

Hazardous Area LED Lighting
Champ® VMV LED Luminaires

Champ® VMV Series

LED luminaires for hazardous areas

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



Crouse-Hinds
by **EATON**

Safe. Reliable. Efficient.

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

Eaton's Crouse-Hinds offers the broadest portfolio of LED luminaires for any industrial or hazardous application.

We utilize more than 100 years of lighting expertise to maximize the benefits of LED technology and provide the safest, **most reliable LED luminaires on the market today.**



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 50% less than HID and 85% less than incandescent

Start/restart time

- Instant illumination compared to 10 minute restrike time for HID

Light quality

- Higher color rendering and color temperature compared to HID

Environmental benefits

- LED reduces carbon footprint
- Mercury-free

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

Retrofit compatibility

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

Application

Refinery - rail loading/unloading facility

Background:

A refinery located on a 5,000 acre site with the ability to accept waterborne cargos and a distribution network that includes pipeline, barges and tanks, trucks and rail, needed a lighting upgrade.

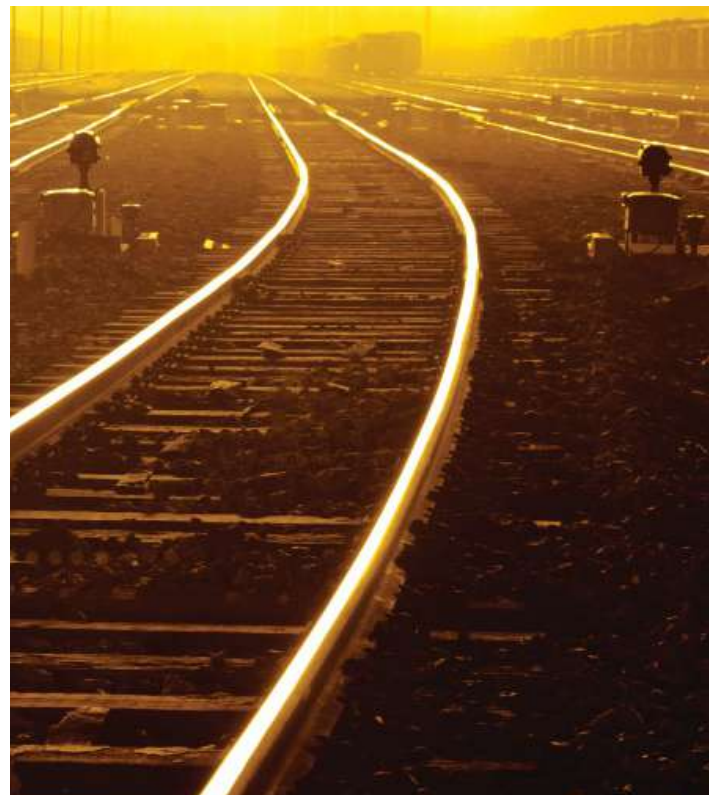
Challenge:

The refinery was looking for energy-efficient, low maintenance lighting solutions in its rail facility for general and work areas.

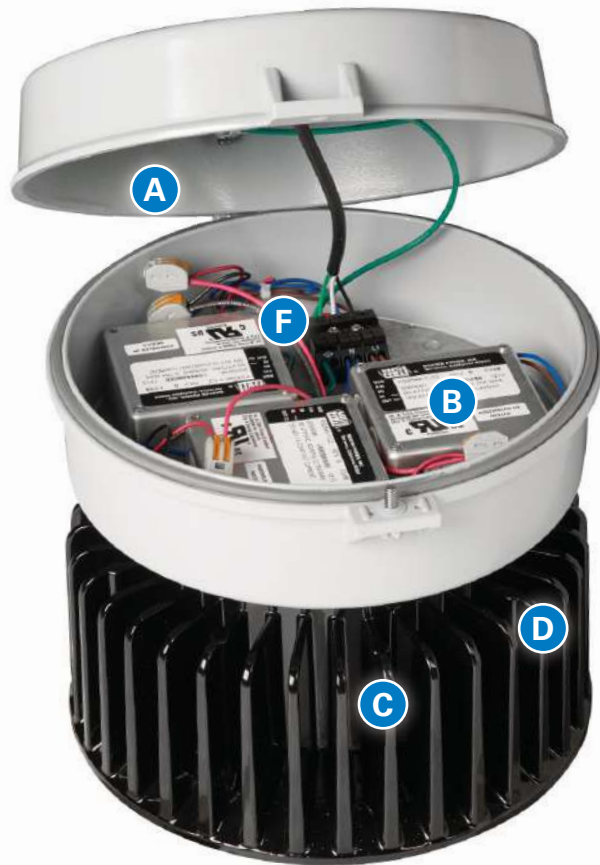
Lighting was needed for catwalks, stairs and in front of the rail unloading facility so equipment at the ground level was properly illuminated. Quick start, targeted illumination was needed for operators connecting hoses and other equipment under the rail cars.

