A Full-Feature Lighting Solution Engineered to Meet the Most Demanding Requirements

Appleton™ Mercmaster™ LED Generation 3 Luminaires
Technology and Application Guide.

EMERSON™

Meeting Your Tough Hazardous and Harsh Industrial Project Demands with a Single Solution.

The Mercmaster™ LED Generation 3, a full-feature lighting solution, offers harsh industrial and hazardous industries a highly configurable luminaire designed to meet the most demanding task and area lighting requirements.

Featuring seven lumen outputs, six mounting types, four light distribution patterns, four replaceable globe choices, three color temperatures, two input voltages, and various retrofit adapter options, this best-in-class LED achieves unprecedented application versatility and comfort. Allowing Engineering, Procurement, and Construction firms (EPCs) to maximize spacing, while minimizing the number of fixtures required in a project, the Mercmaster™ LED Generation 3 delivers improved light distribution while reducing project costs.

Its rugged and corrosion-resistant design is rated for Class I, Division 2 and Class II hazardous locations, marine and wet locations, and is also certified for ATEX/IECEx Zone 2 and 21–22 to provide a globally-rated lighting solution for all your harsh industrial and hazardous illumination needs.

Ask your sales representative to learn more about the newest full-feature Appleton™ lighting solution from Emerson™ — performance you trust.

A Luminaire of Distinction

Developed with superior optics, expanded lumen output range, more color temperature options, and a rugged design, the Appleton™ Mercmaster™ LED Generation 3 offers exceptional features and performance. This industry-leading luminaire delivers outstanding versatility and application flexibility, while reducing energy and maintenance costs, making it the ideal product for hazardous and industrial facilities.

The Mercmaster™ LED Generation 3 Luminaire, specifically designed to meet the needs of our customers.

Superior thermal heat sink design provides cool operation from −40 °C to +65 °C (−40 °F to +149 °F) – wide enough for any environment

IP66/67, NEMA 4X for marine and wet locations

6KV standard surge protection – protects your investment and keeps you up and running

Replaceable globes and LED drivers extend luminaire life even beyond 100,000 hours

Heavy guard provides extra protection

Secondary optics for Type I, Type III, Type V and Type V Wide light distribution

Up to 135 lumens per watt for maximum energy savings

Optional diffused polycarbonate globe for increased glare control

IMLGL3/MLGL3 - IMLGL7/MLGL7
3,500 to 7,500 Lumens
(70-175 W HID)
2m - 6m (6ft - 20ft) Mounting Heights

IMLGH9/MLGH9 - IMLGH6/MLGH6
9,500 to 17,500 Lumens
(250-600 W HID)
4.5m - 10.75m (15ft - 35ft) Mounting Heights

Rugged Reliability

Driver housing design incorporates separate sections for the terminal block and driver. Silicone rubber gaskets seal out moisture, dirt and dust, staying flexible and withstanding high temperatures. The hinge and bolt construction design assures 360° compression at all points on the driver housing gasket for positive sealing. Gray epoxy powder coat finish, electrostatically applied, ensures complete protection.

Global Certifications

With global certifications for ATEX/IECEx Zone 2 and 21/22, NEC/CEC Class I, Division 2, Class II Division I and 2, and Marine and wet locations, no other solution delivers this level of illumination and comfort for harsh industrial and hazardous global environments.

Extremely Versatile

Four globe options and multiple light distribution patterns provide application adaptability, while helping to diffuse glare, reduce hot spots, and soften illumination. Seven lumen output levels, ranging from 3,500 to 17,500 Lumens (HID Equivalences of 70W – 600W) and color temperature options of warm 3000K, neutral 4000K, and cool 5000K CCT, provide the appropriate light for the application.

Customized Optics for Uniform Lighting

The Mercmaster™ LED Generation 3 utilizes secondary optics to provide the choice of Type I, Type III, Type V, or Type V Wide light distribution patterns. Specifically designed with your application needs in mind, these beam patterns provide the required light spread and uniformity.

Design Faster, Easier, and Better with Our Superior Optics

Defining LED equivalencies to HID predecessors can be challenging in any new lighting design or retrofit application. A luminaire's perceived brightness and light distribution are the two attributes that have the greatest effect on equivalency suitability.

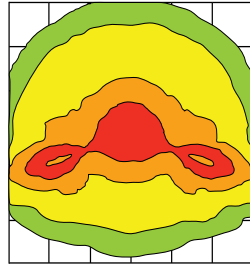## Our Secondary Optics Help Improve Fixture Spacing.

