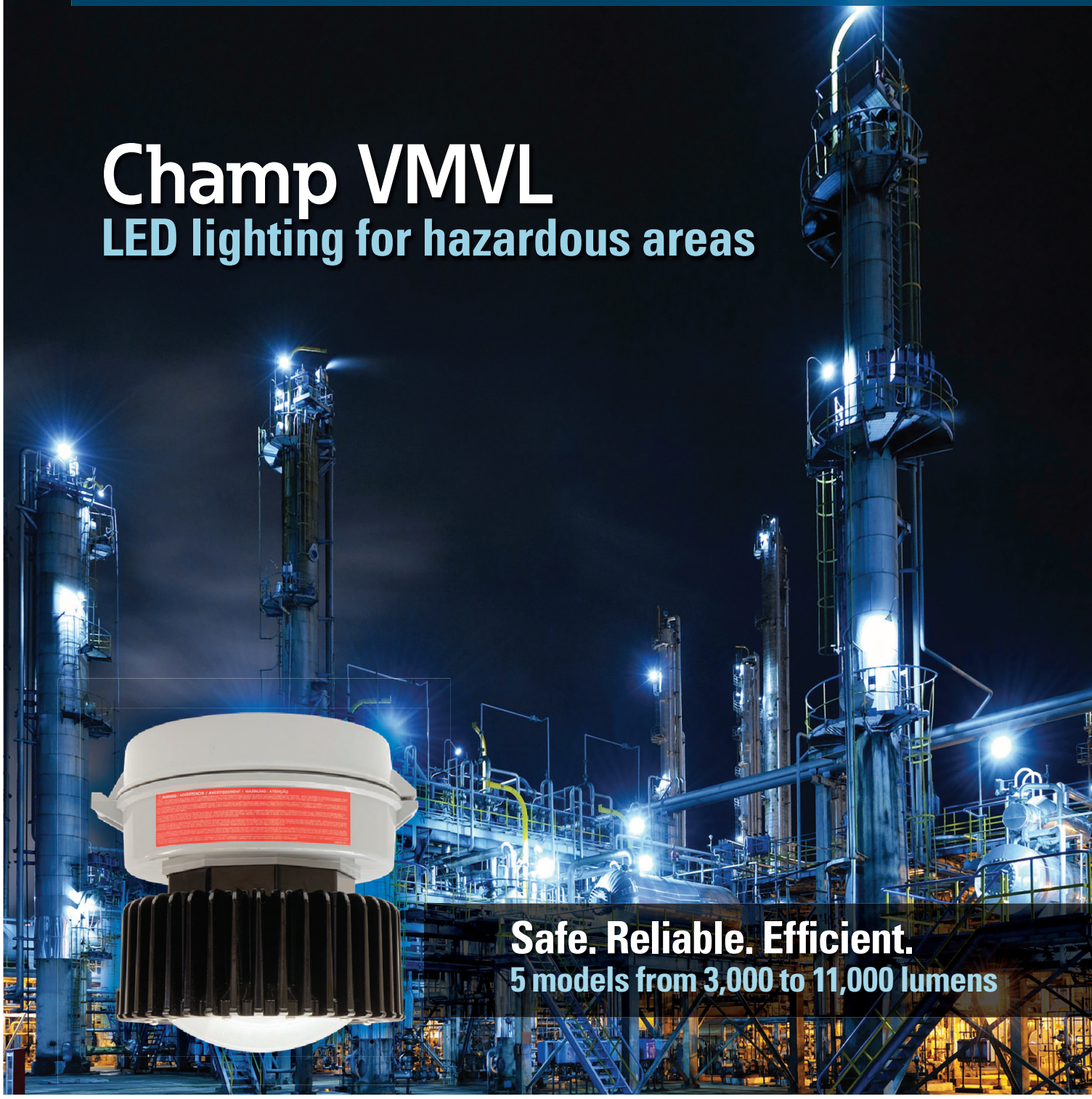
Hazardous Area LED Lighting
Champ® VMVL LED Luminaires

CROUSE-HINDS SERIES

Champ VMVL

LED lighting for hazardous areas



Safe. Reliable. Efficient.
5 models from 3,000 to 11,000 lumens

EATON
Powering Business Worldwide

Champ VMVL LED

Safe. Reliable. Efficient.

