**Pro Series LED Lighting**
Champ® Pro PVM LED Luminaires

CROUSE-HINDS SERIES

# Champ® Pro PVM

## LED luminaires for harsh & heavy industrial areas

## 3,000 to 25,000 lumen LED high bay luminaires

EATON
*Powering Business Worldwide*

## Champ® Pro PVM LED

# Safe. Reliable. Efficient.

Featuring the industry's broadest range of LED luminaires for harsh, hazardous and industrial environments, Eaton's Crouse-Hinds can deliver a lighting solution that performs reliably in even the worst operating conditions. All the while reducing 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 significantly less than traditional fluorescent and HID fixtures

**Start/restart time**
Instant illumination versus 10 minute restrike time for HID

**Light quality**
Higher color rendering compared to fluorescent and HID

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

### Why Crouse-Hinds?

**Rugged design**
Built to withstand extreme temperatures, vibration, water and dust

**High efficacy**
Up to 124 lumens per watt (model dependent)

**Thermal management**
Effective heat sinking ensures longer life

**Quality of light**
Custom optics designed to maximize light distribution and intensity

**Versatile mounting**
LED fixtures are compatible with Crouse-Hinds' HID installed base

# Why Champ Pro PVM LED?

**Rugged mid to high bay solutions.** Champ PVM series LED luminaires are engineered to provide maintenance-free performance while delivering long life and high lumen performance.

**Built to last:**

- Type 4X rated
- Impact-resistant lens sealed from the outside environment provides ingress protection against water and dust
- Die cast aluminum LED housing provides efficient thermal path to heat sink assembly
- Vertical fin design facilitates air flow and dust shedding

**Simple installation and replacement:**

- Contractor-friendly design is ideal for both retrofit and new construction
- Easy to retrofit using existing HID Champ mounting module
- Compact modular design for easy component replacement and future upgrades
- Available with lever lock connectors and standard three-pole terminal block

**Custom optics:**

- Type I, III and V optics designed to maximize light distribution and intensity*

* Type V optics standard

**Increased efficiency and durability:**

- Up to 124 lumens per watt
- Economic life: 7-20 years

PVM3L - PVM11L

**optimized for 8-30 foot mounting heights**

PVM13L & PVM17L

PVM21L & PVM25L

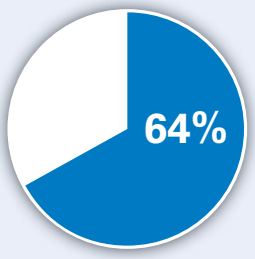
**optimized for 30-60 foot mounting heights**

## LED vs. HID savings at a glance

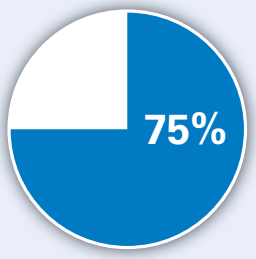
Why are so many facilities making the switch from HID to LED?

The numbers say it all.

**PVM7L vs. 175 watt MH**




64% REDUCTION IN ENERGY COSTS




75% LOWER TOTAL COST OF OWNERSHIP


100% MAINTENANCE REDUCTION

**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.

# Custom optics

Eaton's Crouse-Hinds continuously focuses on engineering product solutions tailored to our customers' unique needs and applications.

Champ Pro PVM LED luminaires feature custom optics designed to maximize light distribution and intensity, providing flexibility for retrofits or new installations throughout the site.

Type III optics minimize light spillover onto the walls and direct light to the ground.

## Three optical options to maximize light distribution and intensity

PVM3L - PVM11L

Type I

Type III

Type V

### TYPE I

Long and rectangular for hallways, walkways, loading docks, catwalks.

Ideal for:

- Mining conveyor belts
- Aisleways and hallways
- Catwalks and walkways
- Ramps and loading docks
- Tunnels with overhead mounts

### TYPE III

Wall mount light distribution, minimizing spillover on the wall.

Ideal for:

- Narrow crosswalks or passages with wall mounted fixtures
- Tunnels with wall mount
- Wall or stanchion mount requiring 180° forward throw beam patterns

### TYPE V

Regular circular distribution pattern for high/low bay indoor and outdoor ceiling or pendant mount lighting.

Ideal for:

- Pendant, ceiling or stanchion mount overhead building mounts
- Processing mills, industrial plants, large buildings, warehouses, etc.