Secondary optics are used to direct light from the source to where it is needed. Unlike HID lamps, LEDs are highly directional, requiring specialized optics to reduce glare and provide even light distribution in a beam shape optimized for specific applications. Well designed optics can help designers achieve ideal spacing and minimize the number of luminaires required. Our new optics set the industry standard for comfortable, evenly distributed lighting, with a selection of patterns.
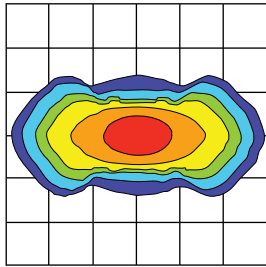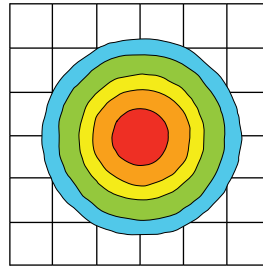
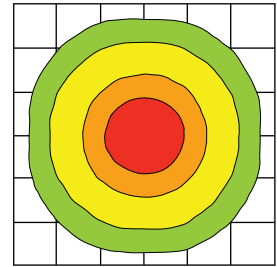| Type I	Type III	Type V	Type V Wide
Narrow Walkway or Aisle Way	Wall Mounted Platform Lighting	Even Distribution For Area and Task Lighting	Type V with More Vertical Illumination

A Word About Perceived Brightness

The human eye has two types of photoreceptors: cones, which are active in brighter light levels, and rods, which take over in darker conditions. Commercial photometry measurements are based on photopic luminous efficiency, which only involves the cones. However, recent research shows that a white light source is perceptually and functionally brighter than its HPS equivalent, especially in a dimly lit application, due to the difference in the spectral power distribution of these light sources. Unfortunately, no universal standard exists today to convert traditional HID measurements to their LED counterparts.

Equivalencies

Emerson™ understands the difficulty in determining equivalent lighting levels with traditional HPS and MH sources and the adjustments that are needed to compensate for S/P ratios. Here are our suggested equivalent lighting range levels for the Mercmaster™ Generation 3 LED.

Nominal Lumens	HID Equivalent	Suggested Mounting Height	Max Spacing at Mounting Height	Model Number
3,500	70-100W	1.8 m - 3.0 m (6 ft - 10 ft)	6.4 m spacing at 2.4 m mounting height (21 ft spacing at 8 ft mounting height)	IMLGL3/MLGL3
5,500	100-150W	2.4 m - 3.7 m (8 ft - 12 ft)	8.5 m spacing at 3.0 m mounting height (28 ft spacing at 10 ft mounting height)	IMLGL5/MLGL5
7,500	175-250W	3.0 m - 4.6 m (10 ft - 15 ft)	10.4 m spacing at 3.6 m mounting height (34 ft spacing at 12 ft mounting height)	IMLGL7/MLGL7
9,500	250-350W	4.6 m - 6.1 m (15 ft - 20 ft)	14.9 m spacing at 5.5 m mounting height (49 ft spacing at 18 ft mounting height)	IMLGH9/MLGH9
11,500	350-400W	6.1 m - 7.6 m (20 ft - 25 ft)	14.6 m spacing at 6.7 m mounting height (48 ft spacing at 22 ft mounting height)	IMLGH1/MLGH1
14,500	400W	6.1 m - 9.1 m (20 ft - 30 ft)	15.8 m spacing at 7.6 m mounting height (52 ft spacing at 25 ft mounting height)	IMLGH3/MLGH3
17,500	400-600W	7.6 m - 10.7 m (25 ft - 35 ft)	15.8 m spacing at 9.1 m mounting height (52 ft spacing at 30 ft mounting height)	IMLGH6/MLGH6

Note: Spacing created on a 3 m (10') wide calculation grid with a Light Loss Factor of 0.9. Designed to have at least 5.0 foot-candles (54 lux) or greater average while maintaining at least an average/minimum foot-candles less than 3 (32 lux).

Don't Compromise on How and Where You Hang Fixtures

Mounting Hoods and Accessories

The Mercmaster™ Generation 3 LED's variety of mounting hoods and accessories means you can hang your luminaries how and where you need them most. You no longer have to compromise on fixture placement; wall, pendant, ceiling, and stanchion choices are available to make installing lighting around cabling, pipes and process equipment as easy as possible. Plus, with accessories like glass and polycarbonate globes, refractor guards, and safety cables, the Mercmaster™ Generation 3 LED offers specific solutions for all your tough application challenges.

