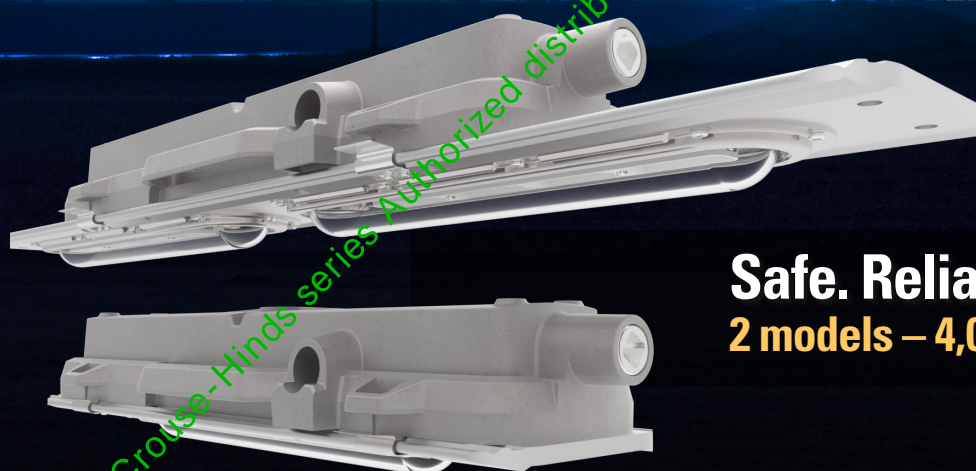


LED lighting for hazardous areas

CROUSE-HINDS  
SERIES

# Champ MLLA

## LED lighting for hazardous areas



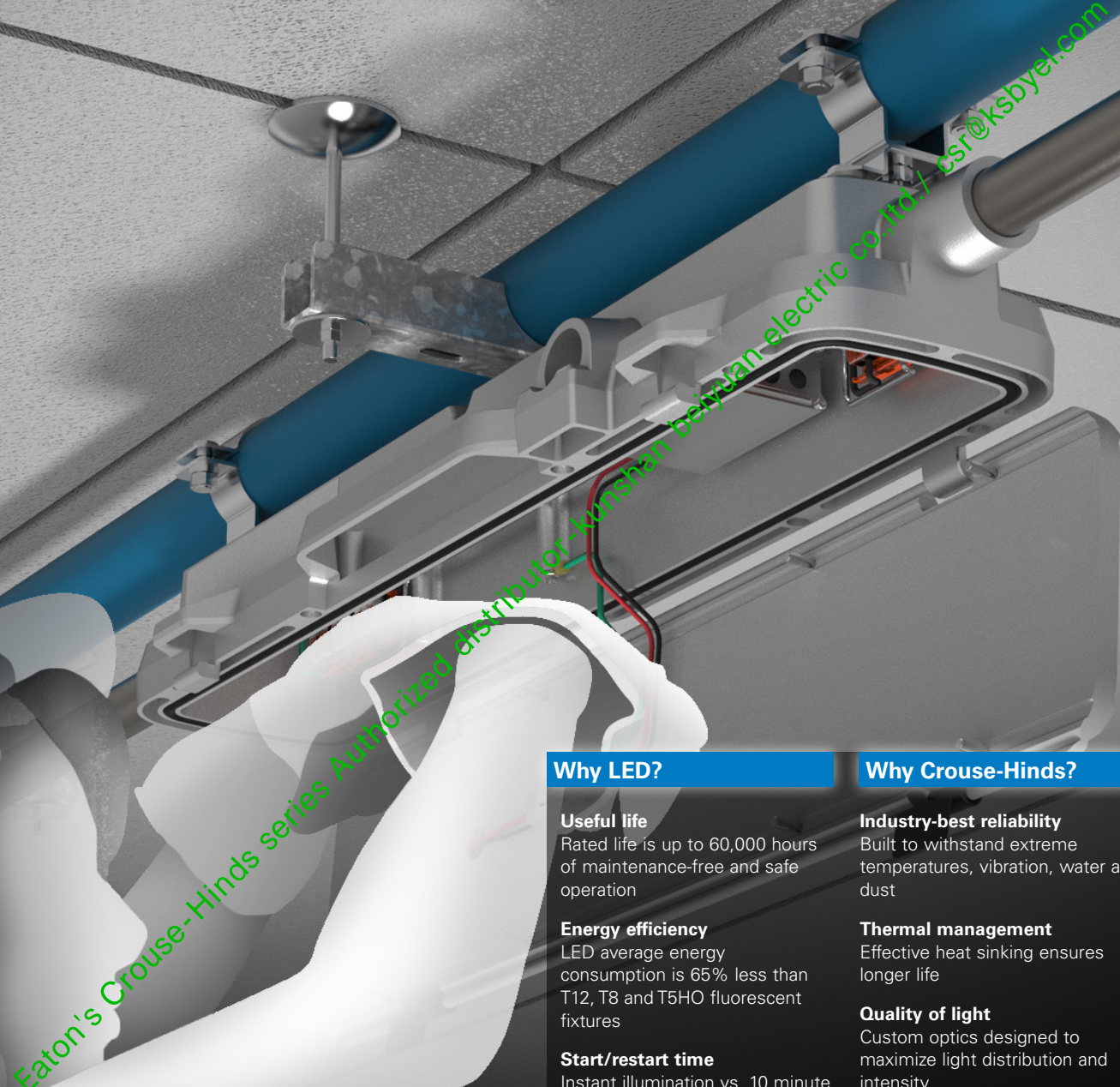
**Safe. Reliable. Efficient.**  
**2 models – 4,000 & 8,000 lumens**

**EATON**

*Powering Business Worldwide*

# Safe. Reliable. Efficient.

Featuring a broad range of LED luminaires for harsh and hazardous environments, Eaton's Crouse-Hinds delivers lighting solutions that perform reliably in even the worst operating conditions. **This reduces your energy, maintenance and manpower costs.**



## Why LED?

### Useful life

Rated life is up to 60,000 hours of maintenance-free and safe operation

### Energy efficiency

LED average energy consumption is 65% less than T12, T8 and T5HO fluorescent fixtures

### Start/restart time

Instant illumination vs. 10 minute restrike time for fluorescent

### Light quality

Higher color rendering and color temperature compared to fluorescent

### Environmental benefits

Mercury-free LED eliminates disposal costs and lower energy consumption for a smaller carbon footprint