Results:

A combination of Champ VMV Series LED Luminaires and Vaporgard™ LED Task Lighting were used in the retrofit. The refinery saved almost \$300,000 in energy savings and roughly \$100,000 in lamp replacement and maintenance savings over the life of the fixture.



Design features



- A Installation and replacement made simple** - This contractor-friendly design is ideal for both retrofit and new construction applications. These luminaires are installed in the same manner and use the same mounting modules as existing Champ Series luminaires. The compact modular design of the VMV allows for easy component replacement and future upgrades.
- B High efficiency drivers** - Designed to provide reliable operation in even the harshest environments. Various AC and DC input voltage options are available to suit virtually any drive requirement.
- C Safe, reliable heat transfer** - Die cast aluminum housing provides safe and effective heat transfer from the LED assembly to the outside environment, ensuring low LED junction temperature, reliability and sustained lumen performance. The vertical fin design facilitates air flow and dust shedding. The impact-resistant lens is sealed from the outside environment and provides ingress protection against water and dust.
- D Type 4X rated** - The LED housing is constructed of durable die cast aluminum, providing an efficient thermal path to the heat sink assembly. The impact-resistant lens is sealed from the outside environment and provides ingress protection against water and dust.
- E Custom optics** - Type I, III and V optics designed to maximize light distribution and intensity.
- F Easy wiring and installation** - Available with lever lock connectors and standard three-pole terminal block.



VMV3L-VMV11L



Type V



Type III



Type I

New high bay models available



VMV13L & VMV17L



VMV21L & VMV25L

optimized for 30-60 foot mounting heights

Custom optics:

Three optical options to maximize light distribution and intensity:



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

Champ VMV Series LED Luminaires

Champ VMV 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
VMV3L	3,515	41	85	70W-100W	Up to 67%
VMV5L	5,288	67	78	100W-150W	Up to 64%
VMV7L	7,404	94	78	150W-175W	Up to 55%
VMV9L	9,515	114	83	250W-320W	Up to 69%
VMV11L	10,935	118	93	320W-400W	Up to 74%
VMV13L	13,226	130	102	400W	Up to 71%
VMV17L	18,793	168	112	400W-600W	Up to 75%
VMV21L	22,110	196	113	600W-750W	Up to 76%
VMV25L	26,531	232	114	750W-1000W	Up to 79%

* Tolerance +/- 10%.

Applications:

- For areas with mounting heights of 8-60 feet
- Oil and gas refineries, drilling rigs, 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
- 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
- Classified and hazardous locations

Champ VMV benefits:

- Instant illumination and restrike
- Better visibility with crisp, white light
- Cold temperature operation / no warm-up required
- 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 55°C
- Dark sky compliant (VMV3L-VMV11L models)
- 5 year fixture warranty†

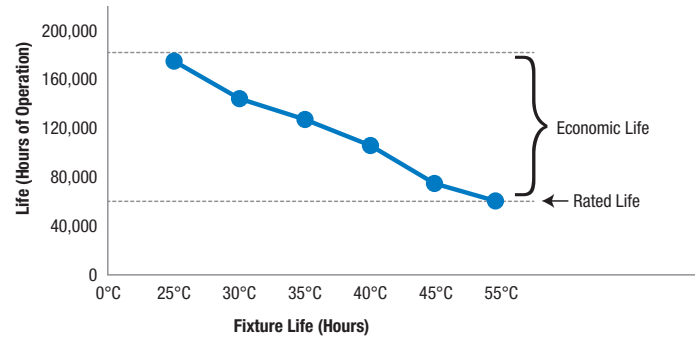
† Refer to page 2 of the D-0413 authorized distributor price book for Crouse-Hinds standard Terms and Conditions.