Mounting Hoods

Pendant - KPA	Pendant Cone - KPCH	Ceiling - KPC
Wall - KPWB	25° Stanchion - KPS	90° Stanchion - KPST

Accessories

	Clear Globe (polycarbonate) VPGL-LED		Glass Globe Guard MGU1
	Diffused Globe (polycarbonate) VPGL-DIFF		Refractor Guard KRG2
	Glass Globe — Clear VPGL-GLASS		Safety Cable LEDSC
	Glass Refractor ① — NEMA Type V Light Distribution LPG-R5		Drain Plug LEDDR3
	Offset Adapters for Retrofits ②		Standard Adapters for Retrofits ②

① Glass Refractor certified only for cCSAus.
② Adapters certified only for cCSAus.

Superior Lighting for Pathways and Walkways Creates a Safer and More Comfortable Work Environment.

In the Walkway Application appearing below, spacing is increased 2 m (7 ft) between fixtures by installing the Mercmaster™ Generation 3 LED. The stanchion mounted fixture, installed over a 1 m (3 ft) narrow walkway, creates a more even light distribution; meeting light levels and uniformity requirements, while reducing installation expenses with improved spacing and fixture standardization.

23.3% Better Spacing with LED Mercmaster™ LED Generation 3 with Type I over HID with Type I Refractor

Mercmaster™ LED Generation 3 with Type I

11.3 m (37 m)

22.6 m (74 ft)
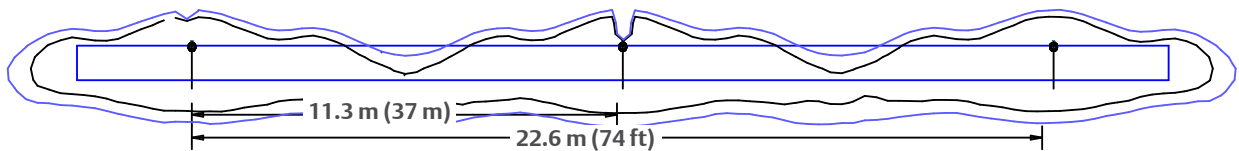
Mercmaster™ III HID with Type I Refractor

9.1 m (30 ft)

18.3 m (60 ft)
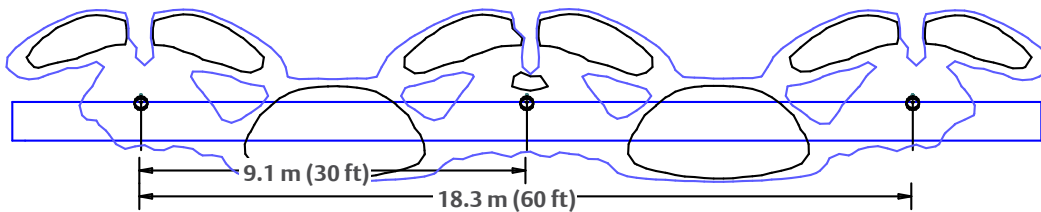
Luminaire	Part Number	Lumens	Spacing
Mercmaster™ LED Generation 3	MLGSL35CD1BU	3,200	11 m (37 ft)
Mercmaster™ III HID	KPSL7010J1MT	5,690	9 m (30 ft)

Mercmaster™ LED Generation 3

11.3 m (37 ft) 22.6 m (74 ft)

9.1 m (30 ft) 18.3 m (60 ft)

