



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx ITS 18.0031

Issue No: 0

Certificate history:

[Issue No. 0 \(2018-09-24\)](#)

Status: **Current**

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Date of Issue: **2018-09-24**

Applicant: **Appleton Group LLC**
9377 W Higgins Rd; Rosemont, IL 60018
United States of America

Equipment: **Areamaster LED Luminaire, models: Generation 2 (Gen 2) and High Lumen (HL) and
Baymaster LED Luminaire, models: Baymaster LED and Baymaster High Lumen (HL)**

Optional accessory:

Type of Protection: **Ex eb, mb, op is, tb**

Marking:

Ex eb mb op is IIC T4/T5/T6 Gb

Ex tb op is IIIC T85°C/T100°C Db

$-40^{\circ}\text{C} < T_{\text{AMB}} < +65^{\circ}\text{C}$

IP64/66/67

120 – 277 VAC, 50/60 Hz

170-300 VDC

315 W (max), 3A (max)

IECEX ITS 18.0031

Approved for issue on behalf of the IECEx
Certification Body:

Paul Moss

Position:

Certification Officer

Signature:
(for printed version)

Date:

Paul Moss
2018.09.24
16:59:46 +01'00'

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2. This certificate is not transferable and remains the property of the issuing body.
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Certificate issued by:



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Manufacturer: **Appleton Group LLC**
9377 W Higgins Rd; Rosemont, IL 60018
United States of America

Additional Manufacturing location(s):

Emerson

Emerson Street No. 4,
Parc Industrial Tetarom 2,
400641, Cluj-Napoca
Romania

EGS Mexico S. de R.L. de C.V.

Via Monterrey Matamoros No. 598 Parque Industrial
Milenium C.P. 66626 Apodaca, Nuevo Leon
Mexico

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-18 : 2014 Edition:4.0	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
IEC 60079-28 : 2015 Edition:2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2015 Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

[GB/ITS/ExTR18.0033/00](#)

Quality Assessment Report:

[FR/LCI/QAR07.0008/12](#)

[US/UL/QAR17.0020/02](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Areamaster/Baymaster Generation 2 (Gen 2)/LED and Areamaster/Baymaster High Lumen (HL) are LED luminaires housed in an aluminum enclosure. The Areamaster and Baymaster luminaires are identical in construction except for the enclosure powder coating, where the Areamaster luminaires are bronze and Baymaster luminaires are gray in color. The equipment consists of a main luminaire compartment (12.75 inch x 7.83 inch / 324 mm x 199 mm) for Gen 2 and (16 inch x 15.5 inch / 406 mm x 394 mm) for HL. The terminal enclosure size is (6.25 inch x 3 inch / 159 mm x 76 mm). The luminaires are equipped with a clear or diffused tempered low iron float glass lens with an anti-reflective coating on one side. Each LED luminaire can utilize one of two different types of silicone gaskets (Parker Hannifin or SurSeal). The luminaires have 3 threaded entries filled with blanking elements for connection of entry devices in the terminal enclosure. All luminaire models have been successfully evaluated/tested for IP64/66/67 per the requirements of EN 60079-0:2012+A11 (with reference to IEC 60529). The luminaires contain an IECEx certified LED driver (either 100W or 150W), LED array and AC/DC terminal blocks. The LED driver is housed within the main luminaire compartment. Gen 2/LED models utilize 1 LED driver, while the High Lumen (HL) models utilizes 2 LED drivers. Also, the Gen 2/LED model luminaires consist of 3 LED modules, while the HL luminaires consist of 4 LED modules.

All individually approved IECEx components have been certified to the standards noted above, except for the AC/DC terminal blocks, for which the Gap analysis has been completed from IEC 60079-7:2006 to IEC 60079-7:2015 per DS 2014/001. Reference the IEC 60079-7 ExTR for more information.

SPECIFIC CONDITIONS OF USE: NO

Annex:

[Annex doc for IEC Ex C of C 103476732DAL-101.pdf](#)

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General product information:

The Areamaster/Baymaster Generation 2 (Gen 2)/LED and Areamaster/Baymaster High Lumen (HL) are LED luminaires housed in an aluminum enclosure. The Areamaster and Baymaster luminaires are identical in construction except for the enclosure powder coating, where the Areamaster luminaires are bronze and Baymaster luminaires are gray in color. The equipment consists of a main luminaire compartment (12.75 inch x 7.83 inch / 324 mm x 199 mm) for Gen 2 and (16 inch x 15.5 inch / 406 mm x 394 mm) for HL. The terminal enclosure size is (6.25 inch x 3 inch / 159 mm x 76 mm). The luminaires are equipped with a clear or diffused tempered low iron float glass lens with an anti-reflective coating on one side. Each LED luminaire can utilize one of two different types of silicone gaskets (Parker Hannifin or SurSeal). The luminaires have 3 threaded entries filled with blanking elements for connection of entry devices in the terminal enclosure. All luminaire models have been successfully evaluated/tested for IP64/66/67 per the requirements of EN 60079-0:2012+A11 (with reference to IEC 60529). The luminaires contain an IECEx certified LED driver (either 100W or 150W), LED array and AC/DC terminal blocks. The LED driver is housed within the main luminaire compartment. Gen 2/LED models utilize 1 LED driver, while the High Lumen (HL) models utilizes 2 LED drivers. Also, the Gen 2/LED model luminaires consist of 3 LED modules, while the HL luminaires consist of 4 LED modules.

