FM Approvals
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Member of the FM Global Group

CERTIFICATE OF COMPLIANCE

HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT

This certificate is issued for the following equipment:

I.

RF-a/b. RF-6HA & RF-8HA Series
NI/I/2/ABCD/T6 Ta = +54 ºC; T5 Ta = +65 ºC; T4A Ta = +85 ºC
NI/I/2/IIC/T6 Ta = +54 ºC; T5 Ta = +65 ºC

a = PCB Type: 6HA or 8HA
b = LED Array: 1x4, 1x6 or 3x4

	LED Flasher	*Feature*	*Input*	*Regulated In*	*LEDs*
(1)	8084-0018G,W,Y,R,B, (RF6/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(2)	8084-0018GP,WP,YP,RP,BP, (RF6/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(3)	8084-0020B,G,R,Y,W, (RF6/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(4)	8084-0020BP,GP,RP,YP,WP, (RF6/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(5)	8084-0024B,G,R,Y,W, (RF8/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(6)	8084-0024BP,GP,RP,YP,WP, (RF8/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(7)	8084-0025G,W,Y,R,B, (RF8/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(8)	8084-0025GP,WP,YP,RP,BP, (RF8/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place

	LED Flasher	Feature	Input	Regulated In	LEDs
(9)	8084-0042R, (RF8/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(10)	8084-0055G,W,Y,R,B, (RF8/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(11)	8084-0055GP,WP,YP,RP,BP, (RF8/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(12)	8084-0057B,G,R,Y,W, (RF8/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(13)	8084-0057BP,GP,RP,YP,WP, (RF8/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(14)	8084-0061B,G,R,W,Y, (RF8/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(15)	8084-0061BP,GP,RP,WP,YP, (RF8/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(16)	8084-0063G,W,Y,R,B, (RF6/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(17)	8084-0063GP,WP,YP,RP,BP, (RF6/1X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	4-Place
(18)	8084-0072B,G,R,Y,W, (RF6/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(19)	8084-0072BP,GP,RP,YP,WP, (RF6/3X4)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	12-Place
(20)	8084-0108B,G,R,W,Y,W-CR, (RF6/1X6)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	6-Place
(21)	8084-0108BP,GP,RP,WP,YP, (RF6/1X6)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	6-Place
(22)	8084-0109B,G,R,W,Y, (RF8/1X6)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	6-Place
(23)	8084-0109BP,GP,RP,WP,YP, (RF8/1X6)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	6-Place
(24)	8084-0134B,G,R,W,Y, (RF6/1X8)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	8-Place
(25)	8084-0134BC,GC,RC,WC,YC, (RF6/1X8)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	8-Place
(26)	8084-0134BP,GP,RP,WP,YP, (RF6/1X8)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	8-Place
(27)	8084-0135B,G,R,W,Y, (RF8/1X8)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	8-Place
(28)	8084-0135BC,GC,RC,WC,YC, (RF8/1X8)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	8-Place
(29)	8084-0135BP,GP,RP,WP,YP, (RF8/1X8)	RS-232/RS-485	10-30 VDC	6.4 W (avg.)	8-Place

Special Conditions of Use:

1. *Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application, including a tool removable cover.*
2. *May be installed in FA-249 and FA-250 Series Lanterns with Fresnel Lens.*

II.

GOM Model. Retrofit LED LR Light Engine (1x6x4) Series.
NI/I/2/ABCD/T6 Ta ≤ +49 ºC/T5 Ta ≤ +64 ºC/T4A Ta ≤ +84 ºC; IP56
NI/I/2/IIC/T6 Ta ≤ +49 ºC/T5 Ta ≤ +64 ºC; IP56

GOM-abc.
a = PCB Type: 8HA
b = LED Array: 1x6x4
c = Power: 4 W, 6 W, 8 W, 11 W, 12 W, 14.5 W, 16.8 W or 19.2 W

Special Conditions of Use:
1. *Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application, including a tool removable cover.*
2. *Consideration to the heating condition of the LED arrays is to be taken for determining the Temperature Class of the final assembly enclosure to which the equipment is installed.*

III.

FA-249HAa. FA-249HAa Gimbaled Light Engine Series.
FA-250HAa. FA-250HAa L-864 Light Engine Series.
NI/I/2/ABCD/T*; IP56
NI/I/2/IIC/T*; IP56

a = LED assembly: (see below)
*** = Only available for FA250 series*

	LED Assembly	*Average Power (W)*	*T-Code*	*Tamb Max (°C)*
(1)	1X6X4	18 W (avg.)	T4A	+48.5 °C
			T4	+63.5 °C
(2)	1X6X8**	49.6 W (avg.)	T4A	+48.5 °C
			T4	+63.5 °C
(3)	1X6X12**	81.6 W (avg.)	T4A	+48.5 °C
			T4	+63.5 °C
(4)	1X9X4	18 W (avg.)	T4A	+48.5 °C
			T4	+63.5 °C
(5)	1X9X8**	49.6 W (avg.)	T4A	+48.5 °C
			T4	+63.5 °C
(6)	1X9X12**	81.6 W (avg.)	T4A	+48.5 °C
			T4	+63.5 °C
(7)	1X16X4	42.6 W (avg.)	T4A (T4)	+68 °C
			T5	+49 °C
(8)	1X16X8**	85.2 W (avg.)	T4A (T4)	+60 °C
			T5	+42 °C
(9)	1X16X12**	85.2 W (avg.)	T4A (T4)	+60 °C
			T5	+42 °C
(10)	1X18X4	51.1 W (avg.)	T4A (T4)	+68 °C
			T5	+49 °C

	LED Assembly	Average Power (W)	T-Code	Tamb Max (°C)
(11)	1X18X8**	85.2 W (avg.)	T4A (T4)	+62 °C
			T5	+42 °C
(12)	1X18X12**	85.2 W (avg.)	T4A (T4)	+62 °C
			T5	+42 °C
(13)	1X22X4	51.1 W (avg.)	T4A (T4)	+63 °C
			T5	+43 °C

Special Conditions of Use:

1. *Shall be installed in compliance with the enclosure, mounting, spacing and segregation requirements of the ultimate application, including a tool removable cover.*
2. *Consideration to the heating condition of the LED arrays is to be taken for determining the Temperature Class of the final assembly enclosure to which the equipment is installed.*

Equipment Ratings:

I.