Mercmaster™ III HID
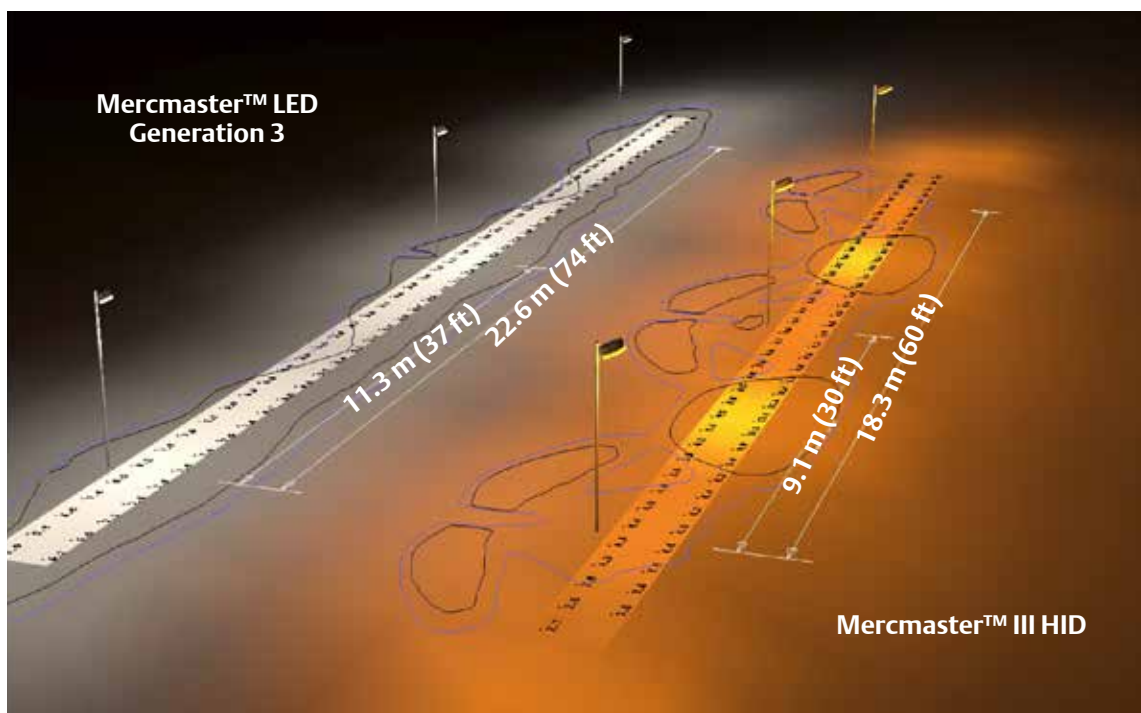
Tunnel: Type I

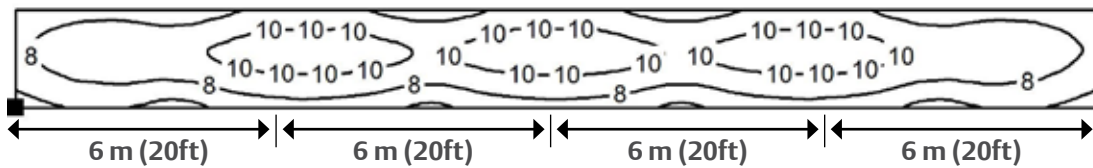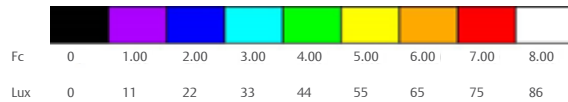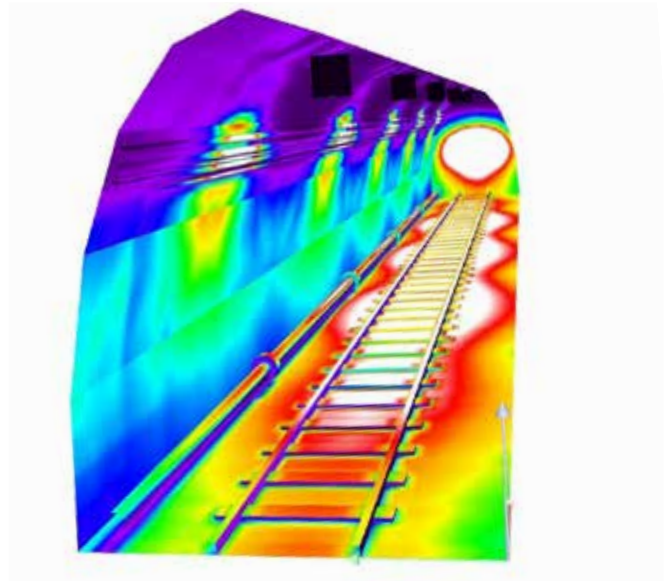Appleton™ Mercmaster™ Generation 3 LED's Type I secondary optic provides the optimal light distribution for tunnels, narrow walkways, and aisles. Long, narrow, uniform, illumination on the ground is shown in the application below, without wasted light in non-critical areas. The LED solution maintains the 5 foot candle (54 lux) minimum with 68% less energy consumption and provides 26% better uniformity over the traditional HID design.