The model nomenclature for the two Areamaster and two Baymaster LED luminaires is shown below:

Series	Lumen Level	Color Temperature	Diffusion Type	Beam Spread	Voltage	Options
AMLZ - Areamaster Gen 2	L6 - 9K	C - 5000K N - 4000K W - 3000K	G - Clear Glass F - Frosted Glass	6 - 7x7 7 - 7x6	BU - 120-277 Vac 50/60 Hz, 170-300Vdc	M - M20 Metric
	L7 - 14K					
	L8 - 18.5K					
AMHZ - Areamaster - High Lumen	L1 - 23K	C - 5000K N - 4000K W - 3000K	G - Clear Glass F - Frosted Glass	6 - 7x7 7 - 7x6	BU - 120-277 Vac 50/60 Hz, 170-300Vdc	M - M20 Metric
	L2 - 28.5K					
	L3 - 36K					

Series	Lumen Level	Color Temperature	Diffusion Type	Beam Spread	None (place holder)	Voltage	Options
BLZ - Baymaster	L6 - 9K	C - 5000K N - 4000K W - 3000K	G - Clear Glass F - Frosted Glass	W - Wide M - Medium	N	BU - 120-277 Vac 50/60 Hz, 170-300Vdc	M - M20 Metric
	L7 - 14K						
	L8 - 18.5K						
BHZ - Baymaster - High Lumen	L1 - 23K	C - 5000K N - 4000K W - 3000K	G - Clear Glass F - Frosted Glass	W - Wide M - Medium	N	BU - 120-277 Vac 50/60 Hz, 170-300Vdc	M - M20 Metric
	L2 - 28.5K						
	L3 - 36K						

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Temperature codes assigned to each model type based on driver current is shown below:

Areamaster Generation 2 model for Gas atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
AMLZL6 – one 100W LED driver (at 450mA max)	T6	T5	T5
AMLZL7 – one 150W LED driver (at 930mA max)	T4	T4	T4
AMLZL8 – one 150W LED driver (at 930mA max)	T4	T4	T4

Areamaster Generation 2 model for Dust atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
AMLZL6 – one 100W LED driver (at 450mA max)	85°C	85°C	85°C
AMLZL7 – one 150W LED driver (at 930mA max)	85°C	100°C	100°C
AMLZL8 – one 150W LED driver (at 930mA max)	85°C	100°C	100°C

Areamaster High Lumen (HL) model for Gas atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
AMHZL1 – two 100W LED drivers (at 600mA max)	T5	T4	T4
AMHZL2 – two 150W LED drivers (at 680mA max)	T4	T4	T4
AMHZL3 – two 150W LED drivers (at 915mA max)	T4	T4	N/A

Areamaster High Lumen (HL) model for Dust atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
AMHZL1 – two 100W LED drivers (at 600mA max)	85°C	100°C	100°C
AMHZL2 – two	85°C	100°C	100°C

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150W LED drivers (at 680mA)			
AMHZL3 – two 150W LED drivers (at 915mA)	100°C	100°C	N/A

Baymaster LED model for Gas atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
BLZL6 – one 100W LED driver (at 450mA max)	T6	T5	T5
BLZL7 – one 150W LED driver (at 930mA max)	T4	T4	T4
BLZL8 – one 150W LED driver (at 930mA max)	T4	T4	T4

Baymaster LED model for Dust atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
BLZL6 – one 100W LED driver (at 450mA max)	85°C	85°C	85°C
BLZL7 – one 150W LED driver (at 930mA max)	85°C	100°C	100°C
BLZL8 – one 150W LED driver (at 930mA max)	85°C	100°C	100°C

Baymaster High Lumen (HL) model for Gas atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
BHZL1 – two 100W LED drivers (at 600mA max)	T5	T4	T4
BHZL2 – two 150W LED drivers (at 680mA max)	T4	T4	T4
BHZL3 – two 150W LED drivers (at 915mA max)	T4	T4	N/A

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Baymaster High Lumen (HL) model for Dust atmospheres:

Model	T-Code at 40°C ambient temperature	T-Code at 55°C ambient temperature	T-Code at 65°C ambient temperature
BHZL1 – two 100W LED drivers (at 600mA max)	85°C	100°C	100°C
BHZL2 – two 150W LED drivers (at 680mA)	85°C	100°C	100°C
BHZL3 – two 150W LED drivers (at 915mA)	100°C	100°C	N/A

Manufacturer's documents

Drawings associated with Issue 0 of this certificate:

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
ZONE 1 RATED LED DRIVER (100W – BU VERSION)	299707557	01	05/21/2018
ZONE 1 RATED LED DRIVER (150W – BU VERSION)	299707558	01	05/21/2018
CLEAR TEMPERED AR COATING GLASS AREAMASTER LED HIGH LUMEN	609203	E	06/28/2018
DIFFUSED TEMPERED AR COATING GLASS AREAMASTER LED HIGH LUMEN	603266	F	06/28/2018
CLEAR TEMPERED AR COATING GLASS AREAMASTER GEN 2	609204	E	06/27/2018
DIFFUSED TEMPERED AR COATING GLASS AREAMASTER GEN 2	615025	D	06/27/2018
AREAMASTER LED GEN 2 ZONE 1	609350	C	07/13/2018
NO MOUNT BAYMASTER LED GEN 2 ZONE 1	609351	C	07/13/2018
AREAMASTER LED HIGH LUMEN ZONE 1	609352	B	06/25/2018
NO MOUNT BAYMASTER LED HIGH LUMEN ZONE 1	609353	B	06/22/2018

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GASKET SILICONE HOLLOW O-RING AREAMASTER LED	615057	C	06/27/2018
GASKET, O-RING DIA 0.26 AREAMASTER LED	615060	D	06/27/2018
SILICONE ADHESIVE/SEALANT RTV – GENERAL PURPOSE	669014	N	06/15/2018
Polyester Powder Coating	MS4002	B	02/25/2016
Polyester Powder Coating	MS4003	E	06/27/2018
THREADED PLUG – SQUARE RECESS	503712	C	10/31/2016
Zone 1 Areamaster Metric Fasteners	610641000	A	06/28/2018
Zone 1 Areamaster Imperial Fasteners	610642000	A	06/28/2018
AREAMASTER LED HIGH LUMEN AND GEN 2 NAMEPLATE LABEL	609347	B	08/06/2018
AREAMASTER LED HIGH LUMEN AND GEN 2 ZONE1 IECEx NAMEPLATE LABEL	609349	B	08/06/2018
Installation Instructions for Appleton Areamaster GEN 2 LED Luminaire – Yoke Mount	650596-000	B	08/06/2018
Installation Instructions for Appleton Areamaster High Lumen LED Luminaire – Yoke Mount	650597-000	B	08/06/2018
Installation Instructions for Appleton Baymaster LED Luminaire – No Mount	650599-000	B	08/06/2018
Installation Instructions for Appleton Baymaster HL LED Luminaire – No Mount	650600-000	B	08/06/2018

Note: An * is included before the title of documents that are new or revised.

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Certified Components (LED Luminaires, models: AREAMASTER/BAYMASTER High Lumen (HL) and AREAMASTER/BAYMASTER Gen 2(LED):

#	Component	Manufacture and Type	Qty	Certificate Number	Standard and Edition	Ratings
1.	LED Driver	Appleton Group – ATX, APMZ100C090UD APMZ150C135UD	1 or 2	IECEX UL 17.0067U	Issue 0, 2018-02-21 IEC 60079-0:2011 IEC 60079-18:2014	Ex mb IIC Gb -40°C to +90°C
2.	Terminal Blocks (AC)	Phoenix Contact GmbH & Co. KG, GB 2,5-EX	2	IECEX SEV 13.0012U	Issue 1, 2014-04-28 IEC 60079-0:2011 IEC 60079-7:2006	Ex eb IIC -60°C to +110°C
3.	Terminal Blocks (DC)	Phoenix Contact GmbH & Co. KG, GB 5/3-EX	4	IECEX PTB 06.0043U	Issue 1, 2014-05-26 IEC 60079-0:2011 IEC 60079-7:2006	Ex eb IIC -60°C to +110°C
4.	LED Array	Appleton Group – ATX, 299707430, 299707539	3 or 4	IECEX UL 17.0008U	Issue 3, 2018-07-24 IEC 60079-0:2017 IEC 60079-18:2004	Ex mb IIC Gb -40°C to +130°C