### Colored LED options:

- Available in red, blue, green and amber*
- Reduction in light pollution for night space observation and sky glow due to isolating blue wavelength in red and amber colors
- Wildlife-friendly
- Improves visibility for telescopes in observatories during night sky space exploration

* Custom optics not available with colored LEDs. One model per color, see assignment sheet.

# Case study: Type I optics

### Catwalk/conveyor lighting

Utilizing Eaton's Crouse-Hinds lighting layout services, Champ Pro PVM luminaires with Type I optics and HID luminaires are shown installed on a catwalk to compare photometrics.

### Comparison

**Champ Pro Type I LEDs have a wider linear pattern** than equivalent HID luminaires and provide more efficient light dispersion, which fully illuminates the catwalk.

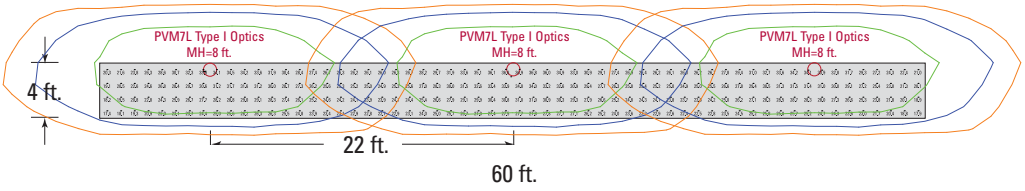
### Results

**Champ Pro PVM LED with Type I optics** provides superior illumination along the conveyor and walkway safely. With no gaps in illumination, the optical pattern allows for increased spacing of fixtures and a safer conveyor system.

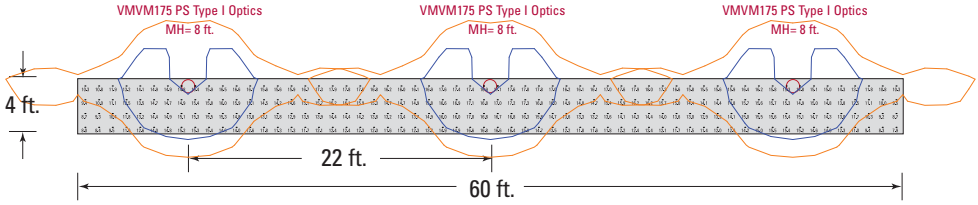
### Savings realized

- **Champ Pro Type I pattern allows for greater fixture spacing** along the catwalk or conveyor system
- Increased visibility with no dark spots results in safer conditions for workers
- LED system provides between 7 to 20 years of maintenance free operation
- Up to 64% energy savings over the life of the fixture

