

1.0 Reference and Address			
Report Number	103764069DAL-001	Original Issued: 2-Jul-2019	Revised: None
Standard(s)	Luminaires [UL 1598:2008 Ed.3 +R:17Oct2012]		
	Luminaires (R2013) [CSA C22.2#250.0:2008 Ed.3 +G1;G2]		
	Explosive Atmospheres – Part 0: Equipment – General Requirements [UL 60079-0:2013 Ed.6+R:20Oct2017]		
	Explosive Atmospheres – Part 7: Equipment Protection By Increased Safety "E" [UL 60079-7:2017 Ed.5+R:21Apr2017]		
	Electrical Apparatus for Explosive Gas Atmospheres - Part 18: Encapsulation 'm' [UL 60079-18:2015 Ed. 4]		
	Explosive Atmospheres - Part 31: Equipment Dust Ignition Protection by Enclosure "t" [UL 60079-31:2015 Ed.2]		
	Explosive Atmospheres - Part 0: Equipment - General Requirements [CAN/CSA C22.2 No. 60079-0:2015 Ed.3]		
	Explosive Atmospheres - Part 7: Equipment Protection by Increased Safety "e" [CAN/CSA C22.2 No. 60079-7:2016 Ed.2]		
	Electrical Apparatus for Explosive Gas Atmospheres - Part 18: Encapsulation 'm' [CAN/CSA C22.2 No. 60079-18:2016 Ed.2]		
	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t" [CAN/CSA C22.2 No. 60079-31:2015 Ed.2]		
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2.0 Product Description	
Product	<p>LED Luminaire</p> <p>For use in: Class I Zone 1 AEx eb mb IIC T4/T5/T6 Gb Class I Zone 21 AEx tb IIC T75°C/T85°C/T100°C Db Ex eb mb IIC T4/T5/T6 Gb Ex tb IIC T75°C/T85°C/T100°C Db</p> <p>Temperature Codes: T4 for MGZxH6xxxxBU model at +40°C, +55°C and +65°C ambient temperatures T4 for MGZxH3xxxxBU model at +40°C, +55°C and +65°C ambient temperatures T5 for MGZxH1xxxxBU model at +40°C ambient temperature T4 for MGZxH1xxxxBU model at +55°C and +65°C ambient temperatures T5 for MGZxH9xxxxBU model at +40°C and +55°C ambient temperatures T4 for MGZxH9xxxxBU model at +65°C ambient temperature T6 for MGZxL9xxxxBU model at +40°C ambient temperature T5 for MGZxL9xxxxBU model at +55°C ambient temperature T4 for MGZxL9xxxxBU model at +55°C ambient temperature T6 for MGZxL7xxxxBU model at +40°C ambient temperature T5 for MGZxL7xxxxBU model at +55°C and +65°C ambient temperatures T6 for MGZxL5xxxxBU model at +40°C and +55°C ambient temperatures T5 for MGZxL5xxxxBU model at +65°C ambient temperature T6 for MGZxL3xxxxBU model at +40°C and +55°C ambient temperatures T5 for MGZxL3xxxxBU model at +65°C ambient temperature T85°C for MGZxH6xxxxBU model at +40°C ambient temperature T100°C for MGZxH6xxxxBU model at +55°C and +65°C ambient temperatures T85°C for MGZxH3xxxxBU model at +40°C ambient temperature T100°C for MGZxH3xxxxBU model at +55°C and +65°C ambient temperatures T85°C for MGZxH1xxxxBU model at +40°C and +55°C ambient temperatures T100°C for MGZxH1xxxxBU model at +65°C ambient temperature T85°C for MGZxH9xxxxBU model at +40°C and +55°C ambient temperatures T100°C for MGZxH9xxxxBU model at +65°C ambient temperature T75°C for MGZxL9xxxxBU model at +40°C ambient temperature T85°C for MGZxL9xxxxBU model at +55°C and +65°C ambient temperatures T75°C for MGZxL7xxxxBU model at +40°C ambient temperature T85°C for MGZxL7xxxxBU model at +55°C and +65°C ambient temperatures T75°C for MGZxL5xxxxBU model at +40°C and +55°C ambient temperatures T85°C for MGZxL5xxxxBU model at +65°C ambient temperature T75°C for MGZxL3xxxxBU model at +40°C and +55°C ambient temperatures T85°C for MGZxL3xxxxBU model at +65°C ambient temperature</p> <p>Ambient Temperature Range: -40°C to +65°C</p>