## Why Crouse-Hinds?

### Industry-best reliability

Built to withstand extreme temperatures, vibration, water and dust

### Thermal management

Effective heat sinking ensures longer life

### Quality of light

Custom optics designed to maximize light distribution and intensity

### Versatile mounting options

Five mounting options for maximum ease of installation

### Servicable drivers

Easy access to drivers for service or replacement

# Design features

## High efficacy:

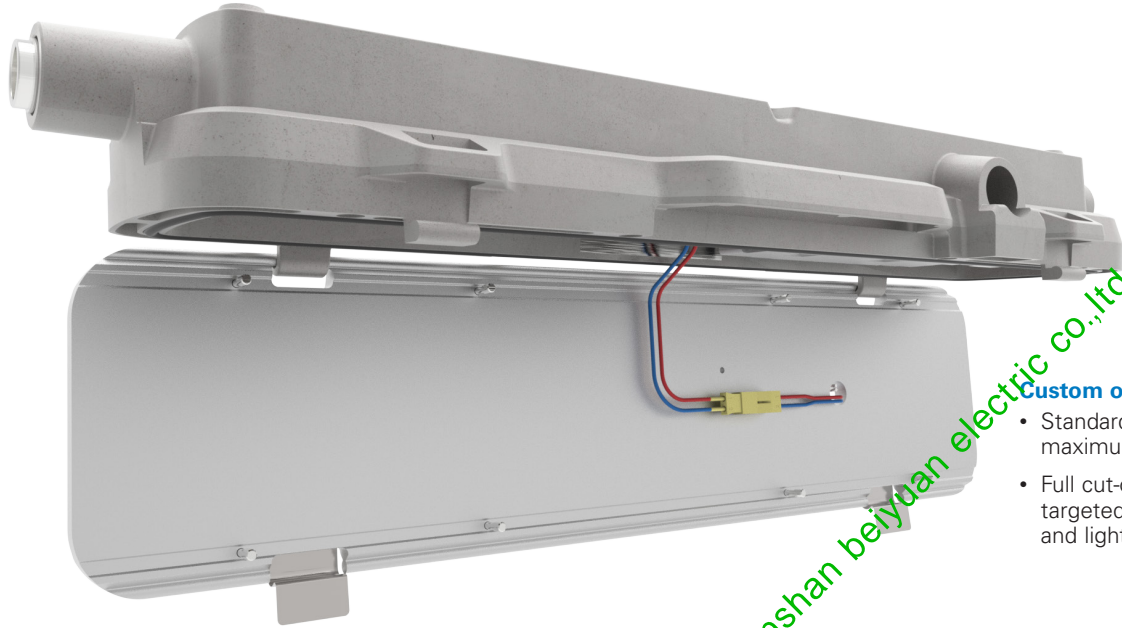
- Up to 134 lumens per watt (MLLA2 with UNV1 driver)

## Quick & easy installation:

- Easy access to drivers and wiring
- No custom brackets or hardware needed

## Comprehensive certification:

- Single model certified for use in Class I, Division 2 and Class II, Division 1 harsh and hazardous applications



## Custom optics:

- Standard wide beam spread for maximum illumination on wall panels
- Full cut-off beam spread option for targeted illumination; avoids spillage and light loss

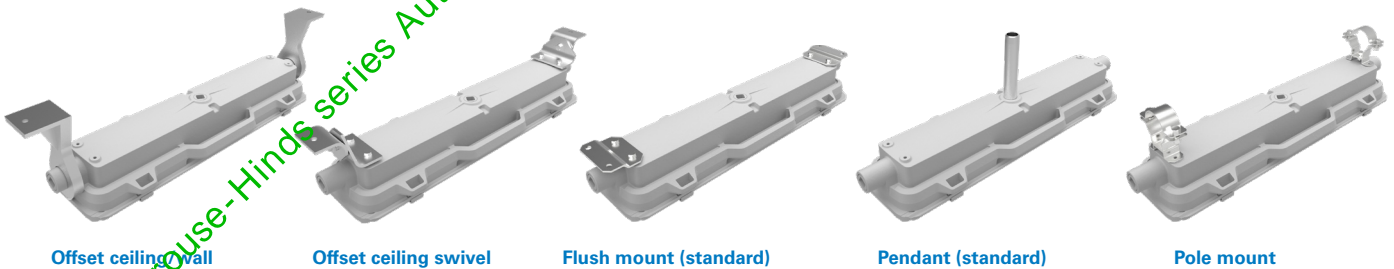
## Slim profile:

- 4.4" fixture height (excluding mounting brackets)
- Perfect for mounting in confined or low height areas

## Built to last:

- Ingress protection from hose down water or diesel fuel in harsh operational conditions – passed 2,000 psi high pressure test
- Vibration-, impact- and shock-resistant – passed 5G, 3-axis vibration test
- 60,000 hour lifetime @ 55°C ambient

## Versatile mounting options:



Offset ceiling/wall

Offset ceiling swivel

Flush mount (standard)

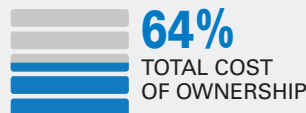
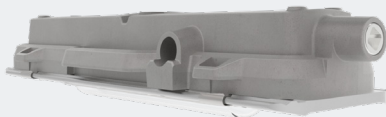
Pendant (standard)

Pole mount

## Why choose Champ MLLA LEDs?

**Reliable lighting.** MLLA LED luminaires are engineered to deliver high lumen output and maintenance-free long life in the toughest conditions.

### MLLA2 vs. 2-lamp T5HO



Assumptions: Calculations based on overall life of the LED system. Energy cost of \$.09 per kilowatt; 24 hour per day operation; labor rate of \$75 each for 2 workers; average time for fixture maintenance of 1 hour.

## Champ® MLLA linear LED luminaires

The Champ MLLA Linear LED by Eaton's Crouse-Hinds is specifically designed to replace fluorescent T12, T8 and T5HO lighting in harsh and hazardous applications. The rugged and durable design features the industry's most versatile and flexible mounting options. The Champ MLLA is the ideal solution for high vibration, impact and hose down applications.

### Applications:

Oil and gas refineries, petrochemical facilities, food and beverage facilities, platforms, loading docks, tunnels, outdoor wall and stanchion mounted general area lighting, and where flammable vapors, gases, ignitable dusts, fibers or flyings are present.

### Key features & benefits:

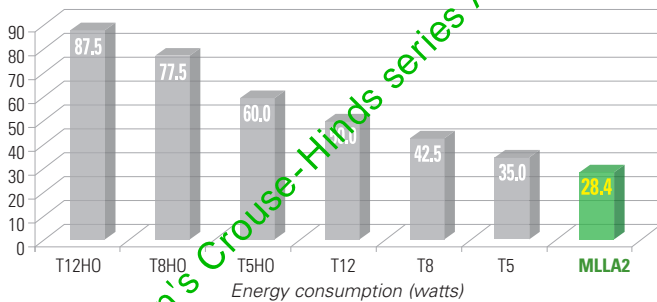
- High efficacy: up to 134 LPW (MLLA2 with UNV1 driver)
- Dimmable driver, 0-10V
- -40°C to +65°C ambient operating temperature (standard model)
- 0°C to +40°C ambient operating temperature (emergency battery back-up model)
- Integral emergency battery back-up: 90 minute run-time and ≥1,000 lumens (all models)
- Low profile (~4" height)
- Ceiling/swivel, wall, flush, pole and pendant mounting options
- Wide and narrow optics for uniform illumination
- Four points of secondary retention
- 2,000 psi high pressure hose rated
- High vibration resistance
- Surge protection (Standard): 4kV line to line, 6kV line to earth
- Surge protection (with SRG1 or SRG3 suffix): ≥10kV line to line, ≥10kV line to earth
- 5 year fixture warranty†

† Refer to the authorized distributor price book for Eaton's Crouse-Hinds series standard Terms and Conditions.