Luminaire: MLGAL32CD1BU

Luminaire Height	Type of Mount	Luminaire Spacing	Targeted Illumination
3.5 m (11.5 ft)	Pendant	6 m (20 ft)	5 Foot Candle (54 Lux) Minimum

Fc	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
Lux	0	11	22	33	44	55	65	75	86

6 m (20ft)   6 m (20ft)   6 m (20ft)   6 m (20ft)

Performance Comparison

| Luminaire	Power Consumption (W)	Lumen Output (LM)	Luminaire Efficacy (LM/W)	NEMA Pattern	Average Illuminance	Maximum Illuminance (EMAX)	Minimum Illuminance (EMIN)	Uniformity (EMAX/EMIN)	Uniformity Improvement	Wattage Reduction
Mercmaster™ LED Generation 3 MLGAL32CD1BU	30	3,200	107	Type I (Aisle)	8.77 Fc (94 Lux)	11 Fc (118 Lux)	5.15 Fc (55 Lux)	0.587 Fc (6.3 Lux)	26%	68%
Mercmaster™ III HID KPAL7075J1GMT	94	6,300	67	Type I (Aisle)	6.44 Fc (69 Lux)	13 Fc (140 Lux)	2.99 Fc (32 Lux)	0.465 Fc (5 Lux)		

Cooling Tower: Type III

The Type III light pattern maximizes forward and side to side light distribution with minimal backlight. Ideal for platforms, this design reduces light pollution while directing light efficiently to the areas where it is needed most; for safe, even illumination.

Luminaire: MLGSL55CD3BU

Luminaire Height	Type of Mount	Luminaire Spacing	Targeted Illumination
2.5 m (8 ft)	25° Stanchion	10 m (33 ft)	5 Foot Candle (54 Lux) Average

48W Mercmaster™ Generation 3 LED provides the desired illumination without unwanted up-light

Fc	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
Lux	0	11	22	33	44	55	65	75	86
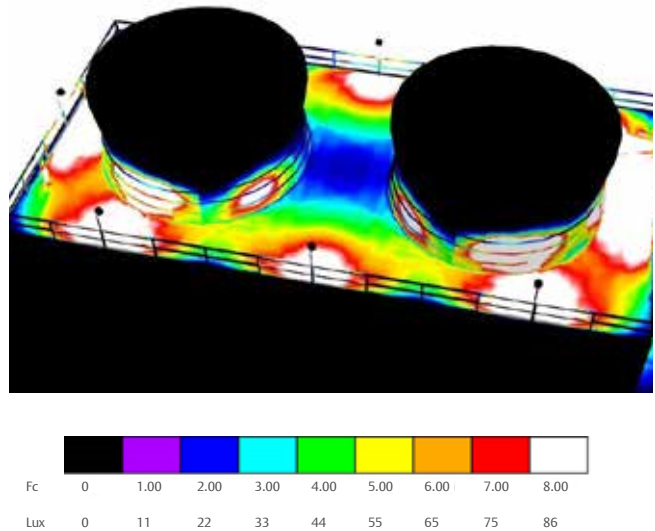
A Word About Internation Dark-Sky Association (IDA) Requirements
Mercmaster™ LED Generation 3 complies with IDA specifications:

Light Spectrum
For luminaires with integrated LED light sources, the light source shall have a listed correlated color temperature (CCT) configuration of 3000K or below (per ANSI C78.377). *Mercmaster™ LED Generation 3 offers a 3000K CCT color temperature choice.*

Shielding
Luminaires shall be fully shielded, emitting no light above 90 degrees (with the exclusion of incidental light reflecting from fixture housing, mounts, and pole). The luminaire's mounting hardware shall not permit mounting in any configuration other than those maintaining full shielding. Non-residential luminaires shall be rated U0.
When used with a Clear Glass or Clear Polycarbonate Globe Mercmaster™ LED Generation 3 luminaires emit no uplight.

Listing and Testing
Luminaires shall be tested and listed to meet UL Standards by an accredited safety testing laboratory. *Mercmaster™ LED Generation 3 luminaires are cCSAus certified to UL and CSA standards.*

Railcar Loading Platform: Type V Wide

Low mounting heights can present unique challenges for directional LED luminaire designs, resulting in dark spots, hot spots, glare and cave effect. Appleton™ Mercmaster™ Generation 3 LED Type V Wide optic design balances the horizontal illumination requirements with vertical lumens, creating a uniform and comfortable lighting experience.