2.0 Product Description	
Brand name	Mercmaster
Description	<p>The Mercmaster Generation 3 luminaires are LED luminaires housed in an aluminum enclosure. The MGZxH and MGZxL luminaire models are identical in construction except for the enclosure dimensions. The equipment consists of a main luminaire compartment, which is connected to different array of mounting hoods, the LED array compartment and the LED driver compartment. The main luminaire compartment has the following dimensions for MGZxH and MGZxL models: 11.60 inch x 2.22 inch / 294.64 mm x 56.39 mm. The LED array compartment and LED driver compartment have the following dimensions for MGZxL model: 14.75 inch x 3.62 inch / 374.65 mm x 91.95 mm and the following dimensions for MGZxH model: 14.75 inch x 5.24 inch / 374.65 mm x 133.1 mm. The mounting hoods can either be pendant type, 25° stanchion hood, 90° stanchion hood, a ceiling hood, trunnion or a wall hood. The luminaires are equipped with a clear tempered borosilicate or soda lime glass, as well as the clear or diffused polymeric lens. Each LED luminaire utilizes silicone gaskets. The luminaires have 1 threaded entry located on the mounting hood, filled with a blanking element for connection of entry devices in the main luminaire compartment. All luminaire models have been successfully evaluated/tested for IP64/66 per the requirements of UL 60079-0/CSA C22.2 No. 60079-0 (with reference to IEC 60529). The luminaires contain 1 UL certified LED driver (50W, 100W or 150W), LED array and AC/DC terminal blocks. The LED driver is housed within the LED luminaire compartment located mid-point between the main and LED module compartments. All luminaire models contain 3 LED array strips, with a total of 36 or 48 LED's across all LED array strips.</p>
Models	<p>MGZ followed A, C, R, S, T or W; followed by L3, L5, L7, L9, H9, H1, H3 or H6; followed 2, 3, 4, 5 or 6; followed by C, N or W; followed by P, D or G; followed by W; followed by BU.</p>

2.0 Product Description	
Model Similarity	<p>In case of the Mercmaster models, the model sequence represents the following:</p> <p><u>Series:</u> MGZ - Mercmaster Gen 3 Zone 1</p> <p><u>Mounting:</u> A = Pendant C = Ceiling R = 90 Stanchion T = Trunnion W = Wall</p> <p><u>Lumen Level:</u> L3 = 3500 L5 = 5500 L7 = 7500 L9 = 9500 H9 = 9500 H1 = 11500 H3 = 13500 H6 = 17500</p> <p><u>Hub Size:</u> 2 = 3/4" NPT 3 = 1" NPT 4 = 1-1/4" NPT Stanchion 5 = 1-1/2" NPT Stanchion 6 = Metric M20</p> <p><u>Color Temperature:</u> C = 5000K N = 4000K W = 3000K</p> <p><u>Diffusion Type:</u> P = Clear Polycarbonate Globe D = Diffused Polycarbonate Globe G = Clear Glass Globe</p> <p><u>Beam Spread:</u> W = Wide</p> <p><u>Voltage:</u> BU = 120-277VAC, 50/60Hz, 170-300VDC</p>
Ratings	<p>120 – 277 VAC, 50/60 Hz 170-300 VDC 1.6A (max) Reference Illustration 1 for power ratings.</p>
Other Ratings	<p>IP 64/66 Special Condition of Use: Potential Electrostatic Charging Hazard – Use a damp cloth for maintenance and cleaning purposes on the equipment. Refer to the Installation Manual for more information.</p>