Featuring a broad range of LED luminaires for harsh, hazardous and industrial environments, Eaton's Crouse-Hinds delivers lighting solutions that perform reliably in even the worst operating conditions. This reduces 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 127 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

Design features

Shown with optional diffused lens

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
- Available with lever lock connectors and standard three-pole terminal block

Multiple lens options:

- Clear glass lens standard
- Optional lenses include diffused glass or clear polycarbonate

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 127 lumens per watt *(7L model)*

Why choose Champ VMVL?

Safe, reliable and efficient. VMVL LED luminaires are engineered to deliver high lumen output and maintenance-free long life in the toughest conditions.

VMVL-7 vs. 175 watt HID

77% ENERGY EFFICIENCY

75% 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

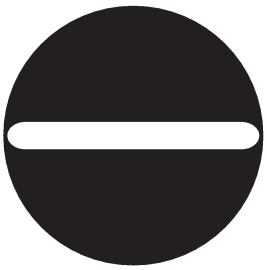
Eaton's Crouse-Hinds continuously focuses on engineering product solutions tailored to our customers' unique needs and applications.

Champ VMVL 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

VMVL-3 to VMVL-11



TYPE I

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

Ideal for:

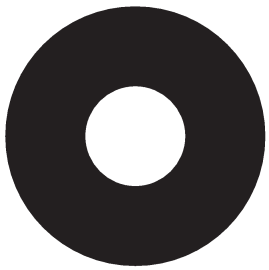
- Mining conveyor belts
- Aisleways and hallways
- Catwalks and walkways
- Ramps and loading docks
- Tunnels with overhead mounts

TYPE III

Stanchion and 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.