## Energy consumption comparison

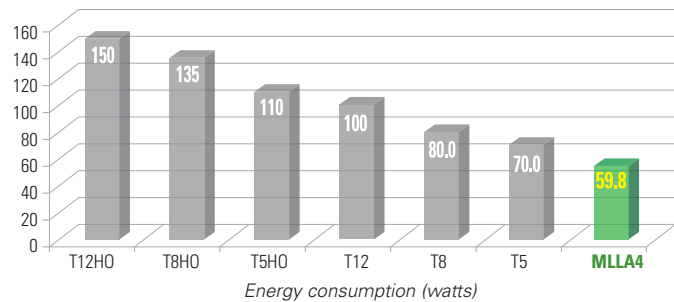
2 foot MLLA linear LED vs. fluorescent



Model	Typical lumens	Wattage	Lumens per watt	Equivalent HID luminaire	Typical energy savings / lifetime
MLLA2	4,000	30.3	132	T12HO	Up to 67%
				T8HO	Up to 63%
				T5HO	Up to 52%
				T12	Up to 42%
				T8	Up to 32%
				T5	Up to 17%

All luminaires in the comparison are 2 lamp, 2 foot, UNV1

4 foot MLLA linear LED vs. fluorescent



Model	Typical lumens	Wattage	Lumens per watt	Equivalent HID luminaire	Typical energy savings / lifetime
MLLA4	8,000	58.9	135	T12HO	Up to 64%
				T8HO	Up to 60%
				T5HO	Up to 50%
				T12	Up to 46%
				T8	Up to 32%
				T5	Up to 22%

All luminaires in the comparison are 2 lamp, 4 foot, UNV1

# Specifications

## Certifications:

### NEC/CEC standards:

- Class I, Division 2, Groups A, B, C, D
- Class I, Zone 2
- Class II, Division 1, Groups E, F, G
- Class III
- Type 4X; IP66/67
- Marine and Wet Locations

### UL standards:

- UL844 Electrical Fixture Hangers for Hazardous Locations
- UL924 for Emergency Lighting Equipment (EM model)
- UL1598 Luminaire
- UL1598A Luminaire for Installation on Marine Vessels
- UL 8750 Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products

### CSA standard:

- C22.2 No. 137, 141 and 250

## Electrical ratings:

UNV1	Input power (watts)	Input amps at 120-277 VAC
MLLA2	30.3	0.25
MLLA4	58.9	0.49

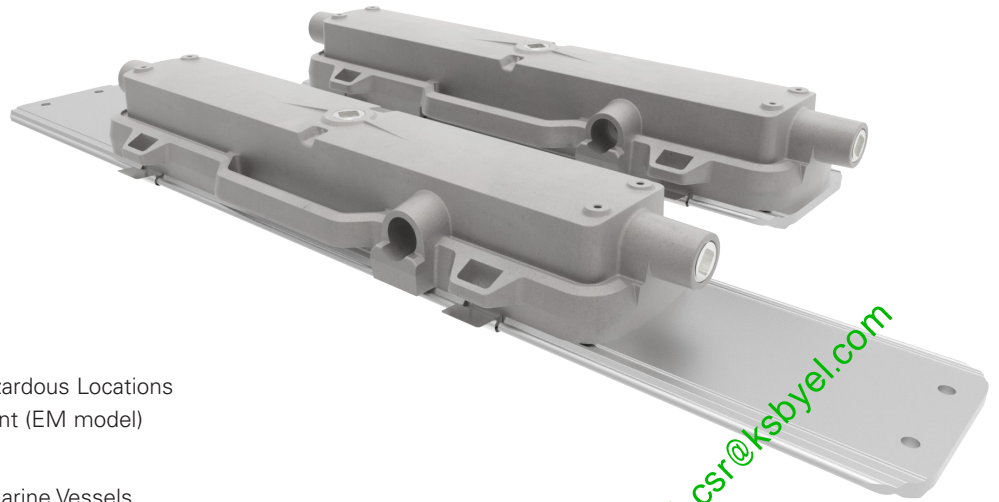
UNV1	
Voltage range, VAC	120-277V at 50/60 Hz
Voltage range, VDC	127/250V

UNV1	Power factor	THD
MLLA2	>0.92	<6.5%
MLLA4	>0.94	<6.2%

UNV34	Input power (watts)	Input amps at 347-480 VAC
MLLA2	31.1	0.09
MLLA4	54.6	0.16

UNV34	
Voltage range, VAC	347-480V at 50/60 Hz

UNV34	Power factor	THD
MLLA2	>0.95	<18%
MLLA4	>0.98	<10%



## Mounting:

### Versatile mounting options:

- Flush back mount
- Swivel/ceiling back mount
- Offset ceiling/wall mount
- Pole mount
- Pendant mount

## Materials:

### Housing:

- Copper-free aluminum
- Optional Corro-free™ epoxy powder coat

### Lens:

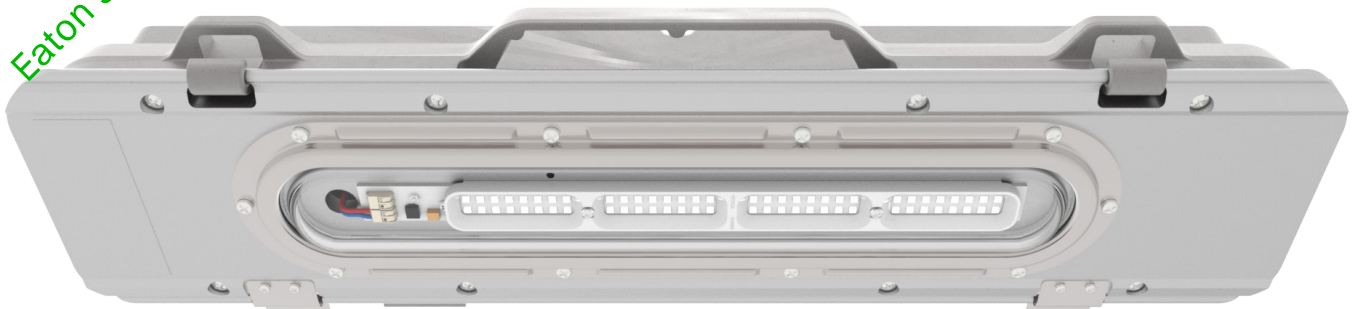
- Clear glass or polycarbonate
- Diffused glass or polycarbonate