3.0 Product Photographs

Photo 1 - External (front) view of Mercmaster Generation 3 LED luminaire

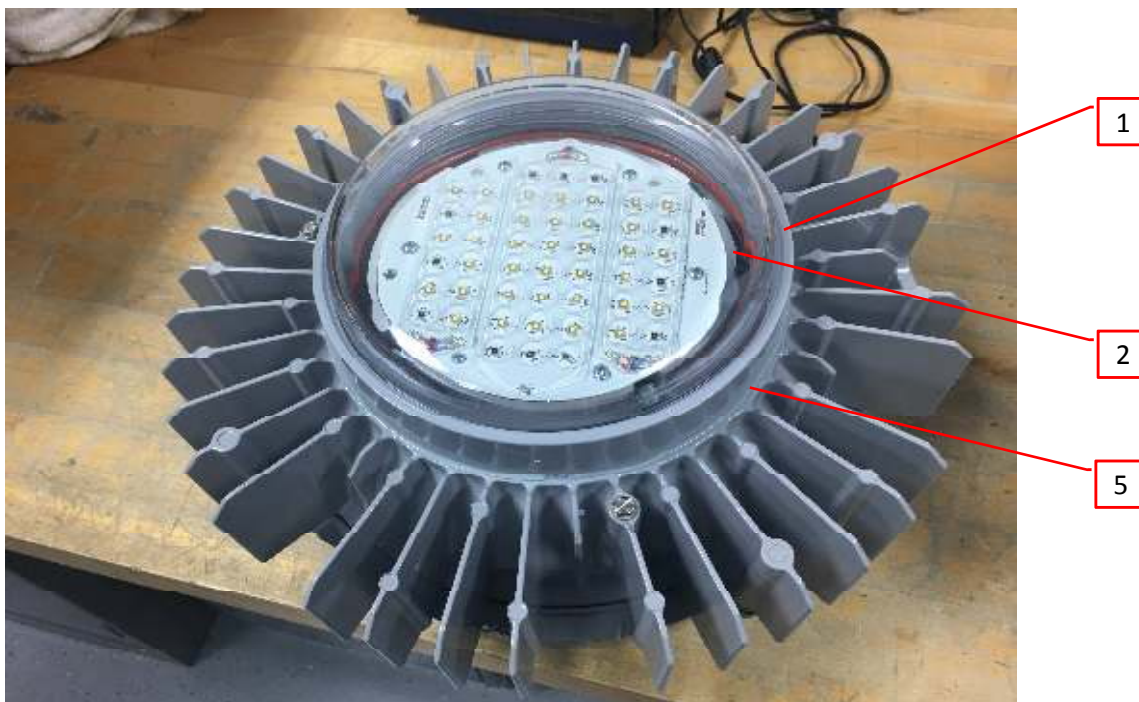
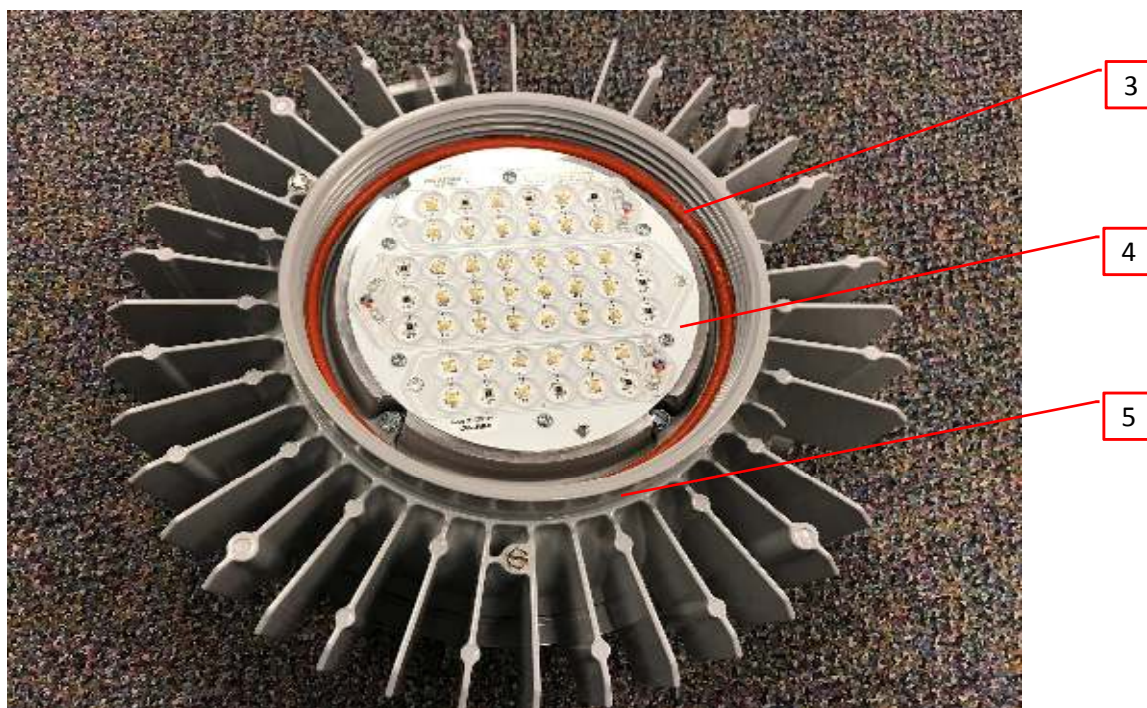


Photo 2 - Internal view of Mercmaster Generation 3 LED luminaire LED compartment



3.0 Product Photographs

Photo 3 - Internal view of Mercmaster Generation 3 LED luminaire terminal compartment

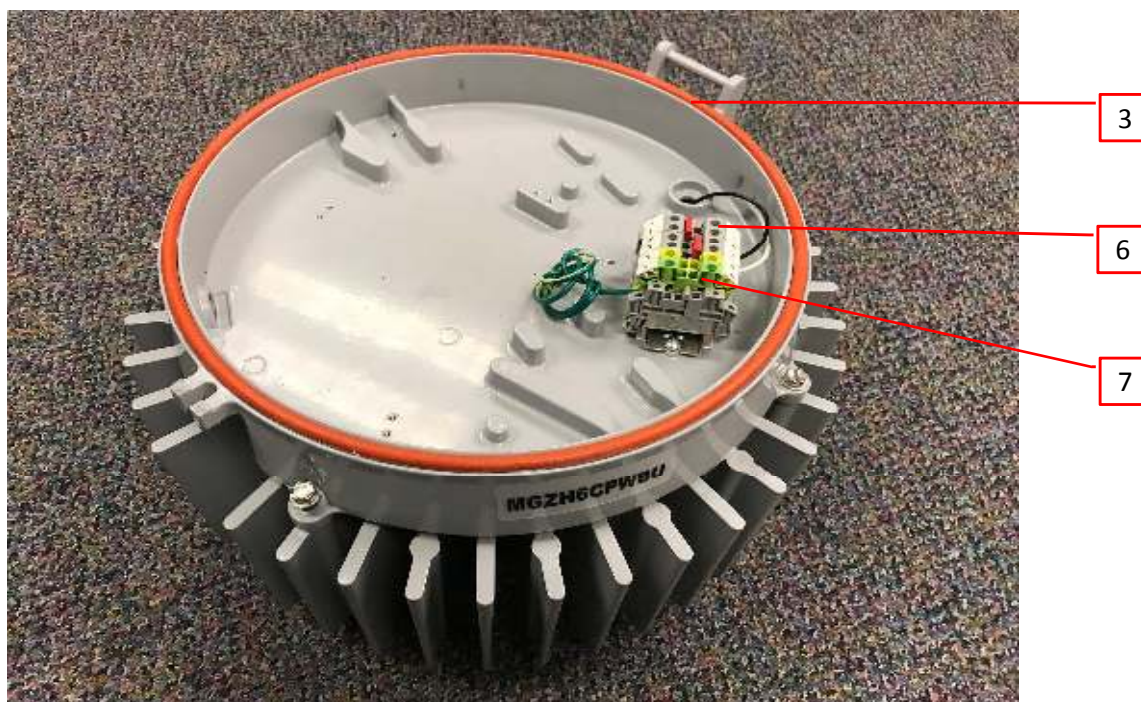


Photo 4 - Internal view of Mercmaster Generation 3 LED luminaire main compartment