Luminaire: MLGAL32CDWBU

Luminaire Height	Type of Mount	Luminaire Spacing	Targeted Illumination
2.7 m (9 ft)	Pendant	20 Feet	5 Foot Candle (54 Lux) Minimum

Fc	0	1.00	2.00	3.00	4.00	5.00	6.00	7.00	8.00
Lux	0	11	22	33	44	55	65	75	86
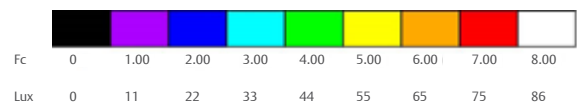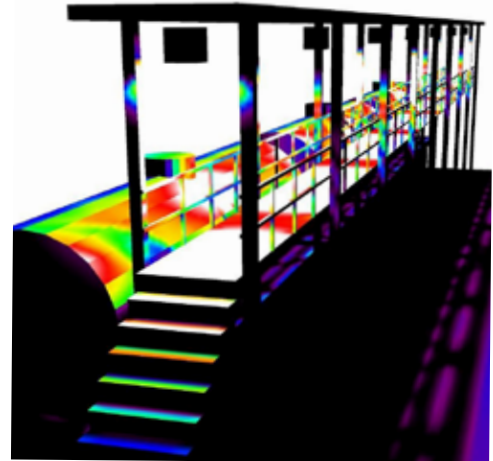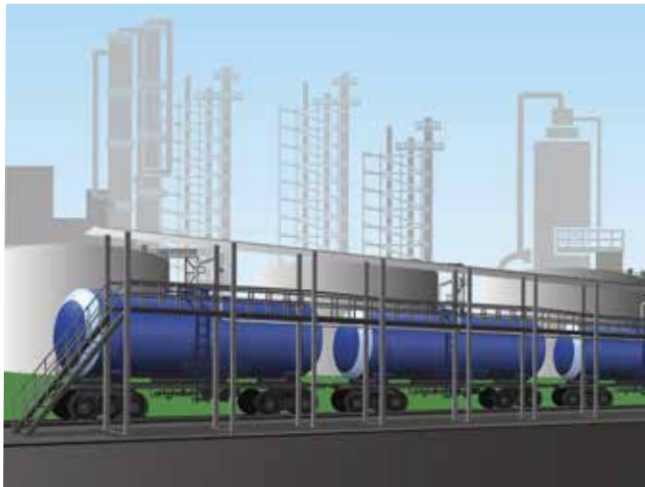
Increased Spacing Leads to Lower Total Cost of Ownership

Using the spacing dimensions provided on page 3, the IMLGL7/MLGL7 can be mounted at 3.7 m (12 ft) with 10.4 m (34 ft) spacing between each luminaire. With this information, we can now design an application with the least number of fixtures in mind, not using the old and outdated standard of 6.0 m (20 ft) spacing. Increasing the spacing and changing to LED can save you 83.7% or $2,310.01 per 91 m (100-yard) run on energy alone.
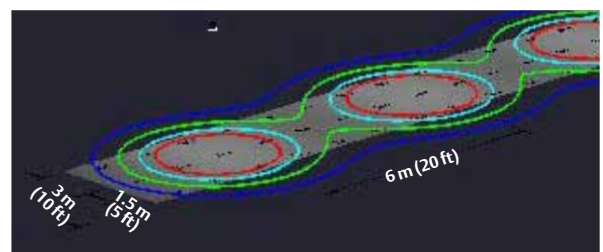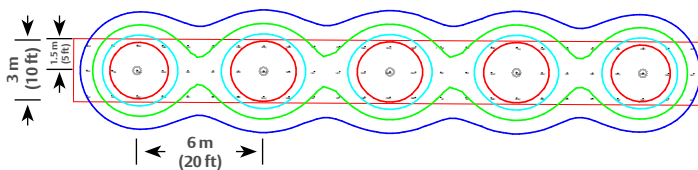
Luminaire	HID Equivalent	Spacing	91 m (100-yard) Run	Wattage	Energy Cost Per 100-Yard *
175W PSMH	175W	6 m (20 ft)	15 Fixtures	210W	$2,759.40
MLGL7 LED	175-250W	10 m (34 ft)	9 Fixtures	57W	449.39

Energy cost calculated at 24 hour per day run time, 365 days a year, $0.10 per Kilowatt cost.