**Champ Pro PVM w/ Type I Optics**

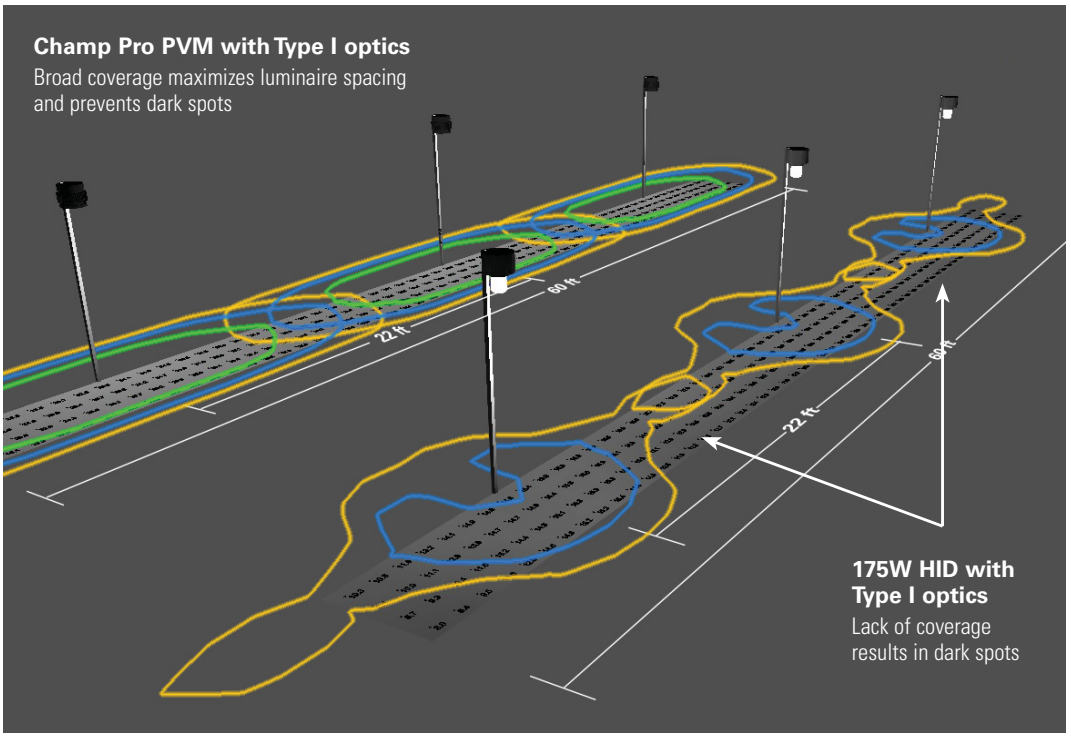



**175W Metal Halide w/ Type I Optics**




| Luminaire | Calc. type | Units | Avg. | Max. | Min. | Avg/min. | Max./min. |
|---|---|---|---|---|---|---|---|
| **Champ Pro PVM** | Illuminance | Fc | 26.91 | 36.9 | 17.4 | 1.55 | 2.12 |
| **175W MH** | Illuminance | Fc | 14.32 | 18.0 | 7.9 | 1.81 | 2.28 |

**Champ Pro has broader coverage area, higher delivered footcandles and uniformity for a typical catwalk or conveyor application.**




**Lighting layout & design services:**

Let us help you design your next big project!

**Contact Crouse-Hinds Customer Service**
crousecustomerctr@eaton.com
(866) 764-5454

# Champ Pro PVM series LED luminaires

Champ Pro PVM series LEDs are designed to provide full-spectrum, crisp, white light with custom IES Type I, III and V distribution.

| Model | Typical lumens (Type V)* | Wattage | Lumens per watt | Equivalent HID luminaire | Typical energy savings / lifetime |
|---|---|---|---|---|---|
| **PVM3L** | 3,531 | 29 | 122 | 70W-100W | Up to 77% |
| **PVM5L** | 5,335 | 43 | 124 | 100W-150W | Up to 67% |
| **PVM7L** | 7,195 | 62 | 116 | 150W-175W | Up to 67% |
| **PVM9L** | 9,266 | 85 | 109 | 250W-320W | Up to 74% |
| **PVM11L** | 11,440 | 113 | 101 | 320W-400W | Up to 74% |
| **PVM13L** | 13,226 | 130 | 102 | 400W | Up to 68% |
| **PVM17L** | 18,793 | 168 | 112 | 400W-600W | Up to 72% |
| **PVM21L** | 22,110 | 196 | 113 | 600W-750W | Up to 74% |
| **PVM25L** | 26,531 | 232 | 114 | 750W-1000W | Up to 77% |

* Tolerance +/- 10%.

## Applications:

- Ordinary non-hazardous locations with mounting heights up to 60 feet
- Heavy industrial, mine site processing areas, platforms, loading docks, tunnels, indoor/outdoor spotlighting, outdoor wall, stanchion mounted general area lighting and areas requiring frequent on-and-off of lights
- Locations requiring continuous and consistent light levels in extreme ambient temperatures
- Where extremely corrosive, wet, dusty, hot and/or cold conditions exist
- Type 4X, marine, wet locations and hose-down environments

## Champ Pro PVM benefits:

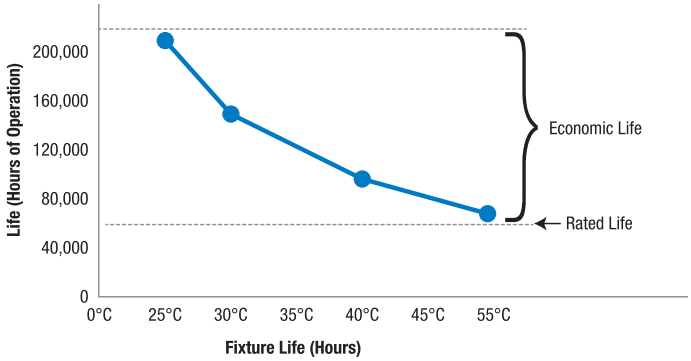
- Instant illumination and restrike
- Better visibility with crisp, white light
- Cold temperature operation / no warm-up required
- Option for redundancy in drivers with multiple series circuits connected to each driver to avoid complete loss of illumination
- Easy installation - compact modular fixture attaches onto existing Champ mounting module
- Energy-efficient technology - up to 64% energy savings over HID fixtures
- Contains no mercury or other hazardous substances
- Shock- and vibration-resistant solid-state luminaires have no filaments or glass components that could break - greatly reduces the risk of premature failure
- Operating ambient: -40°C to 65°C (PVM3L-PVM11L/UNV1 models); -40°C to 55°C (PVM3L-PVM11L/UNV34 and PVM13L-PVM25L models)
- Dark sky compliant (PVM3L-PVM11L models)
- 5 year fixture warranty†

† Refer to page 2 of the D-0914 authorized distributor price book for Crouse-Hinds standard Terms and Conditions.