4.0 Critical Components						
Photo #	Item no. ¹	Name	Manufacturer/ trademark ²	Type / model ²	Technical data and securement means	Mark(s) of conformity ³
1	1	LED luminaire enclosure	Various	EN AC-43400	Alluminium alloy, 4.83mm thick minimum, overall dimensions for the main luminaire compartment 294.64mm by 56.39mm, LED array driver and LED driver compartments 374.65mm by 91.95mm in size; powder coated after welding, gray in color.	NR
1	2	Clear borosilicate glass lens	Various	607646	Clear borosilicate glass lens with anti-reflective coating on one side; 6.35mm thick, size 195mm by 55mm	NR
1	2a	Clear soda lime glass lens (not shown)	Various	607646	Clear borosilicate glass lens with anti-reflective coating on one side; 6.35mm thick, size 195mm by 55mm	NR
1	2b	Clear polymeric lens (not shown)	Bayor Corporation	Markolon LTG-2623	Clear polymeric lens; 6.35mm thick, size 195mm by 55mm, -60°C to +300°C, f1 rated for resistance to UV, V-2 flammability rating, 125 RTI rating	cULus
1	2c	Diffused polymeric lens (not shown)	Bayor Corporation	Markolon LTG-2623	Diffused polymeric lens; 3.98mm thick, size 195mm by 49mm, -60°C to +300°C, f1 rated for resistance to UV, V-2 flammability rating, 125 RTI rating	cULus
2,3	3	Gasket	SurSeal	DGF4U-6080	Silicone gasket, utilized within LED, main and terminal compartments, red color, COT is -40°C to +100°C, f1 rated for resistance to UV, V-0 flammability rating	NR
2	4	LED array	Appleton Group – ATX	59609 series	Encapsulated LED array, operating temperature range -40°C to +130°C; 44-156VDC, 1.25A (max); Evaluation covered under CSA report 70129364	NR
1,2	5	RTV seal/adhesive	Momentive	RTV5818	Seal adhesive applied between tempered low iron float glass and LED compartment cover; milky white/translucent color, COT is -60°C to +204°C, H-B flammability rating, 105 RTI rating	cULus
3	6	AC Terminal block	Phoenix Contact GmbH & Co. KG	GB UT-4	Terminal block rated 600V nominal voltage, 30A nominal current, V0 flammability rating, operating temperature range -40°C to +80°C	cULus

4.0 Critical Components						
Photo #	Item no. ¹	Name	Manufacturer/ trademark ²	Type / model ²	Technical data and securement means	Mark(s) of conformity ³
3	7	Ground Terminal block	Phoenix Contact GmbH & Co. KG	UT-4 PE	Ground terminal block, V0 flammability rating, operating temperature range -40°C to +80°C	cULus
4	8	DC Terminal block	Phoenix Contact GmbH & Co. KG	GB 5/3-EX	Terminal block rated 300V nominal voltage, 30A nominal current, V0 flammability rating, operating temperature range -40°C to +80°C	cULus
9	9	LED Driver	Appleton Group – ATX	APMZ050C135 UD	Encapsulated LED driver, operating temperature range -40°C to +90°C, AC ratings 120-277 Vac, 1.3A (max) at 120VAC, 50/60Hz, DC ratings 170-300 VDC, 50W (max)	cULus
9	10	LED Driver (not shown)		APMZ100C090 UD	Encapsulated LED driver, operating temperature range -40°C to +90°C, AC ratings 120-277 Vac, 0.6A (max) at 120VAC, 50/60Hz, DC ratings 170-300 VDC, 100W (max)	cULus
9	11	LED Driver (not shown)		APMZ150C135 UD	Encapsulated LED driver, operating temperature range -40°C to +90°C, AC ratings 120-277 Vac, 0.9A (max) at 120VAC, 50/60Hz, DC ratings 170-300 VDC, 150W (max)	cULus
9	12	Blanking plug (not shown)	Appleton Group - ATX	APPPLG-75RA	Material type Aluminum 6061-T6 or 6063-T6, size 16.25mm by 25.9mm, Ingress protection/Type rating IP66/IP67	cULus
NOTES: 1) Not all item numbers are indicated (called out) in the photos, as their location is obvious. 2) "Various" means any type, from any manufacturer that complies with the "Technical data and securement means" and meets the "Mark(s) of conformity" can be used. 3) Indicates specific marks to be verified, which assures the agreed level of surveillance for the component. "NR" - indicates Unlisted and only visual examination is necessary. "See 5.0" indicates Unlisted components or assemblies to be evaluated periodically refer to section 5.0 for details.						