LED system:

- High intensity discrete power emitters
- Cool white (5000K, 70 CRI) and 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 VMV13L-VMV25L



LED system lifetime rated versus economic life:



Economic life can range anywhere between 60,000 to 170,000 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	172,060	20	39
30°C	143,383	16	33
40°C	107,537	12	25
55°C	60,000	7	13

Fixture life:

- Rated life of 60,000 hours @ 55°C operating ambient and 24/7 continuous operation for 365 days
- Economic life of 170,000 hours @ 25°C ambient
- L70 >400,000 hours @ 55°C

Drivers

Option	VMV3L-VMV11L	VMV13L-VMV25L
/UNV1	120-277 VAC, 50/60 Hz	120-277 VAC, 50/60 Hz; 108-250 VDC, 50/60 Hz
/UNV34	347-480 VAC, 50/60 Hz*	347/480 K1 Transformer Kit (sold separately)
/VDC**	108-250 VDC, 50/60 Hz	—

* No separate external transformer required to step down voltage.

** Separate driver for DC applications.

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

General certifications and compliances:

NEC and CEC

- Class I, Division 2, Groups A, B, C, D; Class I, Zone 2, nA nR; Class II, Groups E, F, G; Class III
- Zone 21 tb
- Simultaneous Presence
- Wet Locations, Type 4X, IP66

UL Standards

- UL844; UL1598 Luminaires; UL1598A Marine; UL8750; UL50; UL50E

CSA Standard

- cUL Listed to CSA Standard CSA C22.2 No. 137

IEC

- IEC 60079-0:2011
- IEC 60079-15:2010
- IEC 60079-31:2008
- IEC 60598-2-1:1979
- IEC 60529:2001
- Ex nA nR IIC T* Gc -40 to +40
- Ex nA nR IIC T* Gc -40 to +55
- Ex tb IIIC T*°C Db -40 to +40
- Ex tb IIIC T*°C Db -40 to +55

VMV3L-VMV11L only

- IECEX UL 13.0052X

VMV13L-VMV25L only

- IECEX UL 14.0031X

ATEX/CE

- EN 60079-0:2012
- EN 60079-15:2010
- EN 60079-31:2009
- EN 60598-2-1:1989
- EN 60929:1991 +A1:2001
-  II 3 G Ex nA nR IIC T* Gc -40 to +40
-  II 3 G Ex nA nR IIC T* Gc -40 to +55
-  II 2 D Ex tb IIIC T*°C Db IP66 -40 to +40
-  II 2 D Ex tb IIIC T*°C Db IP66 -40 to +55

VMV3L-VMV11L only

- DEMKO 13 ATEX 1475031X
- DEMKO 13 ATEX 1305741X

VMV13L-VMV25L only

- DEMKO 14 ATEX 1324722X
- DEMKO 14 ATEX 2274231X

* See temperature code table below.

Temperature codes:

Lamp/lumen output	Driver type	Ambient temperature	Class I, Div. 2	Class II, Div. I	Simultaneous rating Class I, Div. 2, Div. 1	Class I, Zone 2 AEx nA nR; Ex nA nR	Class III, Div. 1 Class II, Div. 1, Groups E, F, G
3L, 5L, 7L, 9L, 11L	/UNV1; /VDC	40°C	T6	T5	T3C	T6	T72°C
3L, 5L, 7L, 9L, 11L	/UNV1; /VDC	55°C	T5	T4A	T3B	T5	T87°C
3L, 5L, 7L, 9L, 11L	/UNV34	40°C	T4	T5	T3C	T4	T70°C
3L, 5L, 7L, 9L, 11L	/UNV34	55°C	T4	T4A	T3A	T4	T85°C
13L, 17L	/UNV1	40°C	T4A	T5	T4A	T6	T66°C
13L, 17L	/UNV1	55°C	T4	T4A	T4	T5	T81°C
21L, 25L	/UNV1	40°C	T4A	T5	T4A	T6	T71°C
21L, 25L	/UNV1	55°C	T4	T4A	T4	T5	T86°C