## Standard materials:

- Lamp housing and adapter - die cast aluminum with Corro-free™ epoxy powder coat
- Lens - heat- and impact-resistant glass
- Gaskets - silicone
- External hardware - stainless steel
- Factory-sealed, no external seals required

## LED system lifetime rated versus economic life:




**Economic life can range anywhere between 64,000 to 200,000 hours, or 7 to 20 years of maintenance-free operation.**

**Fixture life and years of maintenance-free operation**

| Ambient temperature | Fixture life (hours) | No. of years at 24 hours usage | No. of years at 12 hours usage |
|---|---|---|---|
| 25°C | 201,008 | 23 | 46 |
| 30°C | 153,445 | 17 | 35 |
| 40°C | 94,949 | 11 | 22 |
| 55°C | 64,286 | 7 | 15 |

* 50,000 hours of life at 65°C ambient for PVM3L-PVM11L/UNV1 models.

## Fixture life:

- Rated life of 60,000 hours @ 55°C operating ambient and 24/7 continuous operation for 365 days
- Economic life of 200,000 hours @ 25°C ambient
- L70 >300,000 hours @ 55°C

## Certifications and compliances:

- DesignLights Consortium® Qualified (some models are not DLC qualified)*

NEC and CEC
- Wet Locations, Type 4X, IP66

UL Standards
- UL1598 Luminaires, UL1598A Marine

CSA Standard
- cUL Listed to CSA Standard CSA C22.2 No. 250

IEC Standard
- CE

* Approved models include: PVM3L/UNV1; PVM5L/UNV1; PVM7L/UNV1; PVM9L/UNV1; PVM11L/UNV1; PVM13L/UNV1; PVM17L/UNV1; PVM21L/UNV1; PVM25L/UNV1; PVM3L/UNV34; PVM5L/UNV34; PVM7L/UNV34; PVM9L/UNV34; PVM11L/UNV34;

Refer to www.designlights.org Qualified Products List under family models for full listing details. Not all models are approved for all application categories.

## LED system:

- High intensity discrete power emitters
- Standard: cool white (5000K, 70 CRI)
  Optional: warm white, (3000K, 80 CRI)
- Custom Type I, III and V optics available
- Optics clocking in field to align Type I and Type III light patterns to illumination path for PVM13L-PVM25L

## Electrical ratings:

| | PVM3L | PVM5L | PVM7L | PVM9L | PVM11L |
|---|---|---|---|---|---|
| **Voltage range, VAC** | 120-277 | 120-277 | 120-277 | 120-277 | 120-277 |
| **Frequency** | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| **Input power (watts)** | 29 | 43 | 62 | 85 | 113 |
| **Input amps at 120-277 VAC** | 0.24-0.11 | 0.35-0.16 | 0.52-0.23 | 0.71-0.31 | 0.95-0.41 |
| **Voltage range, VDC** | 108-250 | 108-250 | 108-250 | 108-250 | 108-250 |
| **Power factor** | >0.90 | >0.90 | >0.90 | >0.90 | >0.90 |
| **Total harmonic distortion (THD)** | <20% | <20% | <20% | <20% | <20% |
| **Nominal lumens† (Type V)** | 3,531 | 5,335 | 7,195 | 9,226 | 11,440 |

| | PVM13L | PVM17L | PVM21L | PVM25L |
|---|---|---|---|---|
| **Voltage range, VAC** | 120-277 | 120-277 | 120-277 | 120-277 |
| **Frequency** | 50/60 Hz | 50/60 Hz | 50/60 Hz | 50/60 Hz |
| **Input power (watts)** | 131 | 168 | 196 | 232 |
| **Input amps at 120-277 VAC** | 1.08-0.48 | 1.40-0.62 | 1.64-0.73 | 1.94-0.87 |
| **Voltage range, VDC** | 108-250 | 108-250 | 108-250 | 108-250 |
| **Power factor** | >0.90 | >0.90 | >0.90 | >0.90 |
| **Total harmonic distortion (THD)** | <20% | <20% | <20% | <20% |
| **Nominal lumens† (Type V)** | 13,226 | 18,793 | 22,110 | 26,531 |

† Tolerance +/- 10%.