5.0 Critical Unlisted CEC Components

No Unlisted CEC components are used in this report.

6.0 Critical Features

Recognized Component - A component part, which has been previously evaluated by an accredited certification body with restrictions and must be evaluated as part of the basic product considering the restrictions as specified by the Conditions of Acceptability.

Listed Component - A component part, which has been previously Listed or Certified by an accredited Certification Organization with no restrictions and is used in the intended application within its ratings.

Unlisted Component - A part that has not been previously evaluated to the appropriate designated component standard. It may also be a Listed or Recognized component that is being used outside of its evaluated Listing or component recognition.

Critical Features/Components - An essential part, material, subassembly, system, software, or accessory of a product that has a direct bearing on the product's conformance to applicable requirements of the product standard.

Construction Details - For specific construction details, reference should be made to the photographs and descriptions. All dimensions are approximate unless specified as exact or within a tolerance. In addition to the specific construction details described in this Report, the following general requirements also apply.

1. Spacing - In primary circuits, 6 mm minimum spacing are maintained through air and over surfaces of insulating material between current-carrying parts of opposite polarity and 10 mm minimum between such current-carrying parts and dead-metal parts or low voltage isolated circuits.
2. Mechanical Assembly - Components such as switches, fuseholders, connectors, wiring terminals and display lamps are mounted and prevented from shifting or rotating by the use of lockwashers, starwashers, or other mounting format that prevents turning of the component.
3. Corrosion Protection - All ferrous metal parts are protected against corrosion by painting, plating or the equivalent.
4. Accessibility of Live Parts - All uninsulated live parts in primary circuitry are housed within an approved metal enclosure constructed with no openings other than those specifically described in Sections 4 and 5.
5. Grounding - All exposed dead-metal parts and all dead-metal parts within the enclosure that are exposed are connected to the equipment grounding terminal.
6. Polarized Connection - N/A
7. Internal Wiring - Internal wiring is routed away from sharp or moving parts. Internal wiring leads terminating in soldered connections are made mechanically secure prior to soldering. Recognized Component separable (quick disconnect) connectors of the positive detent type, closed loop connectors, or other types specifically described in the text of this report are also acceptable as internal wiring terminals. At points where internal wiring passes through metal walls or partitions, the wiring insulation is protected against abrasion or damage by plastic bushings or grommets. All wiring is minimum 18 AWG, with a minimum rating of 600V, 105°C.
8. Schematics - Refer to Illustration No. 4 for schematics and other controlled documents requiring verification during Field Representative Inspection Audits. Drawing name, number, revision level and date shall be verified.

6.0 Critical Features

9. Markings - The product is marked on a metallic marking label as follows:

Applicant's Name (S16-L2)

Manufacturer Identification (S16-L2)

Model number - Mercmaster: MGZ followed A, C, R, S, T or W; followed by L3, L5, L7, L9, H9, H1, H3 or H6; followed 2, 3, 4, 5 or 6; followed by C, N or W; followed by P, D or G; followed by W; followed by BU. (S16-L2)

Brand name (S16-L2)

Manufacturing date code (S16-L2)

Certification Ratings - Class I Zone 1 AEx eb mb IIC T4/T5/T6 Gb

Class I Zone 21 AEx tb IIC T75°C/T85°C/T100°C Db

Ex eb mb IIC T4/T5/T6 Gb

Ex tb IIC T75°C/T85°C/T100°C Db

Ambient temperature range: -40°C to +65°C (S24-L2)

Electrical Ratings - 120 – 277 VAC, 50/60 Hz (S24-L3)

170-300 VDC

1.6A (max)

Reference Illustration 1 for power ratings.

IP64/66 (S24-L2)

SUITABLE FOR WET LOCATIONS (S24-L2)

CONVIENT AUX EMPLACEMENTS HUMIDES

MAXIMUM AMBIENT OPERATING TEMPERATURE 65°C (S24-L2)

TEMPÉRATURE AMBIANTE MAXIMALE DE FONCTIONNEMENT 65°C

MIN 90°C SUPPLY CONDUCTORS (S24-L3) and (S32-L4)

LES FILS D'ALIMENTATION 90°C MIN

Refer to Illustration 4 (Drawing name "MERCMASTER LED NAMEPLATE TEMPERATURE LABEL ZONE 1") for product markings.

10. Cautionary Markings - The following markings on a metallic marking label are required:

WARNING! DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE MAY BE PRESENT!

AVERTISSEMENT! NE PAS OUVRIR LORSQU'UNE ATMOSPHERE EXPLOSIVE PEUT ETRE PRESENTE!

WARNING! DO NOT OPEN WHEN ENERGIZED!

AVERTISSEMENT! NE PAS OUVRIR LORSQUE EST ALIMENTÉ!

WARNING! POTENTIAL ELECTROSTATIC CHARGING HAZARD-SEE INSTRUCTIONS!

AVERTISSEMENT! DANGER POTENTIEL DE CHARGE ÉLECTROSTATIQUE-VOIR LES INSTRUCTIONS!

11. Installation, Operating and Safety Instructions - Instructions for installation and use of this product are provided by the manufacturer. Refer to Illustration No. 4 for user manual and other controlled documents requiring verification during Field Representative Inspection Audits. Drawing name, number, revision level and date shall be verified.

