



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 ETL 13.0013X issue No.:0 Certificate history:

Status: **Current**

Date of Issue: **2013-05-31** Page 1 of 3

Applicant: **Focal Technologies Corporation**
77 Frazee Avenue
Dartmouth, NS B3B 1Z4
Canada

Electrical Apparatus: **Electrical Slip Ring**
Optional accessory:

Type of Protection: **Ex d IIB T5 Gb**

Marking: **Ex d IIB T5 Gb**
Tamb -20°C to +55°C
IECEx ETL 13.0013X

Approved for issue on behalf of the IECEx
Certification Body:

Donald Card

Position:

Certification Officer

Signature:
(for printed version)

Date:

May 31, 2013

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

Intertek
3933 US Route 11 South
Cortland NY 13045-2995
United States of America





IECEx Certificate of Conformity

Certificate No.: IECEx ETL 13.0013X

Date of Issue: 2013-05-31

Issue No.: 0

Page 2 of 3

Manufacturer: **Focal Technologies Corporation**
77 Frazee Avenue
Dartmouth, NS B3B 1Z4
Canada

Additional Manufacturing location
(s):

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 electrical 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 Explosive atmospheres - Part 0: General requirements
Edition: 6.0

IEC 60079-1 : 2007-04 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition: 6

*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:
[US/ETL/ExTR13.0012/00](#)

Quality Assessment Report:
[CA/CSA/QAR08.0013/03](#)



IECEx Certificate of Conformity

Certificate No.: IECEx ETL 13.0013X

Date of Issue: 2013-05-31

Issue No.: 0

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Model 176-X and 180-X are electrical slip rings for use in marine, industrial and defense applications. The purpose of the slip rings are to maintain continuous electrical connection between cables fixed to a stationary structure and cables fixed to a rotating structure.
See Annex 1 for additional product information and flamepath details

CONDITIONS OF CERTIFICATION: YES as shown below:

Suitably IECEx Ex d certified cable glands and/or conduit sealing devices shall be used for connection to threaded entries.

No modifications or repairs to the flameproof joints is allowed.

Fasteners that require replacement and not directly sourced from Focal Technologies shall be A4 stainless steel having a minimum property class of 70 in accordance with ISO3506.

AUTHORIZATION TO MARK

This authorizes the application of the Certification Mark(s) shown below to the models described in the Product(s) Covered section when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This authorization also applies to multiple listee model(s) identified on the correlation page of the Listing Report.

This document is the property of Intertek Testing Services and is not transferable. The certification mark(s) may be applied only at the location of the Party Authorized To Apply Mark.

Applicant:	Focal Technologies Inc.	Manufacturer:	Focal Technologies Inc.
Address:	77 Frazee Ave. Dartmouth, Nova Scotia, B3B 1Z4	Address:	77 Frazee Ave. Dartmouth, Nova Scotia, B3B 1Z4
Country:	Canada	Country:	Canada
Contact:	Mrs. Peggy Power	Contact:	Mrs. Peggy Power
Phone:	(902) 468 2263	Phone:	(902) 468 2263
FAX:	(902) 468 2249	FAX:	(902) 468 2249
Email:	ppower@moog.com	Email:	ppower@moog.com
Party Authorized To Apply Mark:	Same as Manufacturer		
Report Issuing Office:	Cortland New York		
Control Number:	<u>4007859</u>	Authorized by:	<u><i>Ellen Buialek</i></u> for Thomas J. Patterson, Certification Manager

ETL CLASSIFIED

**Intertek**


This document supersedes all previous Authorizations to Mark for the noted Report Number.

This Authorization to Mark is for the exclusive use of Intertek's Client and is provided pursuant to the Certification agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Authorization to Mark. Only the Client is authorized to permit copying or distribution of this Authorization to Mark and then only in its entirety. Use of Intertek's Certification mark is restricted to the conditions laid out in the agreement and in this Authorization to Mark. Any further use of the Intertek name for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. Initial Factory Assessments and Follow up Services are for the purpose of assuring appropriate usage of the Certification mark in accordance with the agreement, they are not for the purposes of production quality control and do not relieve the Client of their obligations in this respect.