## Temperature codes:

Ambient temperature	Min. temp. wire supply	Class I, Div. 2	Class II, Div. 1	Simultaneous rating
				Class I, Div. 2, Class II, Div. 1
40°C	75°C	T6	T6	T6
55°C	75°C	T5	T5	T5
65°C	90°C	T4A	T4A	T4A

## Weights:

Luminaire	lbs.	kg.
MLLA2	15.1	6.8
MLLA4	19.5	8.9



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# Ordering information

## Part number example

**MLLA4NCS-UNV1-S903-1R-SRG1-EM1-P-M2**

Champ MLLA-M2 linear LED, warm white, 4 foot, full cut off optics, ceiling/swivel mount, 120-277 VAC driver, clear polycarbonate lens, 3/4" hubs with 1/2" reducers, integrated 10kV surge protection module, integral emergency battery back-up, gray epoxy paint

## MLLA W 4 N CS – UNV1 – S903 – 1R – SRG1 – EM1 – P – M2

Series		Voltage		Entries		Finish	
<b>MLLA</b>	Champ MLLA LED	<b>UNV1</b>	120-277 VAC; 127/250 VDC	<b>BLANK</b>	3/4" NPT entries	<b>BLANK</b>	Natural aluminum
		<b>UNV34</b>	347-480 VAC	<b>1R</b>	3/4" NPT entries with 1/2" reducers	<b>P</b>	Painted (gray, epoxy)
Color temperature		Lens		Enhanced surge		Emergency*	
<b>BLANK</b>	Cool white, 5000K, 80 CRI	<b>BLANK</b>	Clear glass	<b>SRG1</b>	120-277 VAC integrated 10kV surge protection module	<b>EM1</b>	Integral emergency battery back-up
<b>N</b>	Neutral white, 4000K, 80 CRI	<b>S891</b>	Diffused glass	<b>SRG3</b>	347-480 VAC integrated 10kV surge protection module		
<b>W</b>	Warm white, 3000K, 80 CRI	<b>S903</b>	Clear polycarbonate				
		<b>S903D</b>	Diffused polycarbonate				
Length/lumens		Mounts*					
<b>4</b>	4 ft. length, 8,000 lumens	<b>BLANK</b>	Flush ceiling/wall mount				
<b>2</b>	2 ft. length, 4,000 lumens	<b>CS</b>	Ceiling/swivel mount				
		<b>CW</b>	Ceiling/wall mount offset				
		<b>P12</b>	Pole mount, 1.25" diameter				
		<b>P15</b>	Pole mount, 1.50" diameter				
		<b>P20</b>	Pole mount, 2.00" diameter				
Optics*							
<b>BLANK</b>	Standard						
<b>N</b>	Full cut off						

\*Full cutoff option available with clear lens options only.

\*Pendant mount is integral to fixture and available on all models regardless of mounting option chosen. (see page 13 for details)

### Mounting kits (ordered separately)

<b>M2-FLUSH-MT-KIT</b>	Flush ceiling/wall mount
<b>M2-CEILING-SWIVEL-KIT</b>	Ceiling/swivel mount
<b>M2-CEILING-WALL-KIT</b>	Ceiling/wall mount offset
<b>M2-PM-KIT-1.25</b>	Pole mount kit, 1.25" diameter
<b>M2-PM-KIT-1.5</b>	Pole mount kit, 1.50" diameter
<b>M2-PM-KIT-2.0</b>	Pole mount kit, 2.00" diameter
<b>SS KIT</b>	Safety chain kit

**Note:** Conduit entry plugs and mounting kits are shipped with the fixture based on the mounting type selected within the catalog structure. Individual mounting kits are also available, should you wish to change the mounting style in the field.

### Replacement driver kits (ordered separately)

<b>M2-MLLA2-UNV1-DRIVER-KIT</b>	120-277 VAC driver replacement for 2ft linear
<b>M2-MLLA2-UNV34-DRIVER-KIT</b>	347-480 VAC driver replacement for 2ft linear
<b>M2-MLLA4-UNV1-DRIVER-KIT</b>	120-277 VAC driver replacement for 4ft linear
<b>M2-MLLA4-UNV34-DRIVER-KIT</b>	347-480 VAC driver replacement for 4ft linear

### Replacement battery back-up kit (ordered separately)

<b>MLLA-EM1-M2-KIT</b>	Replacement battery, emergency driver, gasket and mounting hardware
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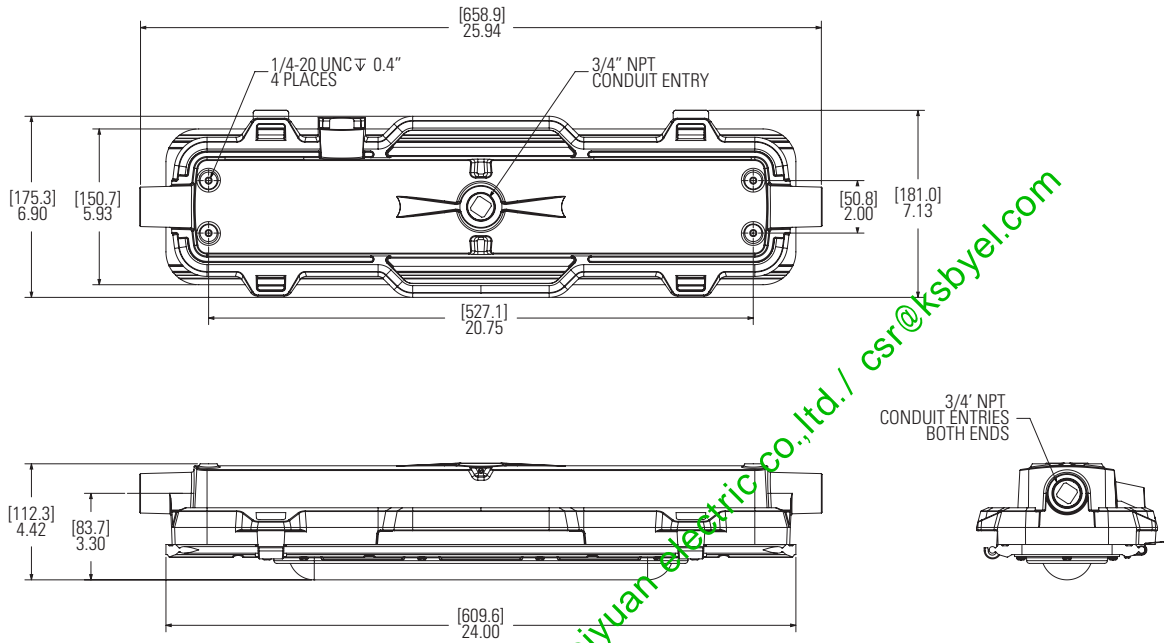
### Replacement surge module kits (ordered separately)