Mercmaster™ LED Generation 3 Luminaire Specifications

		IMLGL3 and MLGL3	IMLGL5 and MLGL5	IMLGL7 and MLGL7
Equivalent to HPS/PSMH		70-100 Watt	100-150 Watt	175-250 Watt
Input Power		30 Watt	46 Watt	57 Watt
Voltage Range	BU	120-277 Vac, 50/60 Hz, 170-300 Vdc		
	BH	347-480 Vac, 50/60 Hz		
Luminous Flux (Efficacy) for 5000K Clear Glass Globe With Wide Optic	Type I	3500 (117)	5300 (115)	8000 (140)
	Type III	3700 (123)	5400 (117)	8300 (146)
	Type V	4000 (133)	6000 (130)	9100 (160)
	Type V Wide	3600 (120)	5400 (117)	8200 (144)
Correlated Color Temperature (CCT)		3000K/4000K/5000K		
Color Rendering Index (CRI)		80/80/70		
Ambient Temperature (NEC/CEC)		−40 °C (−40 °F) to +65 °C (+149 °F)		
T Rating (NEC/CEC) Class I Division 2		T4A @ +65 °C (+149 °F)	T4A @ +65 °C (+149 °F)	T4A @ +65 °C (+149 °F)
T Rating (ATEX/IECEx) Zone 2		T4 @ +65 °C (+149 °F)	T4 @ +65 °C (+149 °F)	T4 @ +65 °C (+149 °F)
Luminaire Weight		9.2 kg (20.3 lb)		
Lifetime		>100,000 hours @ +40 °C (+104 °F) ambient temperature		
		>60,000 hours @ +65 °C (+149 °F) ambient temperature		
Warranty		10 year warranty for Type I, Type III, and Type V Wide Models		

Product Ordering Guide

MLG	A	L3	2	C	P	5	BU	F	1
Series:	Mounting:	Lumen (nominal):	Hub Size:	Color Temperature	Globe Material:	Light Distribution Pattern:	Voltage:	Options:	Options:
MLG - Hazardous Mercmaster™ LED Generation 3	A - Pendant	L3 - 3,500	2 - 3/4" NPT	C - Cool, 5000K	P - Clear Polycarbonate	1 - Type I	BU - 120/277 Vac, 50/60Hz; or 170-300Vdc	F - Fusing	1 - Photocontrol 120V
IMLG - Industrial Mercmaster™ LED Generation 3	C - Ceiling	L5 - 5,500	3 - 1" NPT	N - Neutral, 4000K	D - Diffused Polycarbonate	3 - Type III	BH - 347-480Vac, 50/60Hz	Blank - No Fusing	2 - Photocontrol 208V
	D - Pendant Cone	L7 - 7,500	4 - 1-1/4" NPT stanchion	W - Warm, 3000K	G - Clear Glass	5 - Type V			3 - Photocontrol 240V
	R - 90° Stanchion	H9 - 9,500	5 - 1-1/2" NPT stanchion		J -Glass Prismatic Refractor	W - Type V Wide			4 - Photocontrol 277V
	S - 25° Stanchion	H1 - 11,500	6 - Metric M20						Blank - No Fusing
	U - Mercmaster™ II Adapter, Ceiling or Pendant	H3 - 14,500							
	V - Mercmaster™ II Adapter, Stanchion or Wall	H6 - 17,500							
	W - Wall								
	X - Crouse Hinds™ Adapter, Ceiling or Pendant								
	Y - Crouse Hinds™ Adapter, Stanchion or Wall								

Example: **MLGAL32CP5BUF1**

Mercmaster™ LED Generation 3 Luminaire Specifications

		IMLGH9 and MLGH9	IMLGH1 and MLGH1	IMLGH3 and MLGH3	IMLGH6 and MLGH6
Equivalent to HPS/PSMH		250-350 Watt	350-400 Watt	400 Watt	400-600 Watt
Input Power		75 Watt	93 Watt	115 Watt	145 Watt
Voltage Range	BU	120-277 Vac, 50/60 Hz, 170-300 Vdc			
	BH	347-480 Vac, 50/60 Hz			
Luminous Flux (Efficacy) for 5000K Clear Glass Globe With Wide Optic	Type I	9900 (132)	12000 (129)	14500 (126)	17700 (122)
	Type III	10400 (139)	12600 (135)	15300 (133)	18400 (127)
	Type V	11200 (149)	13600 (146)	16400 (142)	19900 (137)
	Type V Wide	10300 (137)	12500 (134)	15100 (131)	18200 (125)
Correlated Color Temperature (CCT)		3000K/4000K/5000K			
Color Rendering Index (CRI)		80/80/70			
Ambient Temperature (NEC/CEC)		−40 °C (−40 °F) to +65 °C (+149 °F)			
T Rating (NEC/CEC) Class I, Division 2		T4 @ +65 °C (+149 °F)	T3C @ +65 °C (+149 °F)	T3C @ +65 °C (+149 °F)	T3A @ +65 °C (+149 °F)
T Rating (ATEX/IECEx) Zone 2		T4 @ +65 °C (+149 °F)	T3 @ +65 °C (+149 °F)	T3 @ +65 °C (+149 °F)	T3 @ +65 °C (+149 °F)
Luminaire Weight		12.0 kg (26.4 lb)			
Lifetime		>100,000 hours @ +40 °C (+104 °F) ambient temperature			
		>60,000 hours @ +65 °C (+149 °F) ambient temperature			
Warranty		10 year warranty for Type I, Type III, and Type V Wide Models			