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

P. Gageil - [Signature]

Standard(s):	Explosive Atmospheres – Part 0: Equipment – General requirements, UL 60079-0, 5th Edition, Issued: 2009/10/21, Rev:2009/12/08
	Explosive Atmospheres – Part 1: Equipment Protected by Flameproof Enclosures "d", UL 60079-1, 6th Edition, April 10, 2009
	Explosive Atmospheres – Part 0: Equipment – General Requirements, CAN/CSA-C22.2 No. 60079-0:11, December 2011
	Explosive Atmospheres – Part 1: Equipment Protected by Flameproof Enclosures "d", CAN/CSA-C22.2 No. 60079-1:11, December 2011
	Explosion-Proof and Dust-Ignition-Proof Electrical Equipment for Use in Hazardous (Classified) Locations, ANSI/UL 1203, Fourth Edition, September 15, 2006, Rev:2009/10/28
	Explosion-Proof Enclosures for Use In Class I Hazardous Locations, CSA C22.2 No. 30-M1986, General Instruction No. 1-2 November 1988 (Reaffirmed 2012)
Product:	Slip Rings
	For Use In: Class I, Div 1, Groups C & D Class I, Zone 1, Group IIB Class I, Zone 1, AEx d IIB
	Ambient Temperature Range: -20°C to +55°C T-Code: T5 (100°C)
Brand Name: N/A	
Models: 176X and 180X	

P. Gungell 

CERTIFICATE

(1) EC-Type Examination

(2) **Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC**

(3) EC-Type Examination Certificate Number: **KEMA 04ATEX2084 X** Issue Number: **3**

(4) Equipment: **Electrical Slip Rings, Models 176-X and 180-X**

(5) Manufacturer: **Focal Technologies Corporation**

(6) Address: **77 Frazee Avenue, Dartmouth, Nova Scotia, Canada B3B 1Z4**

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

(8) DEKRA Certification B.V., notified body number 0344 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the directive.

The examination and test results are recorded in confidential test report number 212676800.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0 : 2009

EN 60079-1 : 2007

EN 60079-11 : 2007

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment according to the Directive 94/9/EC. Further requirements of the directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:



II 2 G Ex d IIB T5 Gb or Ex d ib IIB T5 Gb

This certificate is issued on 15 June 2012 and, as far as applicable, shall be revised before the date of cessation of presumption of conformity of (one of) the standards mentioned above as communicated in the Official Journal of the European Union.

DEKRA Certification B.V.

M. Erdhuizen
Certification Manager

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* Integral publication of this certificate and adjoining reports is allowed. This Certificate may only be reproduced in its entirety and without any change.



All testing, inspection, auditing and certification activities of the former KEMA Quality are an integral part of the DEKRA Certification Group

(13) **SCHEDULE**

(14) **to EC-Type Examination Certificate KEMA 04ATEX2084 X**

Issue No. 3

(15) **Description**

The Electrical Slip Rings, Models 176-X and 180-X are custom built for use in potential explosive atmospheres. The dimension of the Electrical Slip Ring may vary but is restricted to an internal free volume of 2 dm³ for Model 180-X and 25 dm³ for Model 176-X.

Ambient temperature range -20 °C to + 55 °C.

Electrical data

	Model 176-X	Model 180-X	Model 180-X with IS circuits
Maximum rated voltage	5000 Vac	600 Vac nominal 1000 Vac maximum	750 Vac (power) 50 Vac (IS passes)
Maximum rated current per pass	20 A nominal 30 A maximum	7 A	7 A
Maximum rated current total	760 A	100 A	100 A

Installation instructions

The instructions provided with the equipment shall be followed in detail to assure safe operation.

(16) **Test Report**

No. 212676800.

(17) **Specific conditions of use**

- The property class of the special fasteners shall be at least A*-70.
- For information on the dimensions of the flameproof joints the manufacturer shall be contacted.

(18) **Essential Health and Safety Requirements**

Covered by the standards listed at (9).

(19) **Test documentation**

As listed in Test Report No. 212676800.

Certificate of Compliance

Certificate: 1642334 (LR85838-1)

Master Contract: 155432

Project: 1642334

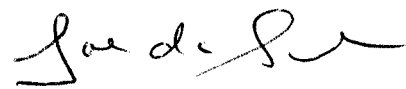
Date Issued: 2005/02/22

Issued to: Focal Technologies Corporation
40 Thornhill Dr, Unit 7
Dartmouth, NS B3B 1S1
Canada
Attention: Mr. Marc Boily

The products listed below are eligible to bear the CSA Mark shown



Issued by: Joe da Silva, C.E.T.



Authorized by: Nick Alfano, Operations
Manager



PRODUCTS

CLASS 9098 01 - MISCELLANEOUS - For Hazardous Locations

Class I, Group C and D:

Housing assembly for Model 180-X electrical slip ring.