7.0 Illustrations

Illustration 1 - Luminaire power ratings

Luminaire model, driver power and driver current	Rated voltage	Rated power
Mercmaster, with 50W LED Driver at 780mA driver current	120 – 277 VAC, 50/60 Hz 170-300 VDC	50W
Mercmaster, with 100W LED Driver at 650mA driver current	120 – 277 VAC, 50/60 Hz 170-300 VDC	100W
Mercmaster, with 150W LED Driver at 900mA driver current	120 – 277 VAC, 50/60 Hz 170-300 VDC	150W

Illustration 2 - Mercmaster LED luminaires model nomenclature

Series	Mounting	Lumen Level	Hub Size	Color Temperature	Diffusion	Beam Spread	Voltage
MGZ - Mercmaster Gen 3 Zone 1	A - Pendant	L3 - 3500	2 - 3/4" NPT	C - 5000K	P - Clear Polycarbonate Globe	W - Type V Wide	BU - 120- 277 Vac 50/60 Hz, 170- 300Vdc
	C - Ceiling	L5 - 5500	3 - 1" NPT	N - 4000K	D - Diffused Polycarbonate Globe		
	R - 90 Stanchion	L7 - 7500	4 - 1-1/4" NPT Stanchion	W - 3000K	G - Clear Glass Globe		
	S - 25 Stanchion	L9 - 9500	5 - 1-1/2" NPT Stanchion				
	T - Trunnion	H9 - 9500	6 - Metric M20				
	W - Wall	H1 - 11,500					
		H3 - 13,500					
		H6 - 17,500					

7.0 Illustrations

Illustration 3 - Temperature Codes for Mercmaster LED luminaire models

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
MGZxH6xxxxBU (150W @ 900mA max)	T4	T4	T4
MGZxH3xxxxBU (150W @ 900mA max)	T4	T4	T4
MGZxH1xxxxBU (100W @ 650mA max)	T5	T4	T4
MGZxH9xxxxBU (100W @ 520mA max)	T5	T5	T4

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
MGZxL9xxxxBU (100W @ 520mA max)	T6	T5	T4
MGZxL7xxxxBU (100W @ 400mA max)	T6	T5	T5
MGZxL5xxxxBU (50W @ 780mA max)	T6	T6	T5
MGZxL3xxxxBU (50W @ 780mA max)	T6	T6	T5

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
MGZxH6xxxxBU (150W @ 900mA max)	85°C	100°C	100°C
MGZxH3xxxxBU (150W @ 900mA max)	85°C	100°C	100°C
MGZxH1xxxxBU (100W @ 650mA max)	85°C	85°C	100°C
MGZxH9xxxxBU (100W @ 520mA max)	85°C	85°C	100°C

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
MGZxL9xxxxBU (100W @ 520mA max)	75°C	85°C	85°C
MGZxL7xxxxBU (100W @ 400mA max)	75°C	85°C	85°C
MGZxL5xxxxBU (50W @ 780mA max)	75°C	75°C	85°C
MGZxL3xxxxBU (50W @ 780mA max)	75°C	75°C	85°C

7.0 Illustrations

Illustration 4 - Critical Drawings (Must be available during Factory Inspection)

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
MERCMaster LED GLASS GLOBE	607646	G	8/16/2018
GLOBE – MERCMaster LED	607647	K	8/16/2018
GASKET, O-RING MERCMaster LED GEN 3.0	609222	J	8/10/2018
MMG3 ZONE1, 48 LG LED ARRAY ASSEMBLY (MCPCB+LEDS+WIRES)	609324	1	4/11/2018
MMG3 ZONE1, 48 LG LED ENGINE (ENCAPSULATED)	609325	1	4/11/2018
MMG3 ZONE1, 36 LG LED ARRAY ASSEMBLY (MCPCB+LEDS+RESISTANCE+WIRE)	609326	1	4/12/2018
MMG3 ZONE1, 36 LG LED ENGINE (ENCAPSULATED)	609327	1	4/12/2018
MERCMaster LED GEN 3.0-LITTLE PRIMO ZONE 1	637019	0	9/12/2018
MERCMaster LED GEN 3.0-BIG PRIMO ZONE 1	637020	0	9/12/2018
ZONE 1 RATED LED DRIVER (50W – BU VERSION)	299707556	1	5/22/2018
ZONE 1 RATED LED DRIVER (100W – BU VERSION)	299707557	1	5/21/2018
ZONE 1 RATED LED DRIVER (150W – BU VERSION)	299707558	1	5/21/2018
THREADED PLUG – SQUARE RECESS	503712	C	10/31/2016
MERCMaster LED NAMEPLATE TEMPERATURE LABEL ZONE 1	663641	A	8/27/2018
SILICON ADHESIVE/SEALANT RTV – GENERAL PURPOSE	669014	P	3/21/2019
Zone 1 MMG3 Metric Fasteners	669183000	A	9/4/2018
Zone 1 MMG3 Imperial Fasteners	669184000	A	9/4/2018
Polyester Powder Coating	MS4003	E	6/27/2018
Installation Instructions for Appleton Mercmaster LED Zone 1 Generation 3 Luminaire	650602-000	C	4/1/2019
MERCMaster LED WARNING LABEL	663530	B	9/21/2017