Case study: Type I optics

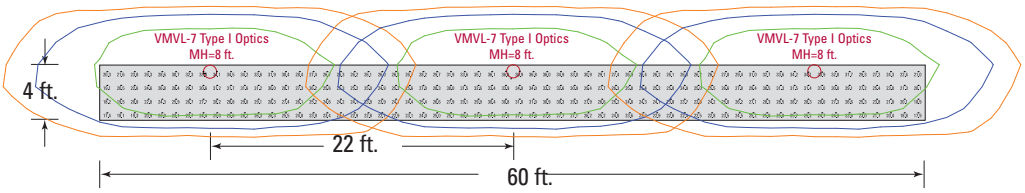
Catwalk/conveyor lighting

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

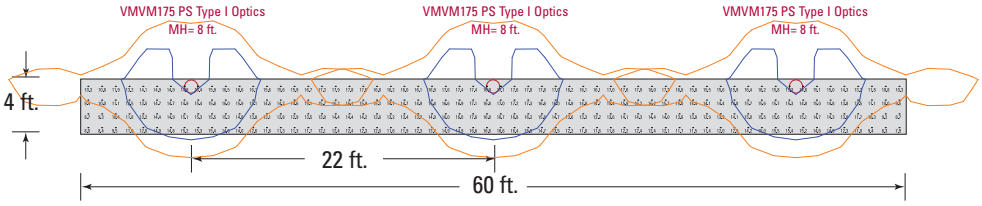
Comparison

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

Champ VMVL w/ Type I optics



175W metal halide w/ Type I optics



Results

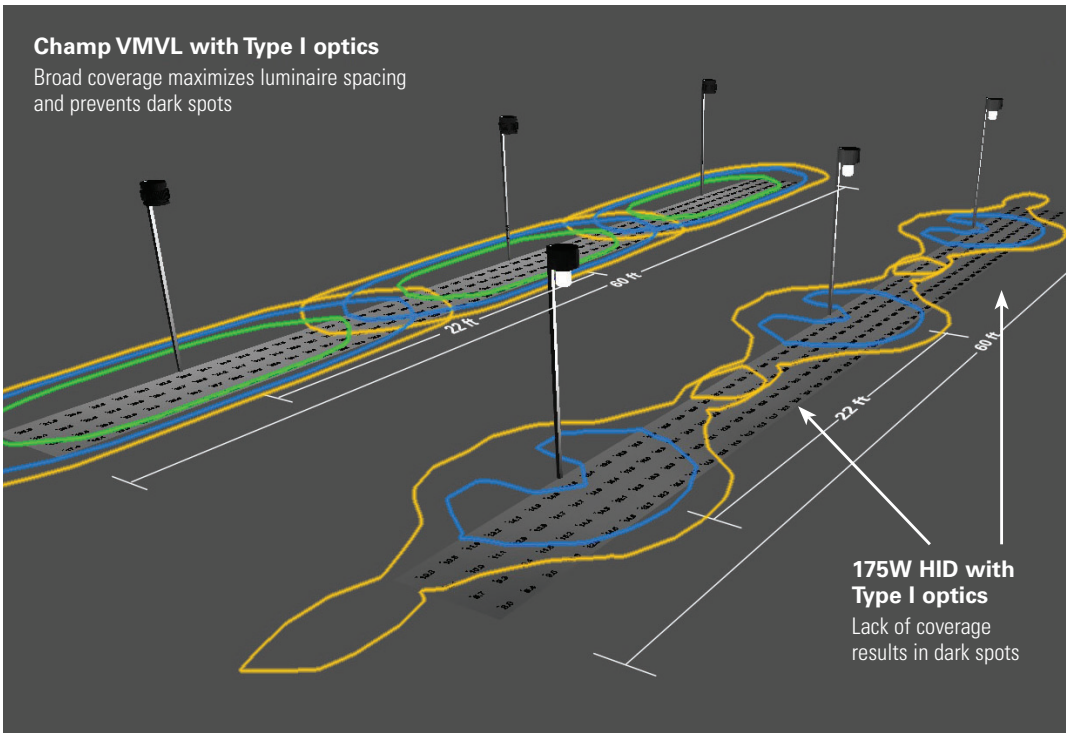
Champ VMVL LED with Type I optics provides superior illumination along the conveyor and walkway safely. With no gaps in illumination, the optical pattern allows for increased spacing of fixtures and a safer conveyor system.

Luminaire	Calc. type	Units	Avg.	Max.	Min.	Avg./min.	Max./min.
Champ VMVL	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

Savings realized

- **Champ 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
- Up to 77% energy savings over the life of the fixture

Champ VMVL 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

Rugged solutions for complex environments.

Champ VMVL LED luminaires are engineered to provide maintenance-free illumination in the most demanding hazardous rated environments.

The Champ VMVL features a compact, high-efficacy design with custom optics to ensure maximum efficiency and mounting flexibility, including the ability to retrofit the Crouse-Hinds installed base to service both LED upgrades and new projects.

Model	Nominal lumens*	Watts	Efficacy	Equivalent HID luminaire
VMVL-3	3,250	26	123 lm/W	70W
VMVL-5	5,537	43	127 lm/W	100W
VMVL-7	7,442	59	127 lm/W	175W
VMVL-9	9,234	73	126 lm/W	250W
VMVL-11	11,114	91	122 lm/W	320W

*Nominal lumens based on Type V optics, 5000K CCT with clear glass lens. Wattage measured at 120 VAC.

Applications:

- For areas with mounting heights of up to 30 feet
- Oil and gas refineries, drilling rigs, petrochemical facilities, food and beverage facilities, platforms, loading docks, tunnels, indoor/outdoor spotlighting, outdoor wall and stanchion mounted general area lighting, and where flammable vapors, gases, ignitable dusts, fibers or flyings are present
- Locations requiring continuous and consistent light levels in extreme ambient temperatures
- Where extremely corrosive, wet, dusty, hot and/or cold conditions exist
- Classified and hazardous locations

Champ VMVL benefits:

- Instant illumination and restrike
- 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 77% 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
- Up to 60,000 hours lifetime at 55°C
- 5 year fixture warranty†

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

Colored LED options:

- Available in green or amber*
- Reduction in light polution 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 availabe with colored LEDs.

Connected lighting highlights:

Advanced scheduling control allows for improving energy efficiency during non-operational hours. Easy software control lets a user set up schedules for lights to be on and off at pre-defined times, removing the challenges of manual management.