APPLICABLE REQUIREMENTS

CSA Std C22.2 No. 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations

MARKINGS



CSA INTERNATIONAL

Certificate: 1642334 (LR85838-1)

Master Contract: 155432

Project: 1642334

Date Issued: 2005/02/22

Manufacturer's name, model designation, hazardous location designation, caution re installation of sealing fittings within 50mm of the enclosure, date code or serial number and the CSA Monogram on a metal nameplate at least 0.020 in thick permanently attached to the enclosure by screws or rivets engaging bottomed holes.



Supplement to Certificate of Compliance

Certificate: 1642334

Master Contract: 155432

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
1642334	2005/02/22	Re-evaluation of Bushing used with Slip Ring, Legacy File LR 85838-1

History

- 14 May 18/99 Update to include Class I, Group C.
- 12 Sept. 15/97 Alternate construction of Model 180-X Certification.
- 10 Mar. 18/97 Alternate construction to cover method used to hold rear flange to the front flange and new #3 flamepath.
- 5 Jan. 30/96 To cover revised construction.

MASTER CONTRACT: 155432

REPORT: 1642334

PROJECT: 1642334

Edition 1: March 8, 1990; Application No LR 85838-1 - Toronto
Issued by Y. Khitrov, P. Eng.

Edition 4: September 15, 1997; Application No LR 85838-12 - Toronto
Issued by J. da Silva, C.E.T.

Report Pages Reissued
Figures Replaced: Figs 1, 2A, 3 thru 7
Figures Added: Fig 2C

Edition 5: May 18, 1999; Application No LR 85838-14 - Toronto
Issued by J. da Silva, C.E.T.

Report Pages Reissued
Figures Replaced: Fig 1
Figures Added: Fig 9

Edition 6: February 22, 2005; Project 1642334 - Toronto
Issued by Joe da Silva, C.E.T.

Report Pages Reissued
Figures Replaced: Fig 6

Contents: Certificate of Compliance - Pages 1 to 2
Supplement to Certificate of Compliance - Page 1
Description and Tests - Pages 1 to 4
Figures - 1 to 9

PRODUCTS

CLASS 9098 01 - MISCELLANEOUS - For Hazardous Locations

Class I, Group C and D:

Housing assembly for Model 180-X electrical slip ring.

The test report shall not be reproduced, except in full, without the approval of CSA International.

APPLICABLE REQUIREMENTS

CSA Std C22.2 No. 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations

MARKINGS

Manufacturer's name, model designation, hazardous location designation, caution re installation of sealing fittings within 50mm of the enclosure, date code or serial number and the CSA Monogram on a metal nameplate at least 0.020 in thick permanently attached to the enclosure by screws or rivets engaging bottomed holes.

Refer to Fig 1.

ALTERATIONS

1. Markings as stated above appear.
2. Conduit entries comply with C22.2 No 0.5-1982

FACTORY TESTS

None.

DESCRIPTION

This report covers the Model 180-X slip ring housing only.

The housing is constructed as shown in Fig 2.

Joints: (Refer to Fig 2A)

- 1, 5: Conduit entries, 1/2 or 3/4 in NPT engaging not less than five full threads.
- 2: Between shaft end piece (Fig 7) and bushing (Fig 6) - metal-to-metal cylindrical, more than 12.5mm long with diametrical clearance of 0.15mm max (Volume less than 2000 cm³).
(Note: Test sample used for Group C Gas had additional 1.2 safety factor on Gap)
- 3: Between sleeve (Fig 3) and mounting flange (Fig 5) - metal-to-metal cylindrical, more than 12.5 mm long with diametrical clearance of 0.10 mm max (volume less than 2000 cm³).
- 4: Between sleeve (Fig 3) and rear flange (Fig 4) - as joint 3 above.
- 6: Between mounting flange (Fig 5) and bushing (Fig 6) - as joint 3 above.

TEST REPORT

Refer to Fig 8.

Application No LR 85838-5:

This application covers a revised construction of the Model 180-X enclosure. This revised construction was tested by DEMCO in Europe with 8 percent ethylene for explosion pressure and with 37 percent hydrogen for flame propagation. The Certificate from DEMCO is 93C.110304 for EExd IIB. It is considered satisfactory for CSA Certification for Class I, Group D (European covers Groups C and D).

Application No LR 85838-14:

Refer to Fig. 9.