<b>M2-MLLA-SRG1-KIT</b>	Replacement UNV1 surge module, bracket, wiring terminals and mounting hardware
<b>M2-MLLA-SRG3-KIT</b>	Replacement UNV34 surge module, bracket, wiring terminals and mounting hardware

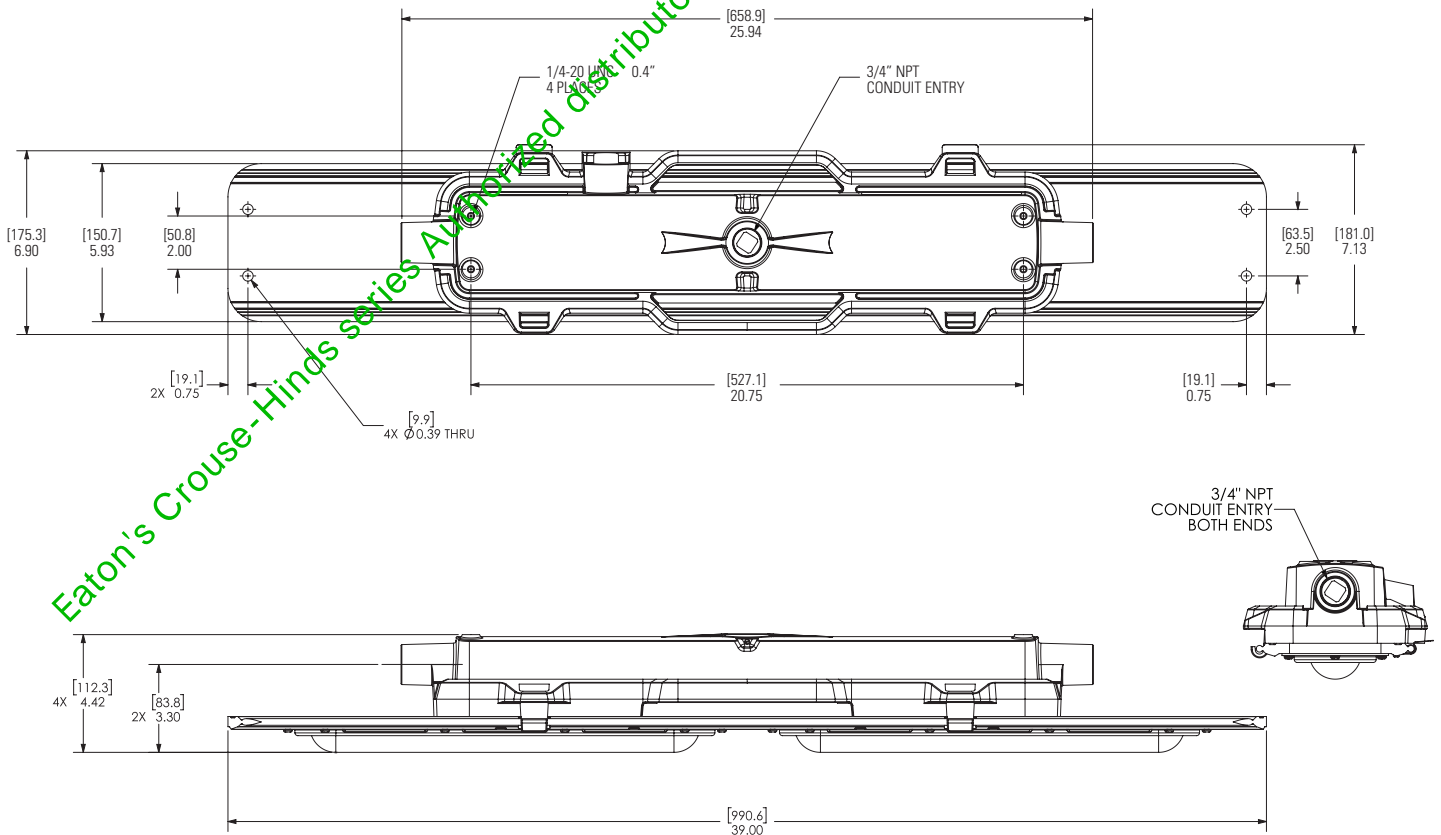


# Dimensions

## MLLA2-M2



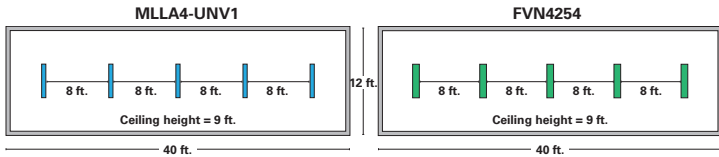
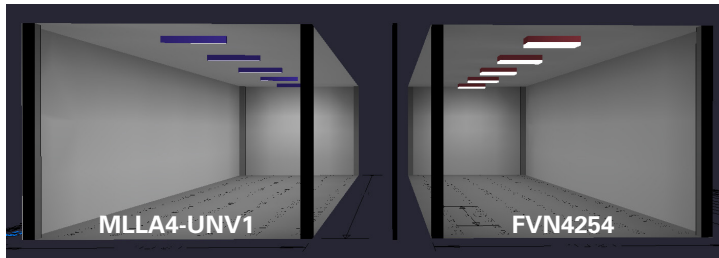
## MLL4-M2



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# Photometrics: control room/pump shed

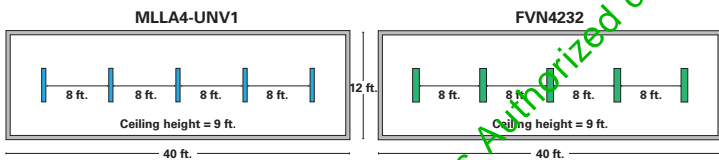
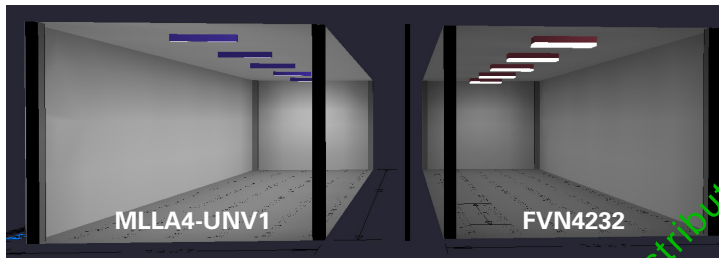
## 4 foot MLLA LED with 120° optics vs. 4 foot 2 lamp T5HO FVN