Electrical ratings:

	VMV3L	VMV5L	VMV7L	VMV9L	VMV11L
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)	41	67	94	114	118
Input amps at 120-277 VAC	0.34-0.17	0.57-0.29	0.80-0.42	0.96-0.49	0.99-0.49
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 lumenst (Type V)	3,515	5,288	7,404	9,515	10,935

	VMV13L	VMV17L	VMV21L	VMV25L
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 lumenst (Type V)	13,226	18,793	22,110	26,531

† Tolerance +/- 10%.

Weights:

Luminaire	lbs.	kg.
VMV3L-VMV11L	21.8	8.07
VMV13L & VMV17L	36.0	16.32
VMV21L & VMV25L	44.0	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 VMV3L-VMV11L models only.

Ordering information

Part number example

VMV17LW2AR1G/UNV1 S890

VMV 17L W 2A R1 G /UNV1 S890

Lamp/function

3L	3,515 Lumen LED
5L	5,288 Lumen LED
7L	7,404 Lumen LED
9L	9,519 Lumen LED
11L	10,935 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)

Mounting style

BLANK	No Cover
J*	1-1/2" Stanchion, 25° Angled
P	1-1/2" Stanchion, Straight
2A	3/4" Pendant
3A	1" Pendant
20A	20mm Pendant
25A	25mm Pendant
2B	3/4" Cone Pendant
3B	1" Cone Pendant

* For VMV3L-VMV11L only.

Color temperature

BLANK	Cool (5000K)
W	Warm (3000K)

Guard

BLANK	No Guard
G	P3001 Wire Guard

Suffixes

S812*	Trunnion Mount Kit with Pin
S890	Quick Clip
S891	Diffused Lens
S896	Teflon Coated Lens
S903	Polycarbonate Lens
TB6	Six-pole Terminal Block

* Order with ceiling mount only.

Voltage

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

* For VMV3L-VMV11L only.

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)
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 VMV3L-VMV11L only.

Accessories (ordered separately)

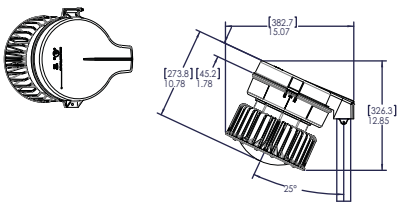
347/480 K1*	Transformer Kit for 347-480 VAC*
D2S20	Photocell, 120V, 50/60 Hz
D2S208 277	Photocell, 208-277V
VMVL S812 K1**	Trunnion Mount Kit with Pin

* For VMV13L-VMV25L only.

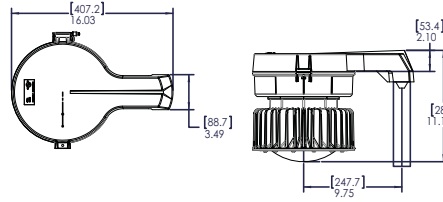
** Order with ceiling mount only.

Mounting options and dimensions:

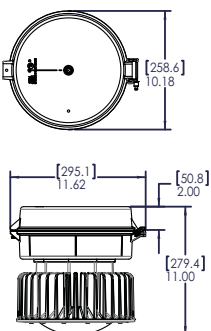
Stanchion - 25° Angled



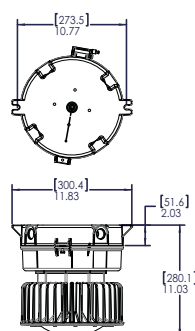
Stanchion - Straight



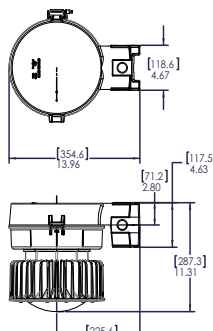
Pendant



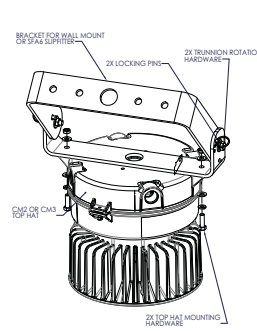
Ceiling



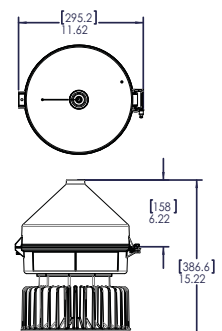
Wall



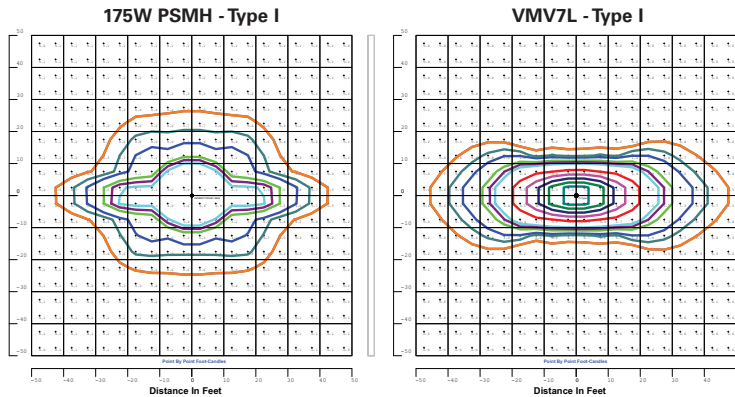
Trunnion



Cone Pendant



Photometric comparison

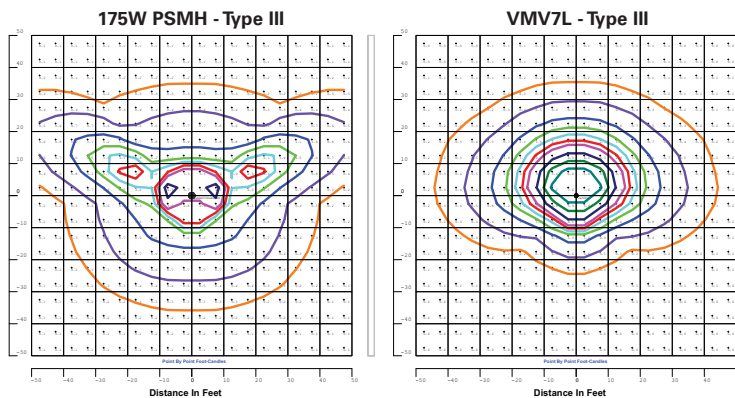


Type I optical pattern



Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.49	3.0	0.0
VMV LED Grid	Illuminance	0.58	7.3	0.0

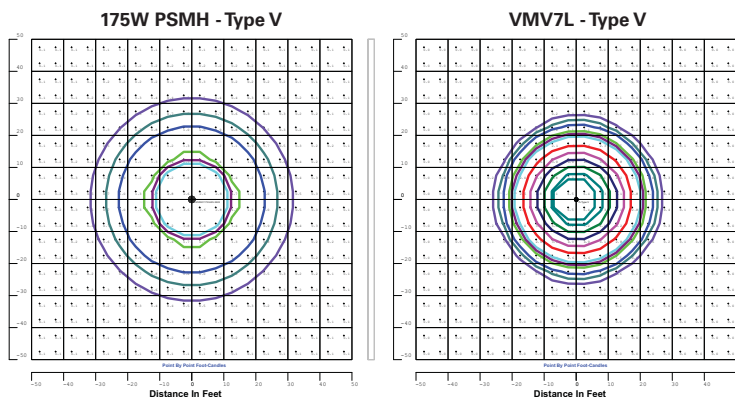


Type III optical pattern



Calculation summary

Label	Calc. type (in Fc)	Avg.	Max.	Min.
VMV 175W MH Grid	Illuminance	0.59	4.5	0.1
VMV LED Grid	Illuminance	0.61	7.6	0.0



Type V optical pattern



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	7.3	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†)	VMV3L	VMV5L	VMV7L	VMV9L	VMV11L
Type I	3,115	4,687	6,562	8,437	9,692
Type III	3,271	4,921	6,890	8,859	10,177
Type V	3,515	5,288	7,404	9,519	10,935

Actual lumens (nominal†)	VMV13L	VMV17L	VMV21L	VMV25L
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%.

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