Project No. 1642334:

Since this project covers updating fig. 6 to change the tolerance of the bushing outer diameter from 1.315 (+.000 / -.002) to 1.315 (+.000 / -.001) resulting in a smaller flamepath gap for flamepath #6, no tests were deemed necessary.



1. **EC-TYPE EXAMINATION CERTIFICATE**
2. **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**
3. EC-Type Examination Certificate Number: **ITS10ATEX17055X**
4. Equipment or Protective System: **FA-165EX Range**
5. Manufacturer: **Pharos Marine Ltd**
6. Address: **6 Steyning Way, Hounslow, Middlesex, TW4 6DL**
7. This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
8. Intertek Testing and Certification Limited, notified body number 0359 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential Intertek Report 10045816, parts A1 & B1, dated 27 September 2010.
9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN60079-0:2009 and EN60079-1:2007 except in respect of those requirements referred to at item 18 of the Schedule.
10. If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
11. This EC-Type examination certificate relates only to the design and construction of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.
12. The marking of the equipment or protective system shall include the following:-

 II 2 G Ex d IIB T5 T_{amb}-40°C to +55°C Gb*
T_{amb}-20°C to +55°C Gb*

* dependant on model



P Moss
Certification Officer
30 September 2010

Intertek Testing & Certification Limited
Deeside Lane, Chester, CH1 6DD
Tel: + 44 (0)1244 882590 Fax: +44 (0)1244 882599
<http://www.intertek.com>
Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

This certificate may only be reproduced in its entirety and without any change, schedule included and is subject to Intertek Testing and Certification Conditions for Granting Certification.

13. SCHEDULE
14. EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS10ATEX17055X
15. Description of Equipment or Protective System

The FA-165EX is a flameproof enclosure with a glass dome that can contain various light sources as well as other electronic equipment. The models covered by this certificate are as follows:

Model No	Description	Max Internal Power Dissipation
FA-165EX 01	Helideck Perimeter Light	40W
FA-165EX 02	Aviation Obstruction Light	40W
FA-165EX 03	Xenon Light	40W
FA-165EX 04	Helideck Status Light Repeater	40W
FA-165EX 05	Spot Light	40W
FA-165EX 06	Wireless Synchronization Unit	40W
FA-165EX 07	Rectangular Spotlight	40W
FA-165EX 08	Flood Light	40W
FA-165EX 09	Multi-colour Spot Light	40W
FA-165EX 10	Photocell Unit	40W
FA-165EX 11	Transformer Unit	40W
FA-165EX 12	Power Supply Unit	40W
FA-165EX 13	LED Light	40W
FA-165EX 14	Directional Light	40W

The enclosure consists of a cast aluminium base (A360) into which is housed the light/electronic modules. Onto this is fitted a dome assembly which consists of a glass dome cemented into an aluminium ring housing forming a cemented flamepath. A flange flamepath is formed between the dome assembly ring and the enclosure base which is then secured using six M10x1.5 hex socket head fasteners. Cable entry is via two M25x1.5 threaded holes which will be fitted with suitably certified cable glands or blanking elements. Both internal and external earthing points are provided via M6 threaded studs with associated nuts and locking washers.

16. Report Number:
Intertek Report 10045816 parts A1 & B1, dated 27 September 2010.
17. CONDITIONS OF CERTIFICATION:
 - (a). Special Conditions for safe use
 - i. No modifications must be made to the flamepaths of the unit without consultation of the drawings listed below.
 - ii. Temperatures could exceed 70°C at the cable gland or 80°C at the branching point, suitably rated cable must be selected.
 - iii. Potential electrostatic charging hazard – clean glass dome only with a damp cloth.
 - iv. For securing glass dome cover to base use only M10x1.5 hex socket head fasteners with yield stress $\geq 450\text{N/mm}^2$.

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 Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

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13. SCHEDULE

14. EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS10ATEX17055X

(b). Conditions For Use (Routine Tests)

A routine overpressure test in accordance with EN 60079-1:2007 shall be carried out on each enclosure (including the cemented glass dome assembly) at the following pressure and must be recorded. There shall be no leakage through the cement and no deformation or damage to the enclosure:

For lower ambient of -20°C – ≥10.16bar

For lower ambient of -40°C – ≥14.73bar

18. Essential Health and Safety Requirements (EHSR's)

The relevant EHSR's have been identified and assessed in Intertek Report 10045816, part C1, dated 27 September 2010.