Daylight harvesting allows for use of the daylight and adjusts the light level of luminaire to maintain the desired light levels. It is best suited for outdoor environments or indoor areas where daylight is present during operational hours of a facility.

Fixture grouping is an added benefit that maximizes control in a defined area. By grouping light fixtures, same control settings can be applied to them to increase efficiency and response time.

Occupancy sensing is best used in areas that see infrequent traffic, such as storage areas of warehouses. Innovative occupancy sensor controls can automatically illuminate the area once presence is sensed in an area and also turn it back off when sensors stop sensing the presence.

Advanced dimming controls help reduce the energy consumptions by setting dimming levels. Dimming controls could be used in conjunction with other control features, such as scheduling and occupancy sensing, to improve energy savings.

Certifications and compliances:

NEC, CEC & IEC

- Class I, Division 2, Groups A, B, C, D
- Class II, Groups E, F, G
- Class III
- Class I, Zone 2 AEx ec mb IICT*GC
- Zone 21 tb IIIC
- Simultaneous Presence
- Wet Locations, Type 4X

UL standards

- UL 844 Hazardous (Classified)
- UL1598 Luminaires, UL1598A Marine

CSA standard

- CSA C22.2 No. 137

IEC/ATEX standards

- IEC 60079-0:2011, 6th Edition / EN 60079-0:2012
- IEC 60079-7:2010, 5.1 Edition / EN 60079-7:2015
- IEC 60079-31:2008, 2nd Edition / EN 60079-31:2014
- IEC 60529:2001 / EN 60529:2001
- IEC 60598-1:2008 / EN 60598-1:2008
- IEC 60598-2:2008 / EN 60598-2:2008
- IEC 60079-18:2017, 4.1 Edition / EN 60079-18:2015 + A1:2017

Luminaire markings

- IECEx UL 13.0052X
- DEMKO 13 ATEX 1305741X
- DEMKO 13 ATEX 1475031X

100-277 VAC/127-250 VDC (UNV1 base luminaire only)

- Ex II 3 G EX ec mb IIC T5 Gc -40°C to +40°C
- Ex II 3 G EX ec mb IIC T5 Gc -40°C to +55°C
- Ex II 3 G EX ec mb IIC T4 Gc -40°C to +65°C
- Ex II 2 D Ex tb IIIC T72°C Db -40°C to +40°C
- Ex II 2 D Ex tb IIIC T87°C Db -40°C to +55°C
- Ex II 2 D Ex tb IIIC T92°C Db -40°C to +65°C

Qualifications and compliances:

- DesignLights Consortium® Qualified (pending)*

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

Temperature codes, UNV1 driver:

VMVL-3 to VMVL-11	40°C	55°C	65°C
Class I, Division 2	T5	T5	T4A
Class II, Division 1	T5	T4A	T4A
Simultaneous rating Class I, Division 1 & II	T3C	T3A	T3A
Class I, Zone 2 AEx nA nR; Ex nA nR	T5	T5	T4
Class III, Div. 1 Class II, Div. 1, Groups E, F, G Zone 21 AEx tb IIIC	T72°C	T72°C	T92°C

Electrical ratings:

Model	Input power (watts)	Input amps at 277 VAC
VMVL-3	26	0.27-0.10
VMVL-5	43	0.45-0.16
VMVL-7	59	0.61-0.21
VMVL-9	73	0.76-0.26
VMVL-11	91	0.92-0.32

*IEC voltage; 100-240 VAC @ 50/60 Hz
**For VMVL-3:PF>0.9 from 100-255 VAC

All models	
Voltage range, VAC*	100-277V at 50/60 Hz
Voltage range, VDC	127-250V
Power factor	≥0.90
THD	≤20%

EMC / CE compliance:
If the dimming interface of the LED driver is connected to an external dimmer which is not provided with the luminaire, a ferrite core must be used on the input and dimming lines. Approved ferrite cores are: Fair-Rite P/N 0431167281.