Nonincendive for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC, Hazardous (Classified) Locations

II.

Nonincendive for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC, IP56, Hazardous (Classified) Locations

III.

Nonincendive for use in Class I, Division 2, Groups A, B, C & D, and Class I, Zone 2, Group IIC, IP56, Hazardous (Classified) Locations

FM Approved for:

Pharos Marine Automatic Power Inc.
10810 West Little York Road, Suite 130
Houston, TX 77041-4051
United States

FM Approvals®

Member of the FM Global Group

This certifies that the equipment described has been found to comply with the following Approval Standards and other documents:

Class 3600	2011
Class 3611	2004
Class 3810	2005
ANSI/ISA 61010-1	2004

Original Project ID: 3020528 Approval Granted: April 12, 2005

Subsequent Revision Reports / Date Approval Amended

Report Number	Date	Report Number	Date
061214	February 1, 2007		
3033871	August 11, 2008		
090320	April 9, 2009		
3043687	October 26, 2011		
3043121	December 2, 2011		
120815	October 11, 2012		

FM Approvals LLC

J. E. Marquedant
Group Manager, Electrical

11 October 2012
Date

U.S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Phone: (202) 372-1546
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Email:Erik.S.Anderson@uscg.mil

16500
MAY 8 2008

Mr. Steve Trenchard
Automatic Power, Inc.
213 Hutchenson St.
Houston, TX 77223-0738

Dear Mr. Trenchard:

This is in response to your letter of April 16, 2008 requesting approval of your FA-249 LED LOW WATT lantern for use on Class "C" structures in the 8th Coast Guard District.

You are authorized to identify the white FA-249 LED LOW WATT lantern using the LED 1x4 array operating at an input power of 0.53 watts as being "U. S. Coast Guard Approved" for Class "C" structures when operated under the jurisdiction of the 8th Coast Guard District. This approval is based on test data provided in your report as well as the discussion below.

The white FA-249 LED LOW WATT lantern using the LED 1x4 array, operating at an input power of 0.53 watts with a Quick flash rhythm (0.3 seconds ON) will provide a minimum effective intensity of 1.43 candela, satisfying the requirements of 1 candela for class "C" structures.

Sincerely,

E. S. ANDERSON
Commander, U. S. Coast Guard
Chief, Visual Navigation Branch
By direction

U.S. Department of Homeland Security

United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: CG-5531
Phone: (202) 372-1546
Fax: (202) 372-1931
Email: gregory.b.tlapa@uscg.mil

16500
13 April 2011

Automatic Power, Inc
Mr. Steve Trenchard
213 Hutchenson Street
Houston, TX 77223-0738

Dear Mr. Trenchard:

This is a correction to my letter 16500 of 28 March 2011, which erroneously listed the FA-249 twice in the 33 CFR 67 compliance table. The following table has corrected that error and supersedes the table in my previously cited letter. All other sections of that letter remain the same.

				PATON Candela Requirements		33 CFR 67 Compliance	
Lantern Model	**Lamp**	**Power**	**Lantern Candela**	**Class A**	**Class C**	**Class A**	**Class C**
FA-249 White LED	1x6 Array	4.1 Watt	159cd	125cd		Complies	
FA-250 White LED	1x6 Array	3.1 Watt	167cd	125cd		Complies	
FA-155SC White	LED	.085 Watt	1.4cd		1cd		Complies

Sincerely,

G. B. TLAPA
Commander, U. S. Coast Guard
Chief, Visual Navigation Division

Copy: CG-432
CGD8 (dpw)

U.S. Department of Homeland Security
United States Coast Guard

Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol CG-NAV-1
Phone: (202) 372-1546
Fax: (202) 372-1909
Email: Scott.J.Smith2@uscg.mill

16500
06 July 2012

Mr. Alan Trojanowski
Automatic Power, Inc.
213 Hutchenson St
Houston, TX 77223-0738

Dear Mr. Trojanowski:

This is in response to your letter of April 13, 2012 that requested approval of your FA-249 BCI lantern for use as Private Aids to Navigation (PATON) on Class B and C structures in the 8th Coast Guard District.

We evaluated the white FA-249 BCI lantern using the LED 1x4 array operating at an input power of 2.0 watts. After careful consideration, we determined that it complies with the requirements of 33 CFR Part 67 for use as PATON for Class B and C structures when operated under the jurisdiction of the 8th Coast Guard District. Our determination is based on test data provided in your report as well as the table below:

				PATON Candela Requirements		33 CFR 67 Compliance	
Lantern Model	**Lamp**	**Power**	**Lantern Candela**	**Class B**	**Class C**	**Class B**	**Class C**
FA-249 White LED Pos. 1, Q (0.1s on)	1x4 Array	2.0 Watt	40cd	25cd	1cd	Complies	Complies

Sincerely,

S. J. SMITH
Captain, U. S. Coast Guard
Chief, Visual Aids to Navigation Division

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CGD8 (dpw)