#	Special Conditions and Verification of Conformance for Each Component
1.	Special Conditions of Safe Use: - The equipment shall be installed in an enclosure that provides a degree of protection not less than IP54 in accordance with IEC 60079-0. - End product shall be marked with the following warning: WARNING – DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT - A conductor used for earthing connection is provided; termination is to be determined in the end use. - The service temperature range is -40°C to +90°C for LED driver models APMZ050C135UD, 50W, APMZ100C090UD, 100W and APMZ150C135UD, 150W. - There are no adverse effects on the surface top of the device when intended faults are applied as compared to temperatures measured under normal conditions. - Determination of the applicability of the dielectric test must be determined in the end use product. Conformance of Each Condition: - Equipment is installed in an enclosure that provides a degree of protection IP54 min. - End product (luminaires) marked with the warning marking: WARNING – DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT - Earthing connection termination of the LED driver to the enclosure exists, which is externally earthed to the surface it is installed to. - Service temperature range of the LED luminaire is -40°C to +65°C. Reference Test Data for more details regarding Temperature Tests. - There are no adverse effects on the surface top of the LED driver under fault operation vs. normal conditions. - Dielectric Strength Test conducted per the requirements of IEC 60079-7. Reference Test Data for more details regarding Dielectric Strength Tests.
2.	Special Conditions of Safe Use: - The terminal blocks of the MUT series are to be installed in enclosures that meet the requirements of the standards IEC/EN 60079-0 and IEC/EN 60079-7 (for gas atmospheres) and IEC/EN 60079-31 (for dust atmospheres). - When installing the terminal blocks, clearances and creepage distances according to the standard IEC 60079-7 must be observed, as well as reduced current ratings when multiple terminals are installed, according to the rating of the enclosure explained in sub-clauses 5.8,

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	6.7 and Annex E. 3. Service temperature range: -60°C ... +110°C. Conformance of Each Condition: - The terminal blocks are mounted within an enclosure that is evaluated per IEC 60079-7 and IEC 60079-31. The enclosure has been successfully tested for IP64/66/67 per IEC 60079-0. - Clearances and creepages are satisfied per the requirements of IEC 60079-7. Reference the applicable checklist for more information. - Service temperature range of the LED luminaire is -40°C to +65°C. Reference Test Data for more details regarding Temperature Tests.
3.	Special Conditions of Safe Use: - The terminal shall be mounted in an enclosure that meets the requirements of an approved type of protection as specified in IEC 60079-0, section 1. - For combustible dust and the enclosure shall satisfy the requirements according to the applicable/relevant standards of IEC 60079-series e.g. IEC 60079-31, type protection "t". - When installing the terminals in an enclosure designed to Increased Safety "e" type of protection as specified in IEC 60079-7, the clearances and creepage distances shown in table 1 shall be duly considered. If accessories are used, the instructions for installation provided by the manufacturer shall be observed. - Installation of electrical components requires a further assessment by an ExCB. Conformance of Each Condition: - The terminal blocks are mounted within an enclosure that is evaluated per IEC 60079-7 and IEC 60079-31. The enclosure has been successfully tested for IP64/66/67 per IEC 60079-0. - See item #1 above. - Clearances and creepages are satisfied per the requirements of IEC 60079-7. Reference the applicable checklist for more information. - Manufacturer is responsible for following the installation of electrical components per IEC 60079-14.
4.	Special Conditions of Safe Use: - Evaluated service temperature range of -40°C to +130°C. - Must be mounted inside a suitable, IECEx certified enclosure with protection method "p", "d", "e", or "t". - Temperature tests will need to be considered for service and surface temperature suitability of the encapsulant in the end application. - When integrating the Encapsulated LED Array, the temperature at the surface of the resin at the hottest point shall not exceed 130°C. - Optical radiation equipment requirements must be evaluated as part of the end use application. Conformance of Each Condition: - Service temperature range of the LED luminaire is -40°C to +65°C. Reference Test Data for more details regarding Temperature Tests. - Component is mounted within an enclosure suitable for protection methods "e" and "t". - Temperature tests are considered for service and surface temperature suitability of the encapsulant in the end application and to ensure the surface of the resin at the hottest point does not exceed 130°C. Reference Test Data for more details regarding Temperature Tests. - See #3 above. - Equipment is evaluated per the requirements of IEC 60079-28: 2015.



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Routine Tests:

1. Routine Dielectric Strength testing of the LED luminaires per IEC 60079-7:2015, Clause 7.1 is applicable. Dielectric strength shall be verified by test at the following test voltage and maintained for at least 1 min without dielectric breakdown occurring:
 - For other electrical equipment and Ex Components, where working voltages exceeding 90 V peak are present: $(1\,000 + 2U)$ V r.m.s. + 5/0 % or 1 500 V r.m.s. +5 0 %, whichever is greater, where U is the working voltage.

The LED luminaire shall be tested as follows:

- Between inputs and ground (frame of the enclosure) – 1600V r.m.s.

Alternatively, a test shall be carried out at 1.2 times the test voltage, but maintained for at least 100ms.

2. 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.

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