1 **TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 17ATEX3366X** Issue: **7**

4 Equipment: **Mercmaster LED Generation 3 and Mercmaster LED Low Profile Luminaires**

5 Applicant: **Appleton Group LLC**

6 Address: 9377 West Higgins Road
Rosemont
Illinois 60018
USA

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 CSA Group Netherlands B.V. certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design of Category 3 equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018/AC:2020 EN 60079-7:2015/A1:2018 EN 60079-31:2014

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This Type Examination Certificate relates only to the design of the specified equipment, and not to specific items of equipment subsequently manufactured. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:

II 3GD
Ex ec IIC T* Gc
Ex tc IIIC T* °C Dc * Refer to ambient range table
Refer to the Schedule for the Ambient Temperature range

Project Number 80082686

Signed: J A May

Title: Director of Operations

CSA Group Netherlands B.V.
Utrechtseweg 310,
6812 AR, Arnhem,
The Netherlands

13 **DESCRIPTION OF EQUIPMENT**

Ratings:

Mercmaster LED Generation 3 Luminaires with driver:

- APMS050C135UD: Input: 120-277 VAC 50/60 Hz, 125-300 VDC
  Output: 22-56 VDC at 0.45-1.35 A (50 W)
- APMS100C105UD: Input: 120-277 VAC 50/60 Hz, 125-300 VDC,
  Output: 57-150 VDC at 0.45-1.05 A (100 W)
- APMS150C105UD: Input: 120-277 VAC 50/60 Hz, 125-300 VDC,
  Output: 86-214 VDC at 0.45-1.05 A (150 W)

Mercmaster LED Low Profile Luminaires:

- APMS050C135UD: Input: 120-277 VAC 50/60 Hz, 125-300 VDC,
  Output: 22-56 VDC at 0.45-1.35 A (50 W)

Ambient Temperature ranges:

Mercmaster LED Generation 3 Luminaires – Little Primo:

Ambient Temperature	EPL	Model Number/Max Driver Output			
		MLG*L3****BU 550 mA	MLG*L5****BU 860 mA	MLG*L7****BU* 390 mA	MLG*L9****BU 480 mA
-40°C ≤ T_a ≤+40°C	EPL Gc	T4	T4	T4	T4
-40°C ≤ T_a ≤ +55°C		T4	T4	T4	T4
-40°C ≤ T_a ≤ +65°C[1]		T4	T3	T4	T4
-40°C ≤ T_a ≤ +70°C[1]		-	-	T4	-
-40°C ≤ T_a ≤+40°C	EPL Db, Dc	81°C	81°C	81°C	81°C
-40°C ≤ T_a ≤+55°C		88°C	88°C	88°C	88°C
-40°C ≤ T_a ≤ +65°C[1]		94°C	94°C	94°C	94°C
-40°C ≤ T_a ≤ +70°C[1]		-	-	99 °C	-

Mercmaster LED Generation 3 Luminaires – Big Primo:

Ambient Temperature	EPL	Model Number/Max Driver Output			
		MLG*H9****BU* 480 mA	MLG*H1****BU* 595 mA	MLG*H3****BU 720 mA	MLG*H6*****BU 900 mA
-40°C ≤ T_a ≤ +40°C	EPL Gc	T4	T3	T3	T3
-40°C ≤ T_a ≤ +55°C		T3	T3	T3	T3
-40°C ≤ T_a ≤ +65°C[1]		T3	T3	T3	T3
-40°C ≤ T_a ≤ +70°C[1]		T3	T3	-	-
-40°C ≤ T_a ≤ +40°C	EPL Db, Dc	61°C	64°C	66°C	71°C
-40°C ≤ T_a ≤ +55°C		74°C	77°C	79°C	84°C
-40°C ≤ T_a ≤ +65°C[1]		83°C	83°C	86°C	95°C
-40°C ≤ T_a ≤ +70°C[1]		88 °C	88°C	-	-

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Mercmaster LED Generation 3 Luminaires – Big Primo (MLGX):