## Drivers:

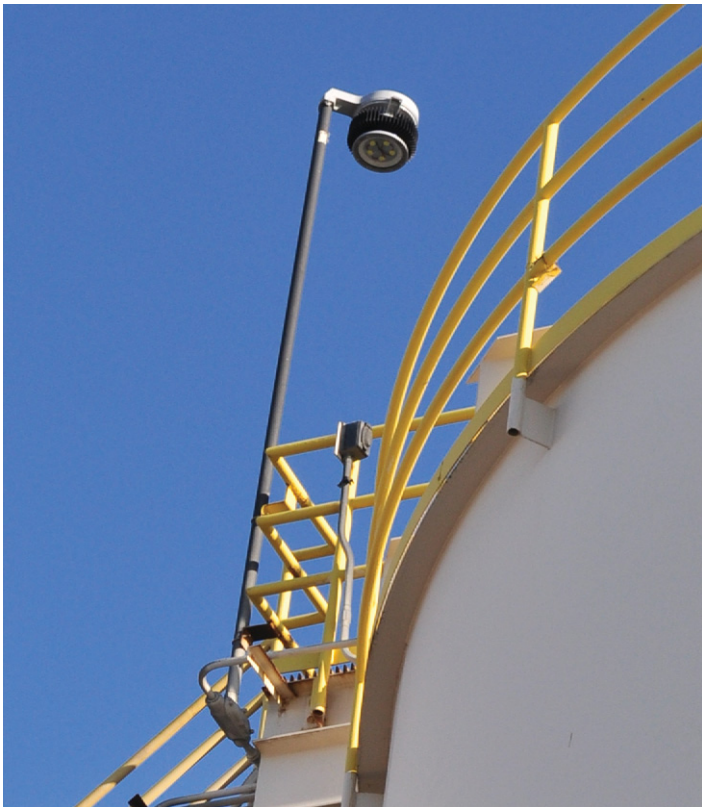
| Option | PVM3L-PVM25L |
|---|---|
| /UNV1 | 120-277 VAC, 50/60 Hz;108-250 VDC, 50/60 Hz |
| /UNV34 | 347-480 VAC, 50/60 Hz |

## Weights:

| Luminaire | lbs. | kg. |
|---|---|---|
| **PVM3L-PVM11L** | 21.80 | 8.07 |
| **PVM13L & PVM17L** | 36.00 | 16.32 |
| **PVM21L & PVM25L** | 44.00 | 19.95 |

| Mounting module | lbs. | kg. |
|---|---|---|
| **Pendant** | 1.25 | 0.57 |
| **Cone pendant** | 4.00 | 1.81 |
| **Flexible pendant** | 1.50 | 0.68 |
| **Ceiling** | 2.75 | 1.25 |
| **Wall** | 4.50 | 2.04 |
| **Angled stanchion*** | 3.50 | 1.59 |
| **Straight stanchion** | 4.50 | 2.04 |

* Angled stanchion for PVM3L-PVM11L models only.



## Options:

- Wire guard with captive mounting hardware
- Trunnion mount with redundant pin locking mechanism (ceiling mount required)
- Quick Clip for quick installation
- Diffused lens for glare reduction
- Redundant driver for prevention of total loss of illumination
- Teflon coating on lens for additional shatter protection
- Polycarbonate lens for areas where glass is prohibited
- Six-pole terminal block

## Accessories (ordered separately):

- Photocell, 120V, 50/60 Hz
- Photocell, 208-277V
- Occupancy sensor with photocell, 120/277 VAC
- Trunnion mount kit with redundant pin locking mechanism (ceiling mount required)
- Remote control for customizing occupancy sensor performance

ORDC/UNV1

REMOTE CONTROL 1

Occupancy sensor and remote (ordered separately)

# Ordering information

**Part number example**

**PVM17LW2AR1G/UNV1 S890**

**PVM 17L W 2A R1 G /UNV1 S890**

**Lamp/function**

| | |
|---|---|
| 3L | 3,531 Lumen LED |
| 5L | 5,335 Lumen LED |
| 7L | 7,195 Lumen LED |
| 9L | 9,226 Lumen LED |
| 11L | 11,440 Lumen LED |
| 13L | 13,226 Lumen LED |
| 17L | 18,793 Lumen LED |
| 21L | 22,110 Lumen LED |
| 25L | 26,531 Lumen LED |
| RL* | Red (3,200 Lumen LED) |
| GL* | Green (4,300 Lumen LED) |
| BL* | Blue (2,100 Lumen LED) |
| AL* | Amber (5,000 Lumen LED) |

* Custom optics not available with colored LEDs.