Illuminance (Fc)	MLLA4-UNV1	FVN4254
<b>Average</b>	44.87	33.78
<b>Maximum</b>	55.40	42.50
<b>Minimum</b>	25.20	18.90
<b>Average/minimum</b>	1.78	1.79
<b>Maximum/minimum</b>	2.20	2.25

Higher average illumination than 2 lamp T5HO FVN and up to 50% energy savings

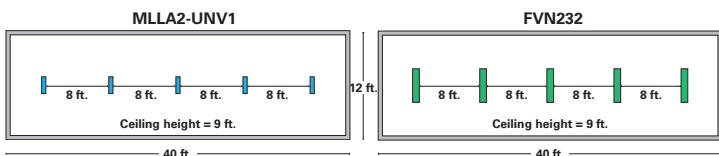
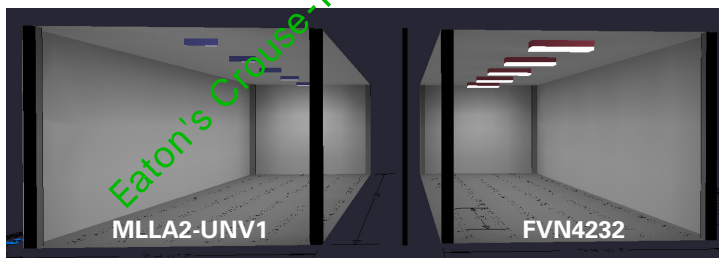
## 4 foot MLLA LED with 120° optics vs. 4 foot 2 lamp T8 FVN



Illuminance (Fc)	MLLA4-UNV1	FVN4232
<b>Average</b>	44.87	22.46
<b>Maximum</b>	55.40	28.30
<b>Minimum</b>	25.20	12.40
<b>Average/minimum</b>	1.78	1.81
<b>Maximum/minimum</b>	2.20	2.28

Twice the average illumination of 2 lamp T8 FVN

## 2 foot MLLA LED with 120° optics vs. 4 foot 2 lamp T8 FVN

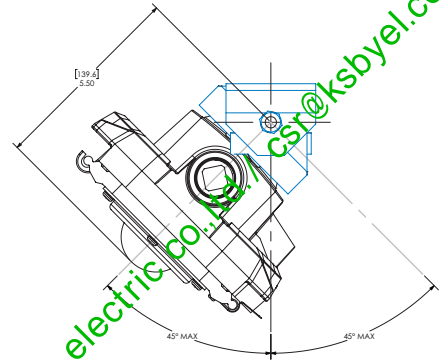
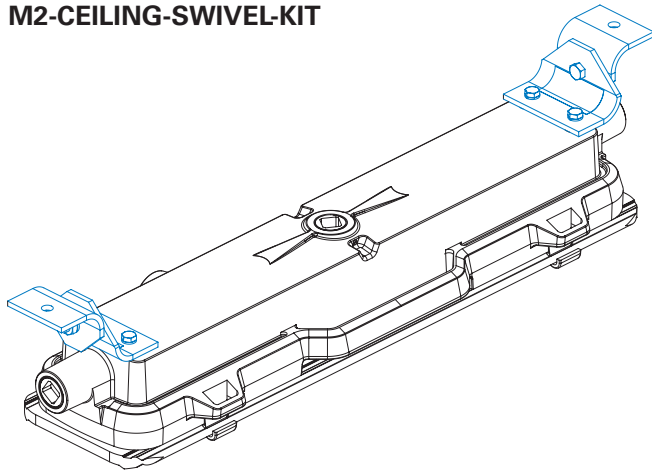


Illuminance (Fc)	MLLA2-UNV1	FVN4232
<b>Average</b>	22.57	22.04
<b>Maximum</b>	27.90	27.70
<b>Minimum</b>	12.70	12.00
<b>Average/minimum</b>	1.78	1.84
<b>Maximum/minimum</b>	2.20	2.31

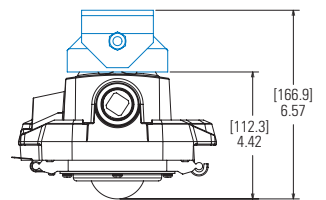
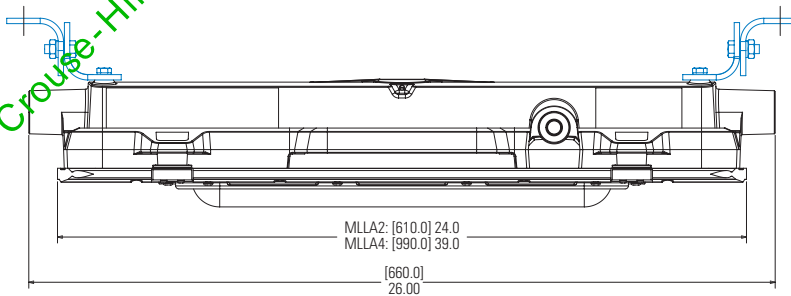
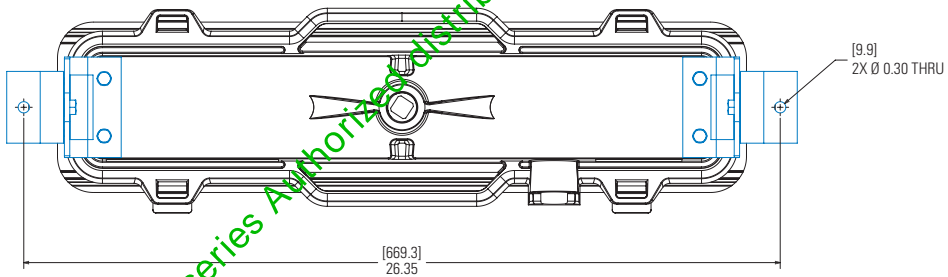
Equivalent illumination to a 2 lamp T8 FVN and up to 50% energy savings

# Mounting options

## Ceiling mount swivel kit M2-CEILING-SWIVEL-KIT



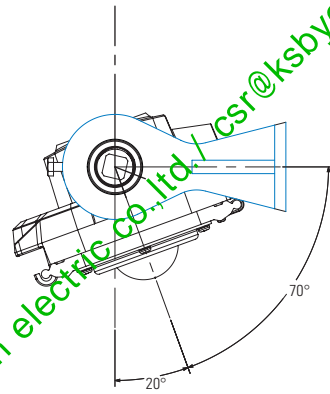
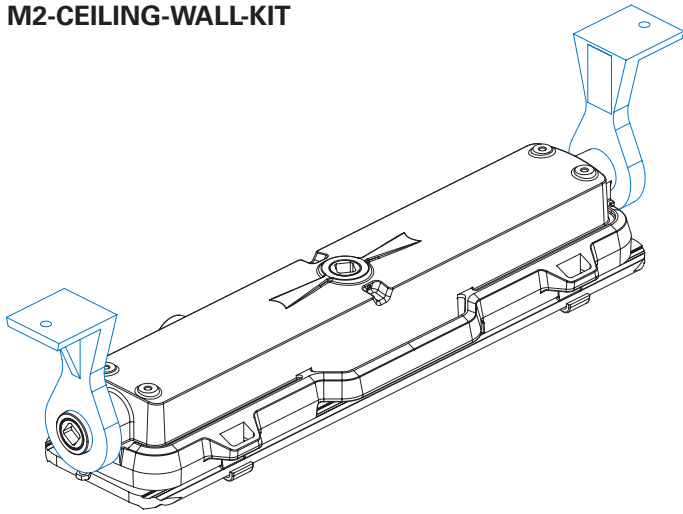
MAXIMUM ROTATION, CEILING SWIVEL MOUNT