Ambient Temperature	EPL	Model Number/Max Driver Output	
		MLG*X1****BU 1040 mA	MLG*X5****BU 1300 mA
-40°C ≤ T_a ≤ +40°C	EPL Gc	T3	T3
-40°C ≤ T_a ≤ +55°C		T3	T3
-40°C ≤ T_a ≤ +60°C[1]		T3	-
-40°C ≤ T_a ≤ +40°C	EPL Db, Dc	82°C	92
-40°C ≤ T_a ≤ +55°C		102°C	104°C
-40°C ≤ T_a ≤ +60°C[1]		102°C	-

Mercmaster LED Low Profile Luminaire:

Ambient Temperature	EPL	Model Number/Max Driver Output		
		MLLED*2***BU/720 mA	MLLED*3***BU/1000 mA	MLLED*4***BU/1300 mA
-40°C ≤ Ta ≤ +40°C	EPL Gc	T5	T4	T4
-40°C ≤ Ta ≤ +55°C		T5	T4	T4
-40°C ≤ Ta ≤ +65°C		T4	T4	T4
-40°C ≤ T_a ≤+40°C	EPL Dc	66°C	66°C	66°C
-40°C ≤ T_a ≤ +55°C		79°C	79°C	79°C
-40°C ≤ T_a ≤ +65°C		88°C	88°C	88°C

Mercmaster LED Low Profile Luminaires MLT:

Ambient Temperature	EPL	Model Number/Ma Driver Output		
		MLT*L3****BU 780 mA	MLT*L4****BU 780 mA	MLT*L5****BU 780 mA
-40°C ≤ T_a ≤ +40°C	EPL Gc	T4	T4	T4
-40°C ≤ T_a ≤ +55°C		T4	T4	T4
-40°C ≤ T_a ≤ +65°C		T4	T4	T4
-40°C ≤ T_a ≤+40°C	EPL Db, Dc	82°C	82°C	82°C
-40°C ≤ T_a ≤ +55°C		82°C	82°C	82°C
-40°C ≤ T_a ≤ +65°C		82°C	82°C	82°C

1 - For MLG*L7, MLG*L9, MLG*H9, MLG*H1, MLG*H3, MLG*H6 and MLG*X1 with voltage range of 125 VDC to 169 VDC operating temperature range is -40 °C to +55 °C.

Mercmaster LED Generation 3 Luminaires (MLG, MLGX) and Mercmaster LED Low Profile Luminaires (MLLED, MLT) are intended to be used in Zone 2, 21 & 22 classified hazardous locations. The LED Luminaires have metallic enclosures with joints containing gaskets and are suitable for indoor & outdoor use, down light, pole mounted & stanchion applications and are designed to operate within voltages 120-277 VAC, 50/60 Hz, 125-300 VDC. They are offered with below lumen levels:

SCHEDULE

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Mercmaster LED Generation 3 Luminaires (MLG)	
Nominal Lumens	Model Number
3500	MLGL3
5500	MLGL5
7500	MLGL7
9500	MLGL9
9500	MLGH9
11,500	MLGH1
13,500	MLGH3
16,000	MLGH6
20000	MLGX1
25000	MLGX5

Mercmaster LED Low Profile Luminaires (MLLED, MLT)	
Nominal Lumens	Model Number
3000	MLLED2
4000	MLLED3
5000	MLLED4
3500	MLTL3
4500	MLTL4
5500	MLTL5

Project Model Numbers

Generation 3, Little Primo, Big Primo – MLG:

Catalogue number MLG may be followed by A, C, R, S, T or W, followed by L3, L5, L7, L9, H9, H1, H3, H6, X1 or X5, may be followed by 2, 3, 4, 5 or 6 followed by C, M, N, R or W, may be followed by D, G or P, may be followed by 1, 3, 5 or W, followed by BU, optionally may be followed by A.

Mercmaster LED Low Profile Luminaires – MLLED:

Cat. No. MLLED, may be followed by A, C, R, S, T or W, followed by 2, 3, or 4, may be followed by 2, 3, 4, 5 or 6, followed by C, N or W, may be followed by P5, D5 or G5, followed by BU.