**Color temperature**

| | |
|---|---|
| BLANK | Cool (5000K) or Colored |
| W | Warm (3000K) |

**Mounting style**

| | |
|---|---|
| BLANK | No Cover |
| J* | 1-½" Stanchion, 25° Angled |
| P | 1-½" Stanchion, Straight |
| 2A | ¾" Pendant |
| 3A | 1" Pendant |
| 20A | 20mm Pendant |
| 25A | 25mm Pendant |
| 2B | ¾" Cone Pendant |
| 3B | 1" Cone Pendant |
| 2C | ¾" Ceiling |
| 3C | 1" Ceiling |
| 20C | 20mm Ceiling |
| 25C | 25mm Ceiling |
| 2HA | ¾" Flexible Pendant |
| 2TW | ¾" Wall |
| 3TW | 1" Wall |
| 20TW | 20mm Wall |
| 25TW | 25mm Wall |

* For PVM3L-PVM11L only.

**Accessories (ordered separately)**

| | |
|---|---|
| D2S20 | Photocell, 120V, 50/60 Hz |
| D2S208 277 | Photocell, 208-277V |
| VMVL S812 K1* | Trunnion Mount Kit with Pin |

* Order with ceiling mount only.

**Suffixes**

| | |
|---|---|
| S812* | Trunnion Mount Kit with Pin |
| S831 | Safety Cable |
| S890 | Quick Clip |
| S891 | Diffused Lens |
| S892** | Redundant Driver |
| S896 | Teflon Coated Lens |
| S903 | Polycarbonate Lens |
| TB6 | Six-pole Terminal Block |

* Order with ceiling mount only.

** Available for 5L & 7L only. Redundant driver standard on 9L - 25L models. 7L = 6,616 lumens with S892 suffix.

**Voltage**

| | |
|---|---|
| /UNV1 | 120-277 VAC, 50/60 Hz; 108-250 VDC, 50/60 Hz |
| /UNV34 | 347-480 VAC, 50/60 Hz |

**Guard**

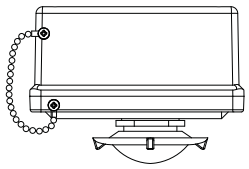
| | |
|---|---|
| BLANK | No Guard |
| G | P3001 Wire Guard |

**Optics**

| | |
|---|---|
| BLANK | Type V Optic Standard *(All Mounts)* |
| R1 | Type I Optic *(All Mounts Minus Ceiling)* |
| R1A* | Type I Optic *(Ceiling with Conduit 45° Counterclockwise or 135° Clockwise from Hinge)* |
| R1B* | Type I Optic *(Ceiling with Conduit 45° Clockwise or 135° Counterclockwise from Hinge)* |
| R3 | Type III Optic *(All Mounts Minus Ceiling)* |
| R3AP* | Type III Optic *(Select when using Appleton® top hat adapter with Champ fixture)* |
| R3A1* | Type III Optic *(Ceiling with Conduit 45° Counterclockwise from Top Hat Hinge)* |
| R3A2* | Type III Optic *(Ceiling with Conduit 135° Clockwise from Top Hat Hinge)* |
| R3B1* | Type III Optic *(Ceiling with Conduit 45° Clockwise from Top Hat Hinge)* |
| R3B2* | Type III Optic *(Ceiling with Conduit 135° Counterclockwise from Top Hat Hinge)* |

* For PVM3L-PVM11L only.

# Occupancy sensor

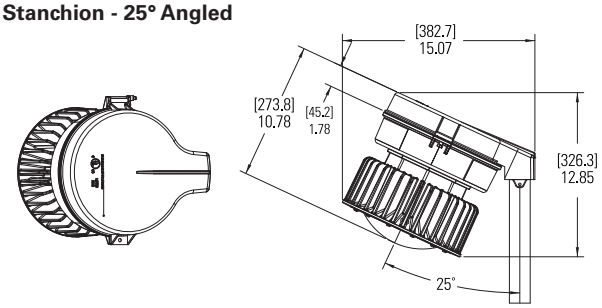


| Occupancy sensors | |
|---|---|
| ORDC/UNV1 | 3/4" NPT entry, 100-277 VAC |
| 347/480 K1 | Step down transformer for 347-480 VAC applicaitons |