19. Drawings and Documents

Number	Title	Issue	Date
Wc50139	FA-165 Ex Nameplate	C	17/6/10
Yc77260	General Arrangement FA-165 Ex Zone 1	4	9-14-10
Yc77261	FA-165 Ex Varients	A	20/8/10
Yc77264	Glass Dome Cover	2	8-20-2009
Yc77265	Body Machining	13	8-17-2009
Yc77266	Dome Retention Clip	1	3-15-2010
Yc77267	Lid Machining	4	8-19-2009

This Certificate is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to permit copying or distribution of this Certificate and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.

Intertek Testing & Certification Limited
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Tel: + 44 (0)1244 882590 Fax: +44 (0)1244 882599

<http://www.intertek.com>

Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

This Certificate is the property of Intertek Testing and Certification Ltd
and is subject to Intertek Testing and Certification Conditions for Granting Certification.



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 10.0041X** issue No.: **0** Certificate history:

Status: **Current**

Date of Issue: **2010-09-30** Page 1 of 3

Applicant: **Pharos Marine Ltd**
6 Steyning Way
Hounslow
Middlesex
TW4 6DL
United Kingdom

Electrical Apparatus: **FA-165EX Range**
Optional accessory:

Type of Protection: **Flameproof**


Marking: **Ex d IIB T5 Tamb -40C to +55C Gb***
Tamb -20C to +55C Gb*
*** dependant on model**

Approved for issue on behalf of the IECEx Certification Body: **P Moss**

Position: **Certification Officer**

Signature:
(for printed version)

Date:


30th Sept 2010.

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Intertek Testing & Certification Limited
ITS House, Cleeve Road,
Leatherhead,
Surrey, KT22 7SB
United Kingdom

Intertek



IECEx Certificate of Conformity

Certificate No.: IECEx ITS 10.0041X

Date of Issue: 2010-09-30

Issue No.: 0

Page 2 of 3

Manufacturer: **Pharos Marine Ltd**
6 Steyning Way
Hounslow
Middlesex
TW4 6DL
United Kingdom

Manufacturing location(s):

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 electrical 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 : 2007-10 Explosive atmospheres - Part 0: Equipment - General requirements
Edition: 5

IEC 60079-1 : 2007-04 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
Edition: 6

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/ExTR10.0039/00

Quality Assessment Report:

GB/ITS/QAR10.0017/00



IECEx Certificate of Conformity

Certificate No.: IECEx ITS 10.0041X

Date of Issue: 2010-09-30

Issue No.: 0

Page 3 of 3

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The FA-165EX is a flameproof enclosure with a glass dome that can contain various lights as well as other electronic equipment. The models covered by this certificate are as follows:

Model No	Description	Max Internal Power Dissipation
FA-165EX 01	Helideck Perimeter Light	40W
FA-165EX 02	Aviation Obstruction Light	40W
FA-165EX 03	Xenon Light	40W
FA-165EX 04	Helideck Status Light Repeater	40W
FA-165EX 05	Spot Light	40W
FA-165EX 06	Wireless Synchronization Unit	40W
FA-165EX 07	Rectangular Spotlight	40W
FA-165EX 08	Flood Light	40W
FA-165EX 09	Multi-colour Spot Light	40W
FA-165EX 10	Photocell Unit	40W
FA-165EX 11	Transformer Unit	40W
FA-165EX 12	Power Supply Unit	40W
FA-165EX 13	LED Light	40W
FA-165EX 14	Directional Light	40W

The enclosure consists of a cast aluminium base (Type A360) into which is housed the light/electronic modules. Onto this is fitted a dome assembly which consists of a glass dome cemented into an aluminium ring housing forming a cemented flamepath. A flange flamepath is formed between the dome assembly ring and the enclosure base which is then secured using six M10x1.5 hex socket head fasteners. Cable entry is via two M25x1.5 threaded holes which must be fitted with suitably certified cable glands or blanking elements. Both internal and external earthing points are provided via M6 threaded studs with associated nuts and locking washers. Dimensions: Overall Height = 149.81mm, Base Diameter = 252.48mm.

CONDITIONS OF CERTIFICATION: YES as shown below:

(a). Special Conditions for safe use

- No modifications must be made to the flamepaths of the unit without consultation of the drawings listed on IECEx Ex Test Report Cover GB/ITS/ExTR10.0039/00.
- Temperatures could exceed 70°C at the cable gland or 80°C at the branching point, suitably rated cable must be selected.
- Potential electrostatic charging hazard – clean glass dome only with a damp cloth.
- For securing glass dome cover to base use only M10x1.5 hex socket head fasteners with yield stress $\geq 450\text{N/mm}^2$.