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:

- High intensity discrete power emitters
- Standard: cool white (5000K, 70 CRI); optional: warm white, (3000K, 80 CRI) or neutral white (4000K, 70 CRI)
- Custom Type I, III and V optics available

Weights:

Model	lbs.	kg.
VMVL-3 to VMVL-7	19.00	8.62
VMVL-9 & VMVL-11	19.20	8.70

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

Ordering information

(For UNV34 models, see VMV ordering information on page 11)

Part number example: VMVL-3-N-2A-R1-G-UNV1-S831-S891

Champ VMVL, 3,000 lumens, 4000K neutral white, ¾" pendant mount, Type I optics, wire guard, 100-277 VAC driver, safety cable, diffused glass lens

VMVL - 3 - N - 2A - R1 - G - UNV1 - S831 - S891

Light source/intensity†

3	3,250 nominal lumens
5	5,537 nominal lumens
7	7,442 nominal lumens
9	9,234 nominal lumens
11	11,114 nominal lumens

†Refer to Champ VMV ordering information on page 11 for 13,000 to 25,000 lumen models.

Color temperature

BLANK	5000K, 70 CRI *(cool white)*
N*	4000K, 70 CRI *(neutral white)*
W	3000K, 80 CRI *(warm white)*

*Consult factory for lead time
**5700K and 6500K are available upon request; consult factory.

Optics

BLANK	Type V optic standard
R1	Type I optic
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)*

*Available with ceiling mount modules only.

Lens guard

BLANK	No guard
G	Wire guard

Accessories & options†

S812	Trunnion mount kit with pin *(available with ceiling mount only)*
S831	Safety cable
S890	Quick clip
TB6*	Six-pole terminal block

†Ordered with fixture or available separately.
*For NEC/CEC only.

Voltage†

UNV1	100-277 VAC, 50/60 Hz; 127-250 VDC

IEC voltage; 100-240 VAC at 50/60 Hz

†Refer to Champ VMV ordering information on page 11 for UNV34 voltage ranges and redundant drivers.

Lens material

BLANK	Clear glass
S891	Diffused glass
S896*	Teflon coated lens
S903	Polycarbonate

*For NEC/CEC only.

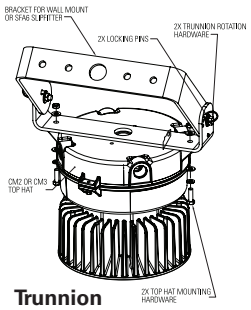
Mounting

BLANK	No mounting module
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
2HA	¾" flexible pendant
2C	¾" ceiling
3C	1" ceiling

20C	20mm ceiling
25C	25mm ceiling
2TW	¾" wall
3TW	1" wall
20TW	20mm wall
25TW	25mm wall

Accessories *(ordered separately)*



Trunnion

Mounting & hardware

VMVL S812 K1	Trunnion mount kit with pin*
VMVL S812 K1 DBR	PVC coated trunnion mount kit with pin*
VMVL S831 K1	Safety cable
VMVL S890 K1	Quick clip
CHMM1	Top hat adapter *(mounts to Appleton Mercmaster III top hats)*

*Available with ceiling mounted modules only.

Replacement driver kit

VMVL-3-5-7L-UNV1-DRIVER KIT	Replacement driver kit for VMVL-3, -5 and -7 models
VMVL-9-11L-UNV1-DRIVER KIT	Replacement driver kit for VMVL-9 and -11 models

Photocells

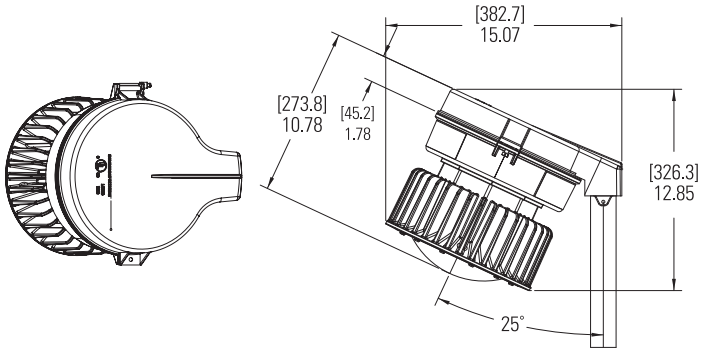
D2S20	Photocell, 120V
D2S208 277	Photocell, 208-277V