NEC/CEC Certifications

Ordinary Location
- cULus Listed
- Type 3R, 4, 4X
- IP66/IP67
- Suitable for Use in Wet Locations
- Marine Outside Type (Salt Water) for USA only
- cCSAus: 164460 Certificate Number: 70129364

Hazardous Location
- Class I, Division 2, Groups A, B, C, D
- Class II, Division 1 and 2, Group E, F, G
- Class III
- Class I, Zone 2 AEx ec IIC
- Zone 21 AEx tb IIIC
- Class I, Zone 2 Ex ec IIC
- Zone 21 Ex tb IIIC
- Type 3R, 4, 4X
- IP66/IP67
- Simultaneous Exposure
- Suitable for Use in Wet Locations
- Marine Outside Type (Salt Water)
- cCSAus: 164460, Certificate Number: 70112879
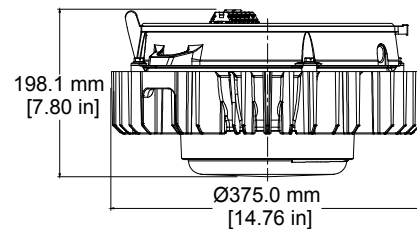
ATEX Certifications

Hazardous Location
- Zone 2 and 21/22
- Ⓔ II 3 G
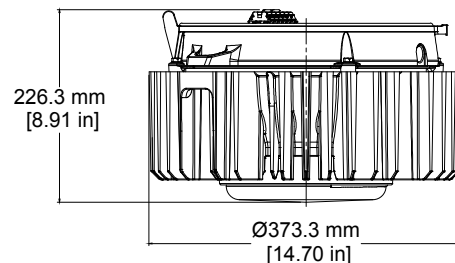- Ⓔ II 2 GD
- IP66
- IK08

IECEx Certifications

Hazardous Location
- Zone 2 and 21/22
- Ex ec IIC
- Ex tb IIIC
- Ex op is IIIC
- IP66
- IK08

Driver Housing

198.1 mm [7.80 in]
Ø375.0 mm [14.76 in]

**IMLGL3/MLGL3 - IMLGL7/MLGL7
3,500 to 7,500 lumens (70-175W HID)**

226.3 mm [8.91 in]
Ø373.3 mm [14.70 in]

**IMLGH9/MLGH9 - IMLGH6/MLGH6
9,500 to 17,500 lumens (250-600W HID)**

Maximize usable light enabling you to comfortably and safely work in harsh or hazardous environments.

Appleton™ is the cornerstone brands of Emerson's Electrical Apparatus and Lighting business; trusted worldwide to make electrical installations safer, more productive and more reliable.

United States (Headquarters)
Appleton Grp LLC
9377 W. Higgins Road
Rosemont, IL 60018
United States
T +1 800 621 1506

Europe
ATX SAS
Espace Industriel Nord
35, rue André Durouchez,
CS 98017
80084 Amiens Cedex 2, France
T +33 3 2254 1390

Canada
EGS Electrical Group Canada Ltd.
99 Union Street
Elmira ON, N3B 3L7
Canada
T +1 888 765 2226

Asia Pacific
EGS Private Ltd.
Block 4008, Ang Mo Kio Ave 10,
#04-16 TechPlace 1,
Singapore 569625
T +65 6556 1100

Latin America
EGS Comercializadora Mexico S
de RL de CV
Calle 10 N°145 Piso 3
Col. San Pedro de los Pinos
Del. Álvaro Obregon
Ciudad de México. 01180
T +52 55 5809 5049

Australia Sales Office
Bayswater, Victoria
T +61 3 9721 0348

China Sales Office
Shanghai
T +86 21 3338 7000

Middle East Sales Office
Dammam, Saudi Arabia
T +966 13 510 3702

Chile Sales Office
Las Condes
T +56 2928 4819

India Sales Office
Chennai
T +91 44 3919 7300

Korea Sales Office
Seoul
T +82 2 3483 1555

Emerson.com

LinkedIn.com/company/emerson

EMERSON™

CONSIDER IT SOLVED.™