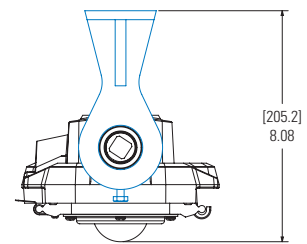
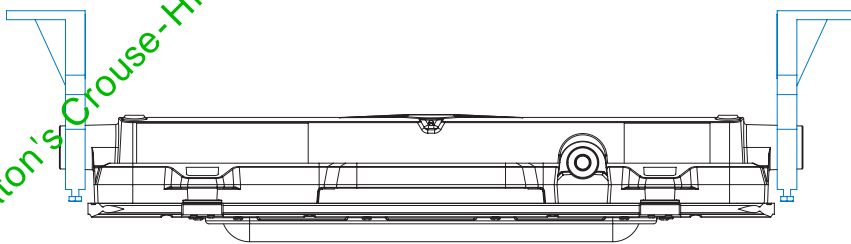
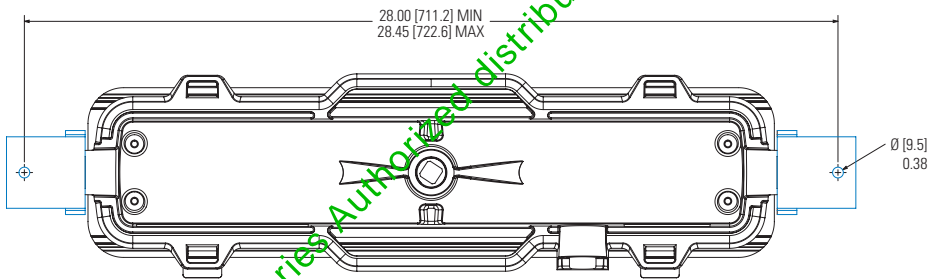
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# Mounting options

## Ceiling/wall mount kit M2-CEILING-WALL-KIT

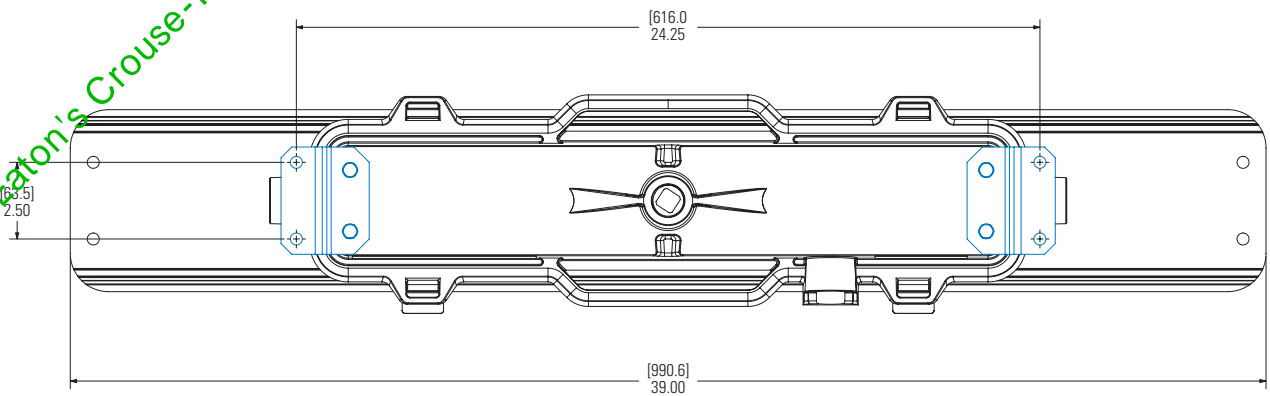
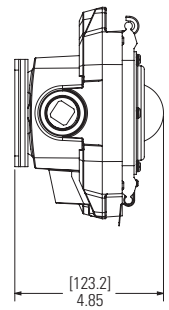
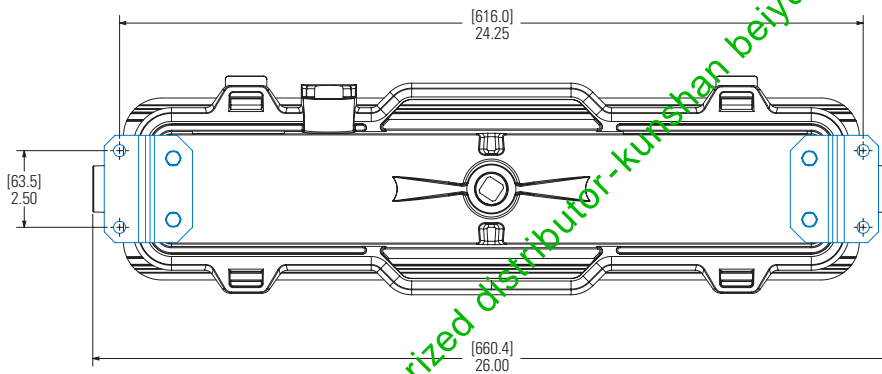
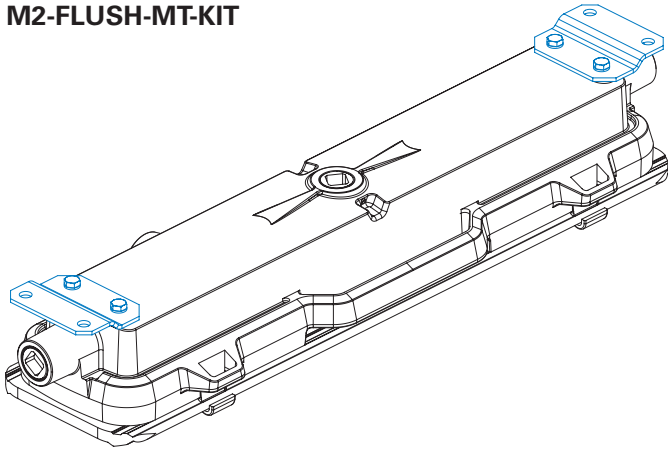