Lens guard

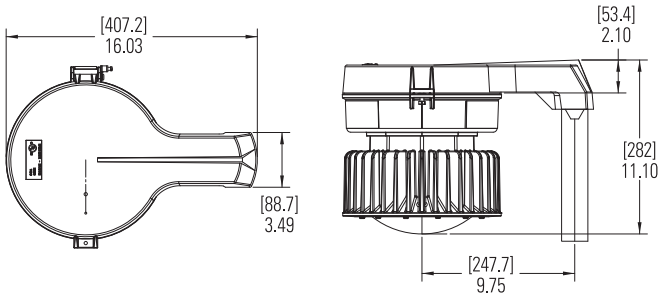
P3001	Wire guard

Mounting options and dimensions

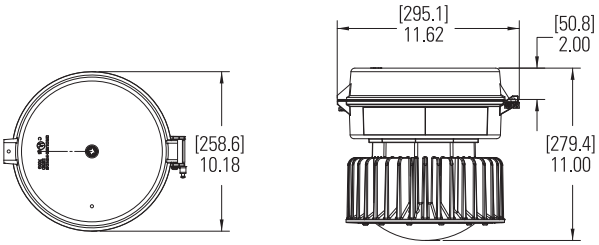
Stanchion - 25° angled



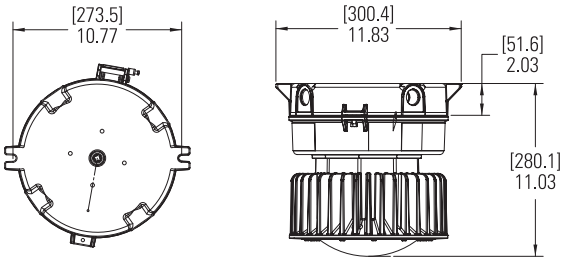
Stanchion - straight



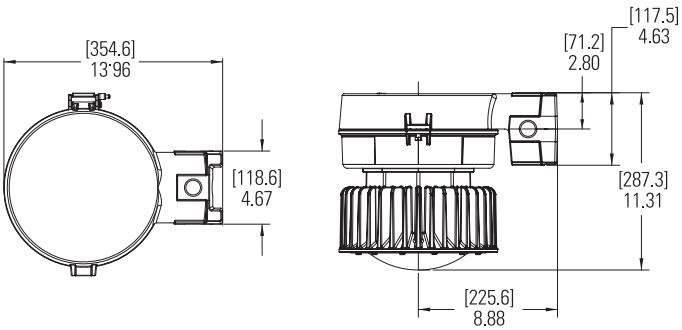
Pendant



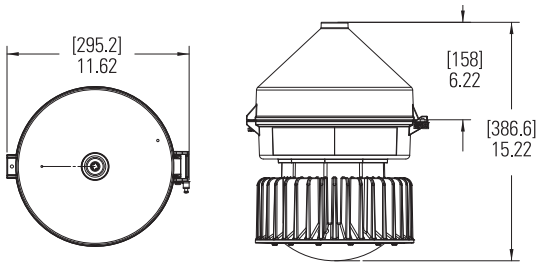
Ceiling



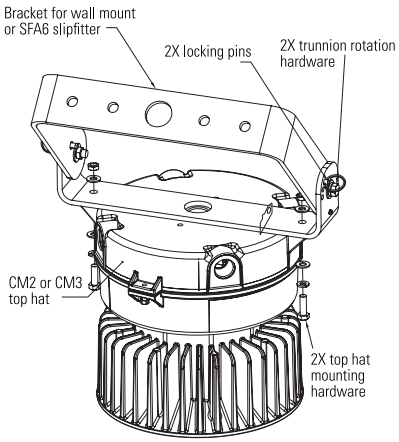
Wall



Cone pendant

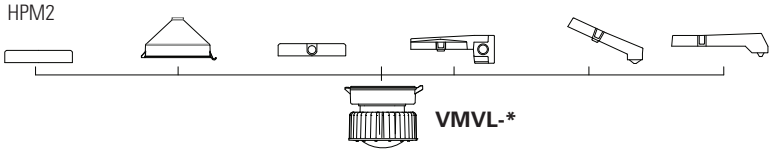


Trunnion



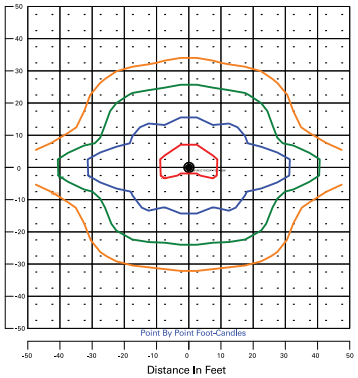
Mounting module series

Pendant	Cone	Ceiling	Wall	Stanchion	
APM2	BPM2	CM2	TWM2	JM5	PM5
APM3	BPM3	CM3	TWM3		
HPM2					

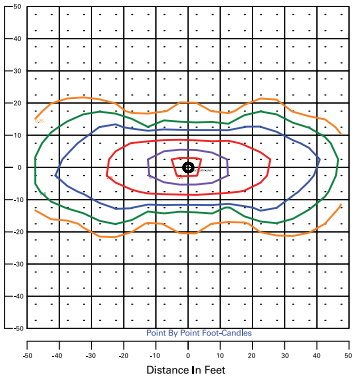


Photometric comparison at 15 ft. mounting height

175W PSMH - Type I



VMVL-7 - Type I



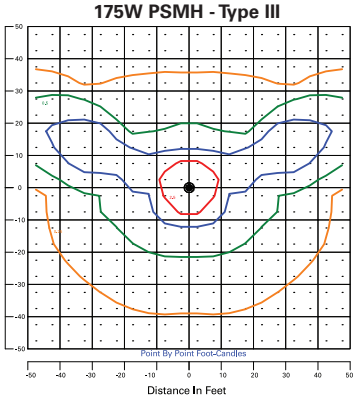