Mercmaster LED LT Luminaires – MLT:

Cat. No. MLT, may be followed by A, C, R, S, T or W, followed by L3, L4 or L5, may be followed by 2, 3, 4, 5 or 6, followed by C, M, N, R or W, followed by D, G or P, followed by 1, 3, 4 or W, followed by BU.

Variation 1 - This variation introduced the following changes:

i. The introduction of an additional manufacturing location: Emerson, Emerson Street No. 4, Parc Industrial Tetarom 2, Cluj Napoca, 400641, Romania, was recognized.
ii. Assessment of minor drawing modifications, the correction of notes, which are included for clarification/correction only.

Variation 2 - This variation introduced the following changes:

i. The introduction of an additional DC Input rating (125-169 VDC)
ii. Minor modifications in nomenclature of the product.

Variation 3 - This variation introduced the following changes:

i. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, the previously listed standard is replaced as follows: EN 60079-0:2012/A11:2013 is replaced by EN IEC 60079-0:2018
ii. Add an alternate construction for the Little Primo and Big Primo LED Luminaires to include a modified Driver Housing part and additional terminal block.
iii. Add a new high lumen version of the Big Primo LED Luminaire by adding a second driver to the construction.
iv. Add an external metallic visor as an optional accessory.
v. Add an alternate supplier of LED chip components (Nichia) for the 36 and 51 LED arrays.
vi. Add 3500 K CCT and 4500 K CCT LED components.
vii. Add high ambient temperature variants based on extrapolation
viii. Add a new high lumen version of the Mercmaster LED Low Profile luminaire (series MLT) by installing the 36 LED array already in use in the Little Primo.
ix. Recognition of minor drawing amendments, none of which affect compliance with the standards.
x. The description was amended to reflect the above changes.

Variation 4 - This variation introduced the following changes:

i. The introduction of an additional manufacturing location in Saudi Arabia.
ii. Recognition of minor drawing amendments.
iii. Following appropriate assessment to demonstrate compliance the listed standards EN IEC 60079-0:2018 and EN 60079-7:2015 were updated to EN IEC 60079-0:2018/AC:2020 and EN 60079-7:2015/A1:2018 respectively with the certification coding being unchanged.

Variation 5 - This variation introduced the following change:

i. Add two additional non-metallic materials for the clear and diffused lenses/globes used for the equipment. The two polycarbonate materials are Makrolon 2407+f1 and Makrolon 2607+f1 manufactured by Covestro.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	15 February 2018	R70138055A	The release of the prime certificate.
1	30 August 2018	N/A	Certificate re-issued to correct a typographical error in the Ambient Temperature range tables.
2	22 October 2018	R70197567A	The introduction of Variation 1.
3	08 February 2019	R70203598A	The introduction of Variation 2.

Issue	Date	Report number	Comment
4	31 October 2019	0364	Transfer of certificate Sira 17ATEX3366X from Sira Certification Service to CSA Group Netherlands B.V.
5	03 April 2020	R80022726A	The introduction of Variation 3.
6	24 September 2020	R80041802A	The introduction of Variation 4.
7	05 August 2021	R80082686A	The introduction of Variation 5.

15 SPECIFIC CONDITIONS OF USE

15.1 "Mercmaster LED Series Luminaires with clear and diffused polycarbonate globes may generate ignition capable levels of electrostatic charge. When installing the equipment in a location where external conditions are conducive to the build-up of electrostatic charge on the plastic surface, the equipment shall only be cleaned with a damp cloth and the instructions in the manual followed."

16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed reports listed in Section 14.2.

17 CONDITIONS OF MANUFACTURE

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Certificates.

17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.

17.3 The products covered by this certificate incorporate previously certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform CSA of any modifications of the devices that may impinge upon the explosion safety design of their products.

17.4 In accordance with IEC 60079-7:2017 clause 7.1, each manufactured sample of the equipment shall be subjected to an electric strength test using a test voltage of 2U+1000V rms for 60 seconds between input and ground wire. Alternatively, a voltage of 20% higher may be applied for 1s. There shall be no evidence of flashover or breakdown and the maximum current flowing shall not exceed 5 mA.

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