7.0 Illustrations

Illustration 5 - Marking Format and location tables

Size designation	Letter height		Font size (points)	Font typeface, upper case
	mm	(in)		
S16	1.6	(0.062)	6	Not specified
S24	2.4	(0.094)	10	Univers bold Arial bold Helvetica bold Zurich BT Bold
S32	3.2	(0.125)	12	Not specified
S48	4.8	(0.188)	19	Univers bold Arial bold Helvetica bold Zurich BT Bold

Format location designation for marking

Location designation	Description	Label exposed to a dry/damp environment	Label exposed to a wet environment
L1	Visible during relamping, and after installation	Type P	Type P
L2	Visible during installation	Type N	Type P
L3	Visible during installation and inspection of wire connections, located near the supply connections	Type N	Type P
L4	On the smallest unit package or carton	Type T	Type T
L5	On an instruction sheet or tag	Type T	Type T
L6	Visible during component replacement	Type P	Type P

Type P designates a permanent label or nameplate that is intended to remain in the applied position for the lifetime of the luminaire under conditions of normal use. It provides information required for user maintenance over the expected life of the product. It is made of metal, plastic, or other material that complies with Clause 20.1.7.

Type N designates a non-permanent label or nameplate that is intended to remain in place only for the purpose of installation. It shows the certification mark, manufacturer's identification, and product identification. It is made of paper with an adhesive backing.

Type T designates a temporary label, instruction sheet, or tag that is not required after installation. It provides installation instructions, and information not required after installation. It is made of printed matter with or without adhesive and/or attachment, and is intended to be included with, or attached to, the product.

8.0 Test Summary					
Evaluation Period	December 21, 2018 to December 31, 2018		Project No.	G103764069	
Sample Rec. Date	N/A	Condition	Prototype	Sample ID.	N/A
Test Location	Appleton Group LLC Skokie Lab, 7770 Frontage Rd, Skokie, IL, 60077				
Test Procedure	Witnessed Manufacturer Testing (WMT) - Level 2				
Determination of the result includes consideration of measurement uncertainty from the test equipment and methods. The product was tested as indicated below with results in conformance to the relevant test criteria. Due to the previous testing performed under CSA Report 70129364, no testing was performed in accordance to UL 1598:2008 Ed.3, CSA C22.2#250.0:2008 Ed.3, UL 8750:2015 Ed.2 and CSA C22.2#250.13:2014 Ed.2.					
The following tests were performed:					
Test Description	UL 60079-0:2013 Ed.+R:20Oct2017 CAN/CSA C22.2 No. 60079-0:2015 Ed.3 Clause	IEC 60529:2013 Ed. 2.2 Clause	UL 60079-7:2017 Ed.5+R:21Apr2017 7 CAN/CSA C22.2 No. 60079-7:2016 Ed.2 Clause		
Temperature Measurement	26.5.1	--	--		
Thermal Shock Test	26.5.2	--	--		
Test for Resistance to Impact	26.4.2	--	--		
Degree of Protection (IP) by Enclosures	26.4.5	--	--		
Thermal Endurance to Heat	26.8	--	--		
Thermal Endurance to Cold	26.9	--	--		
Tests for Degree of Protection (IP Code) by Enclosures - IP6X	--	13.6	--		
Tests for Degree of Protection (IP Code) by Enclosures - IPX4	--	14.2.4	--		
Tests for Degree of Protection (IP Code) by Enclosures - IPX6	--	14.2.6	--		
Dielectric Strength Test	--	--	6.1		

8.1 Signatures			
<p>A representative sample of the product covered by this report has been evaluated and found to comply with the applicable requirements of the standards indicated in Section 1.0.</p>			
Completed by:	Igor Rakonjac	Reviewed by:	Kevin Wolf / Mohammad N. Zaman
Title:	Senior Compliance Investigator	Title:	Assistant Chief Engineer / Senior Compliance Investigator
Signature:		Signature:	

9.0 Correlation Page For Multiple Listings	
The following products, which are identical to those identified in this report except for model number and Listee name, are authorized to bear the ETL label under provisions of the Intertek Multiple Listing Program.	
BASIC LISTEE	Appleton Group LLC
Address	9377 W Higgins Rd; Rosemont, IL 60018
Country	USA
Product	LED Luminaire

MULTIPLE LISTEE 1	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	
MULTIPLE LISTEE 1 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 2	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	
MULTIPLE LISTEE 2 MODELS	BASIC LISTEE MODELS

MULTIPLE LISTEE 3	None
Address	
Country	
Brand Name	
ASSOCIATED MANUFACTURER	
Address	
Country	
MULTIPLE LISTEE 3 MODELS	BASIC LISTEE MODELS

10.0 General Information

The Applicant and Manufacturer have agreed to produce, test and label ETL Listed products in accordance with the requirements of this Report. The Manufacturer has also agreed to notify Intertek and to request authorization prior to using alternate parts, components or materials.

COMPONENTS

Components used shall be those itemized in this Intertek report covering the product, including any amendments and/or revisions.

LISTING MARK

The ETL Listing mark applied to the products shall either be separable in form, such as labels purchased from Intertek, or on a product nameplate or other media only as specifically authorized by Intertek. Use of the mark is subject to the control of Intertek.