Type I optical pattern

0.25 0.50 1.0 2.5 5.0

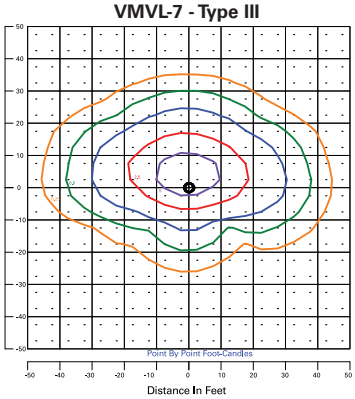
Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.45	2.8	0.0
VMV LED Grid	Illuminance	0.62	8.0	0.0

175W PSMH - Type III



VMVL-7 - Type III



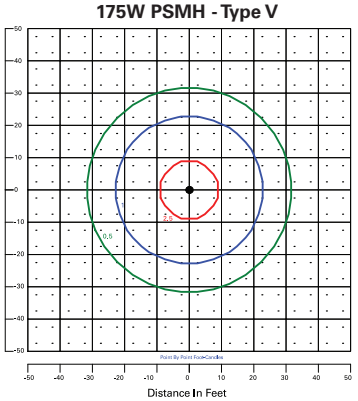
Type III optical pattern

0.25 0.50 1.0 2.5 5.0

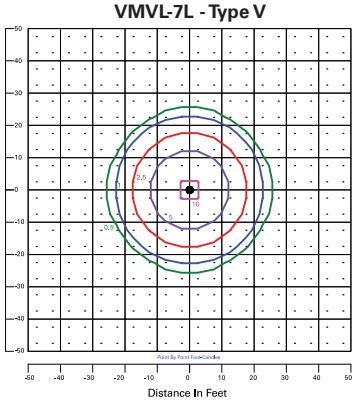
Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.53	3.2	0.1
VMV LED Grid	Illuminance	0.61	7.5	0.0

175W PSMH - Type V



VMVL-7L - 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
VMV LED Grid	Illuminance	0.69	10.1	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†)	VMVL-3	VMVL-5	VMVL-7	VMVL-9	VMVL-11
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	3,250	5,537	7,442	9,234	11,114

† Tolerance +/- 10%.