Wall Bracket with 6" Arm ²⁹ MA1056-XX=Direct Mount for Square Pole MA1057-XX=Direct Mount for Round Pole MA1201-XX=Direct Wall Mount Kit ²⁹ MA1207-XX=Mast Arm Adapter MA1231-XX=Structural Mount Wall Mount Arm ³⁰		MA1017-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon MA1018-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon MA1019-XX=3@120° Tenon Adapter for 2-3/8" O.D. Tenon MA1045-XX=4@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1048-XX=2@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1115-XX=3@90° Tenon Adapter for 2-3/8" O.D. Tenon MA1116-XX=2@120° Tenon Adapter for 2-3/8" O.D. Tenon MA1010-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon MA1011-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon MA1012-XX=3@120° Tenon Adapter for 3-1/2" O.D. Tenon MA1013-XX=4@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1014-XX=2@90° Tenon Adapter for 3-1/2" O.D. Tenon MA1015-XX=2@120° Tenon Adapter for 3-1/2" O.D. Tenon MA1016-XX=3@90° Tenon Adapter for 3-1/2" O.D. Tenon WOLC-7P-10A=WaveLinX Outdoor Control Module (7-pin) ³¹	

NOTES:

- Customer is responsible for engineering pole analysis to confirm pole and fixture compatibility for all applications. Refer to our pole white paper WP513001EN for additional support information.
- DesignLights Consortium™ Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.
- Arm not included. Order separately.
- Standard 4000K CCT and greater than 70 CRI.
- 21 LED LightBAR powered at 350mA, 7 LED LightBAR powered at 1A.
- Available with VXM only.
- Only for use with 480V Wye systems. Per NEC, not for use with ungrounded systems, impedance grounded systems or corner grounded systems (commonly known as Three Phase Three Wire Delta, Three Phase High Leg Delta and Three Phase Corner Grounded Delta systems).
- Custom and RAL color matching available upon request. Consult your customer service representative for more information.
- Add as suffix in the order shown.
- Compatible with 5" MA1071 arm only (VXS). Compatible with 10" MA1051 arm only (VXM).
- Compatible with 5" MA1074 arm only (VXS). Compatible with 10" MA1053 arm only (VXM).
- Wall mount structural options do not include arm assembly (See accessories). Compatible with 5" MA1071 arm only (VXS). Compatible with MA2131 arm only (VXM).
- Low-level output varies by bar count. Consult factory. Requires two or more light bars.
- Extended lead times apply. See website for IES files.
- Available with E01-E02 and F01-F02 configurations only (VXS). Available with E01-E04 and F01-F04 configurations only (VXM). Specify 120V or 277V. LED cold weather integral battery pack is rated for minimum operating temperature -4°F (-20°C). Operates one light bar for 90-minutes. Not available in all configurations, consult factory. Rated for use in 25°C ambient.
- LumaWatt wireless sensors are factory installed only requiring network components LWP-EM-1, LWP-GW-1, and LWP-PoE8 in appropriate quantities. See www.cooperlighting.com for LumaWatt application information.
- Only for use with SL2, SL3 and SL4 distributions. Not available with L90 or R90 options.
- Consult factory for more information.
- Utilizes internal step-down transformer when 347V or 480V is selected.
- The FSIR-100 accessory is required to adjust parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative at Cooper Lighting Solutions for more information.
- Not available with HA option.
- Approximately 22' detection diameter at 8' mounting height.
- Approximately 40' detection diameter at 20' mounting height.
- Approximately 60' detection diameter at 40' mounting height.
- Approximately 100' detection diameter at 40' mounting height.
- Replace XX with color designation.
- One required for each LightBAR. Not available with L90 or R90 options.
- Use when mounting fixture head at 90° increments.
- For use in downlighting applications only.
- Includes arm only. Must specify WRCP or WRCS in fixture ordering logic. Downlighting applications only.
- Requires 7-pin NEMA twistlock photocontrol receptacle. The WOLC-7 cannot be used in conjunction with additional sensors or controls.