The mark must include the following four items:

- 1) applicable country identifiers "US" and/or "C" or "US", "C" and "EU"
- 2) the word "Listed" or "Classified" or "Recognized Component" (whichever is appropriate)
- 3) a control number issue by Intertek
- 4) a product descriptor that identifies the standards used for certification. Example:

For US standards, the words, "Conforms to" shall appear with the standard number along with the word, "Standard" or "Std." Example: "Conforms to ANSI/UL Std. XX."

For Canadian standards, the words "Certified to CAN/CSA Standard CXX No. XX." shall be used, or abbreviated, "Cert. to CAN/CSA Std. CXX No. XX."

Can be used together when both standards are used.

Note: A facsimile must be submitted to Intertek, Attn: Follow-up Services for approval prior to use.

The facsimile need not have a control number. A control number will be issued **after signed Certification Agreements** have been received by the Follow-up Services office, approval of the facsimile of your proposed Listing Mark, satisfactory completion of the Listing Report, and scheduling of a factory assessment in your facility.

MANUFACTURING AND PRODUCTION TESTS

Manufacturing and Production Tests shall be performed as required in this Report.

FOLLOW-UP SERVICE

Periodic unannounced audits of the manufacturing facility (and any locations authorized to apply the mark) shall be scheduled by Intertek. An audit report shall be issued after each visit. Special attention will be given to the following:

1. Conformance of the manufactured product to the descriptions in this Report.
2. Conformance of the use of the ETL mark with the requirements of this Report and the Certification Agreement.
3. Manufacturing changes.
4. Performance of specified Manufacturing and Production Tests.

In the event that the Intertek representative identifies non-conformance(s) to any provision of this Report, the Applicant shall take one or more of the following actions:

1. Correct the non-conformance.
2. Remove the ETL Mark from non-conforming product.
3. Contact the issuing product safety evaluation center for instructions.

10.1 Evaluation of Unlisted Components

Because Unlisted Components are uncontrolled, and they do not fall under a third party follow up program, Intertek may require these components to be tested and/or evaluated at least once annually, more often for certain components, as part of the independent certification process. The Unlisted Components in Section 5.0 require testing and/or evaluation as indicated.

Note to Intertek Follow Up Inspector: The Component Evaluation Center, CEC, will notify you in writing when these components must be selected and sent to the CEC for re-evaluation

Ship the samples to:

Intertek Testing Services NA Inc.

ETL Component Evaluation Center

45000 Helm Street, Suite 150

Plymouth Twp., MI 48170 USA

Attn: Component Evaluation Center

Sample Disposition: Due to the destructive nature of the testing, all samples will be discarded at the conclusion of testing unless, the manufacturer specifically requests the return of the samples. The request for return must accompany the initial component shipment.

11.0 Manufacturing and Production Tests

The manufacturer agrees to conduct the following Manufacturing and Production Tests as specified:

Required Tests

Dielectric Voltage Withstand Test, Grounding Continuity Test

Where the equipment incorporates certified components, the manufacturer shall ensure that any changes to those components do not affect the compliance of the certified product that is the subject of this certificate.

11.1 Dielectric Voltage Withstand Test

Method

One hundred percent of production of the products covered by this Report shall be subjected to a routine production line dielectric withstand test.

The test shall be conducted on products, which are fully assembled. Prior to applying the test potential, all switches, contactors, relays, etc., should be closed so that all primary circuits are energized by the test potential. If all primary circuits cannot be tested at one time, then separate applications of the test potential shall be made.

The test voltage specified below shall be applied between primary circuits and accessible dead-metal parts. The test voltage may be gradually increased to the specified value but must be maintained at the specified value for one hundred milli seconds or one minute as required.

Test Equipment

The test equipment shall incorporate a transformer with an essentially sinusoidal output, a means to indicate the applied test potential, and an audible and/or visual indicator of dielectric breakdown.

The test equipment shall incorporate a voltmeter in the output circuit to indicate directly the applied test potential if the rated output of the test equipment is less than 500VA.

If the rated output of the test equipment is 500VA or more, the applied test potential may be indicated by either:

- 1 - a voltmeter in the primary circuit;
- 2 - a selector switch marked to indicate the test potential; or
- 3 - a marking in a readily visible location to indicate the test potential for test equipment having a single test potential output.

In cases 2 and 3, the test equipment shall include a lamp or other visual means to indicate that the test potential is present at the test equipment output. All test equipment shall be maintained in current calibration.

Products Requiring Dielectric Voltage Withstand Test:

<u>Product</u>	<u>Test Voltage</u>	<u>Test Time</u>
All products covered by this Report.	1600V	60 s
	or	
	1920V	100 ms

11.2 Grounding Continuity Test

Method

Test to be conducted at least once per quarter on products covered by this report in order to determine that there is continuity between accessible dead-metal parts of the product and the grounding pin or blade of the attachment plug.

If all accessible dead metal is connected, only a single test need be performed. A visual or audible device (ohmmeter, buzzer, etc.) may be used to indicate grounding continuity.

Products Requiring Grounding Continuity Test:

All products covered by this Report.

The following changes are in compliance with the declaration of Section 8.1:

ED 16.3.15 (20-Apr-17) Mandatory