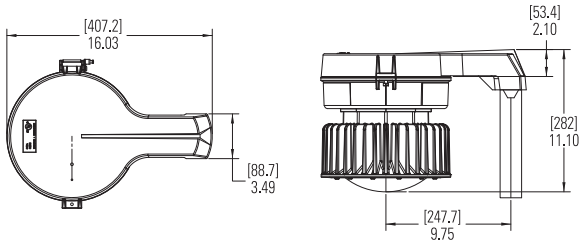
| Occupancy sensor accessories (ordered separately) | |
|---|---|
| CABLE KIT ORD 1 | TECK armored cable (5ft) with TECK glands (¾") |
| CABLE KIT ORD 2 | P Type non armored cable (5ft) with ADE1F glands (3/4") |
| CABLE KIT ORD 3 | Metal-clad armored cable (5ft) with TMC glands (3/4") |
| CABLE KIT ORD 4 | SO cable (5ft) with ADE1F glands (3/4") |
| ORDC WKIT | Wall Mount Kit |
| ORDC PKIT | Pendant Mount Kit |
| ORDC SKIT | Stanchion Mount Kit |
| REMOTE CONTROL 1 | Remote control for programming sensor |

# Mounting options and dimensions

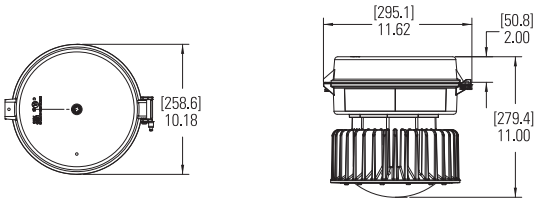
### Stanchion - 25° Angled



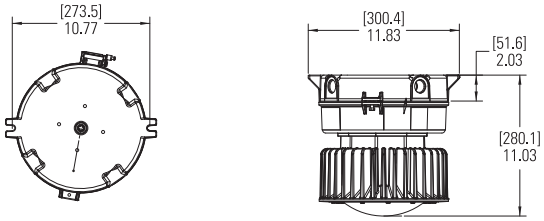

### Stanchion - Straight



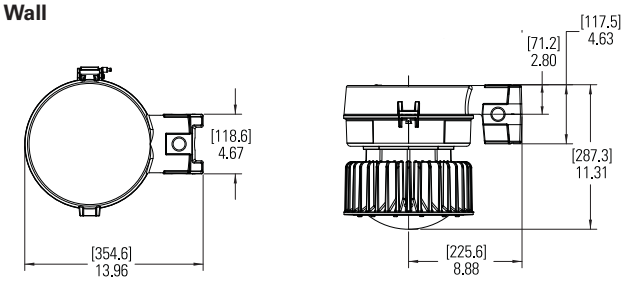

### Pendant



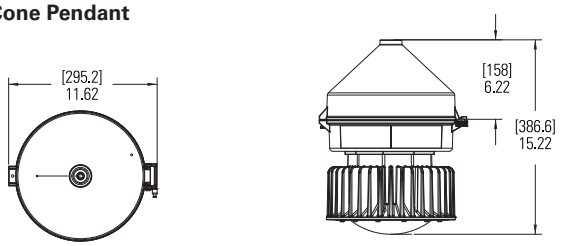

### Ceiling



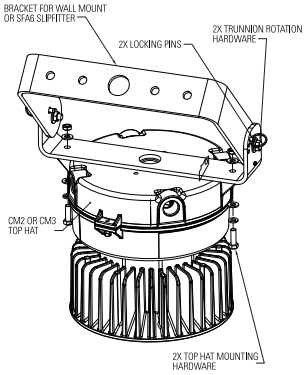

### Wall




### Cone Pendant

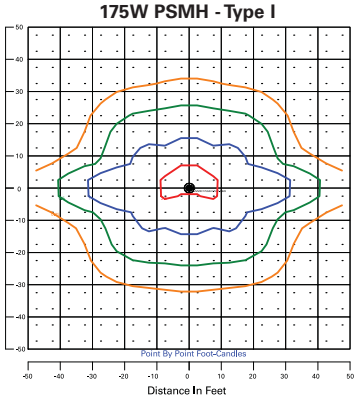



### Trunnion

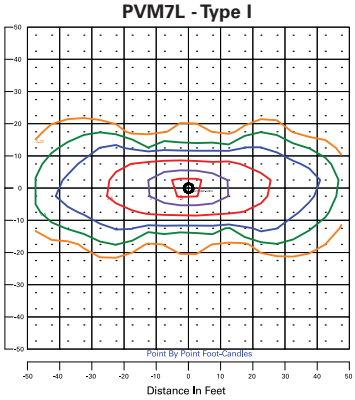


# Photometric comparison at 15 ft. mounting height

175W PSMH - Type I




PVM7L - Type I



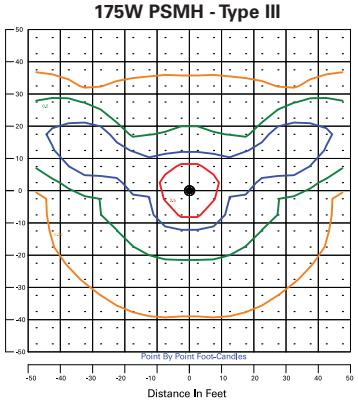

### Type I optical pattern

0.25 0.50 1.0 2.5 5.0

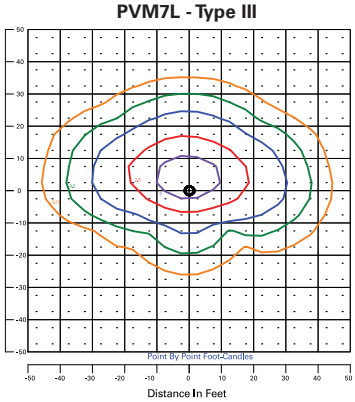
**Calculation summary**

| Label | Calc. type (in Fc) | Avg. | Max. | Min. |
|---|---|---|---|---|
| VMV 175W MH Grid | Illuminance | 0.49 | 3.0 | 0.0 |