MAXIMUM ROTATION, WALL MOUNTING



# Mounting options

## Flush mount kit M2-FLUSH-MT-KIT

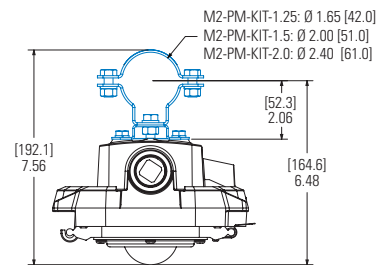
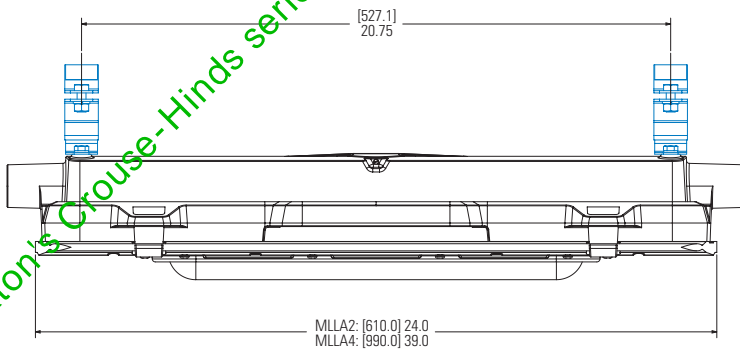
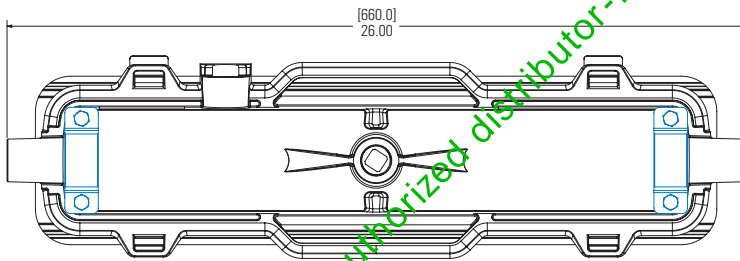
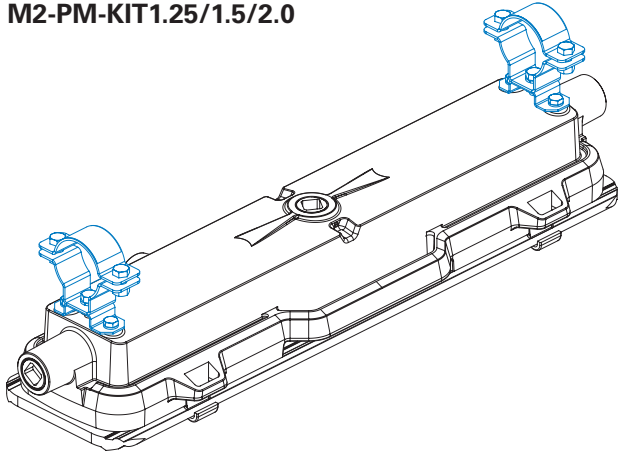


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# Mounting options

## Pole mount kit

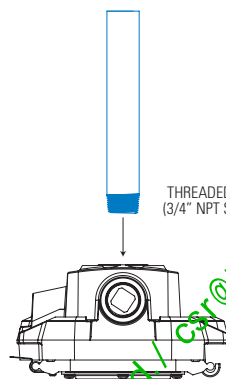
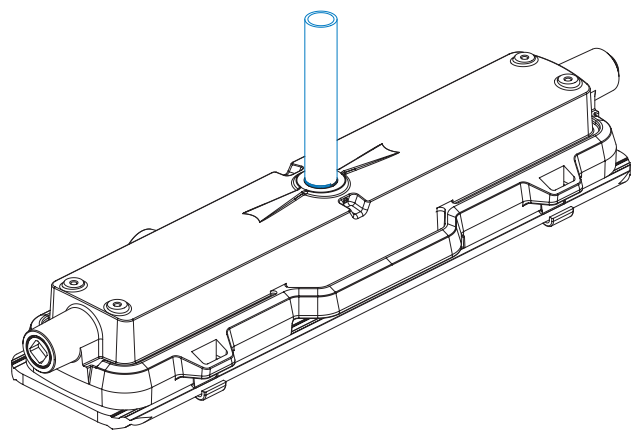
M2-PM-KIT1.25/1.5/2.0



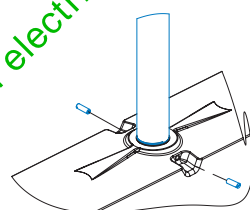
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# Mounting options

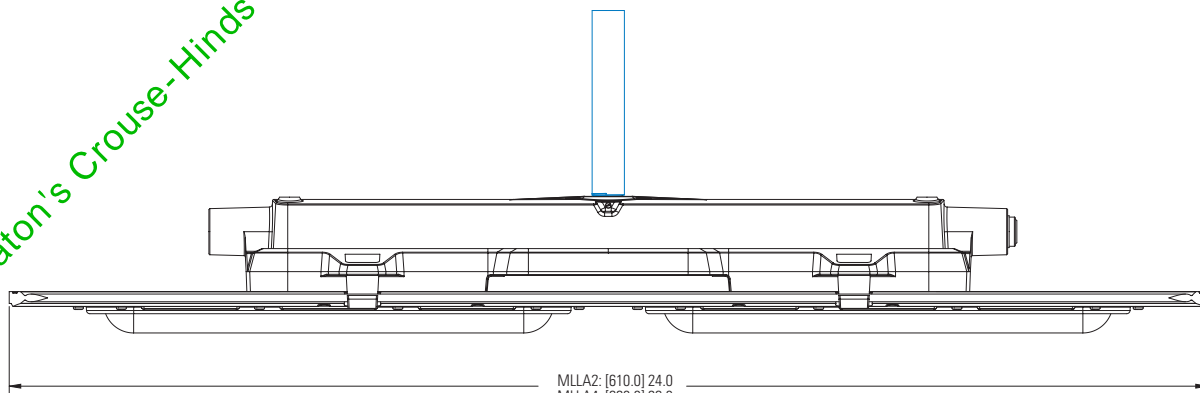
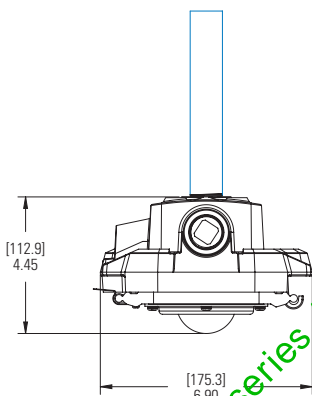
## Pendant mount



THREADED CONDUIT  
(3/4" NPT STANDARD)



SET SCREW DETAIL



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# Notes

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