| PVM LED Grid | Illuminance | 0.56 | 7.1 | 0.0 |

175W PSMH - Type III




PVM7L - Type III



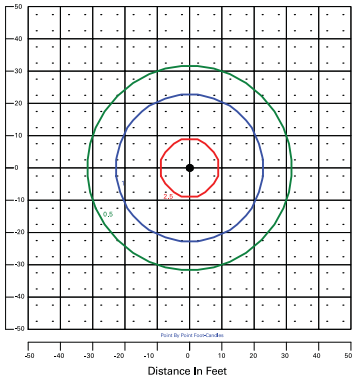

### Type III optical pattern

0.25 0.50 1.0 2.5 5.0

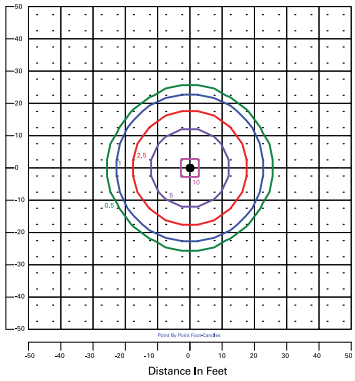
**Calculation summary**

| Label | Calc. type (in Fc) | Avg. | Max. | Min. |
|---|---|---|---|---|
| VMV 175W MH Grid | Illuminance | 0.59 | 4.5 | 0.1 |
| PVM LED Grid | Illuminance | 0.54 | 6.8 | 0.0 |

175W PSMH - Type V




PVM7L - Type V




### Type V optical pattern

0.50 1.0 2.5 5.0 10.0

**Calculation summary**

| Label | Calc. type (in Fc) | Avg. | Max. | Min. |
|---|---|---|---|---|
| VMV 175W MH Grid | Illuminance | 0.51 | 2.8 | 0.1 |
| PVM LED Grid | Illuminance | 0.60 | 9.1 | 0.0 |

**Higher average footcandles, uniformity and distribution coverage with less than half the lumens and energy consumption compared to 175W metal halide**

| Actual lumens (nominal†) | PVM3L | PVM5L | PVM7L | PVM9L | PVM11L |
|---|---|---|---|---|---|
| Type I | 3,360 | 5,045 | 6,844 | 8,823 | 10,730 |
| Type III | 3,309 | 4,468 | 6,741 | 8,618 | 10,660 |
| Type V | 3,531 | 5,335 | 7,195 | 9,266 | 11,440 |

| Actual lumens (nominal†) | PVM13L | PVM17L | PVM21L | PVM25L |
|---|---|---|---|---|
| Type I | 12,842 | 18,194 | 21,404 | 25,685 |
| Type III | 12,493 | 17,699 | 20,822 | 24,987 |
| Type V | 13,266 | 18,793 | 22,110 | 26,531 |

† Tolerance +/- 10%.