(b). Conditions For Use (Routine Tests)

A routine overpressure test in accordance with EN 60079-1:2007 shall be carried out on each enclosure (including the cemented glass dome assembly) at the following pressure and must be recorded. There shall be no leakage through the cement and no deformation or damage to the enclosure:

For lower ambient of -20°C – 10.16bar

For lower ambient of -40°C – 14.73bar

Test Verification of Conformity

On the basis of the tests undertaken, the sample of the below product has been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

Applicant Name & Address : Pharos Marine Ltd
Steining Way
Hounslow
TW4 6DL
UK

Product Tested : Flameproof Enclosure with Glass Dome

Ratings and principal characteristics : Glass dome cemented to cover and then cover secured to base using six M10x20mm stainless steel hex head fasteners. Groove in flange of base fitted with o-ring. Base contains two M25 cable entries fitted with certified IP66 blanking elements for test purposes.

Model(s) : FA165-Ex

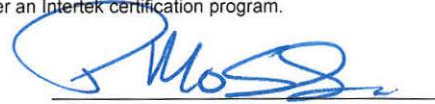
Relevant Standard/Specification : EN60529:1992 IP66
IEC60529:2001 Ed 2.1

Verification Issuing Office Name & Address : Intertek Testing & Certification Limited
Deeside Lane, Chester, CH1 6DD

Verification/Report Number(s) : 11055815

NOTE : This verification is part of the full test report(s) and should be read in conjunction with it.

This Verification is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to copy or distribute this Verification. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results referenced from this Verification are relevant only to the sample tested. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.


Signature

Paul Moss
Certification Officer
06 September 2012



(1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in
Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) EC-type-examination Certificate Number:

PTB 02 ATEX 1072



(4) Equipment: Controller type GR.. - ...L... .. CN

(5) Manufacturer: KILLARK, Div of Hubbel Inc. (Delaware)

(6) Address: St. Louis MO 63115 USA

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

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 02-12231.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014:1997 + A1 + A2

EN 50 018:2000

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

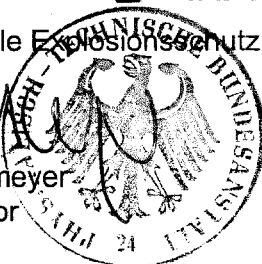


II 2 G EEx d IIC T6 or T5

Zertifizierungsstelle Explosionschutz

By order:

Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Braunschweig, January 17, 2003

(13)

SCHEDULE

(14)

EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 1072

(15) Description of equipment

The controller of type GR.. - ...L... .. CN consists alternatively of one or several housings of the type of protection Flameproof Enclosure "d", which contain electrical apparatus. The connection is carried out by direct cable entry or through a conduit entry. Technical details for it are specified in the operating instructions.

Electrical data

Rated voltage max. 690 V
Conductor size AWG max. 120 mm² (4/0)

Maximum power loss for use in temperature class

Housing Type	T6	T5
GRB	30 W	40 W
2GRB	35 W	55 W
4GRB	45 W	65 W
GRE	55 W	85 W
GRM	75 W	115 W
3GRM	90 W	130 W
5GRM	95 W	140 W
GRK	100 W	145 W
4GRK	145 W	205 W
GRL	120 W	170 W
GRH	160 W	225 W
4GRH	190 W	265 W
8GRH	230 W	330 W
GRHC	180 W	255 W
4GRHC	220 W	310 W
8GRHC	245 W	355 W
GRHA	215 W	300 W
4GRHA	240 W	345 W
8GRHA	270 W	395 W

Rated values are maximum values, the actual electrical values are determined by mounted electrical apparatus. Within these limiting values complying with the appropriate standards the manufacturer specifies the final limiting values dependent on power supply specifications, operating mode, utilization category, etc.

(16) Report PTB Ex 02-12231

(17) Special conditions for safe use

The controller may also be connected by means of suitable cable entries or conduit systems which meet the requirements of EN 50018, sections 13.1 and 13.2, and for which a separate examination certificate has been issued.

Openings not used shall be closed in compliance with EN 50018, section 11.

This EC type-examination certificate as well as any future supplements thereto shall at the same time be regarded as supplements for Component Certificate PTB Nr. Ex- 97.D.1048.

(18) Essential health and safety requirements

The tests and the favorable results these have produced reveal that the controller meets the requirements of directive 94/9/EC as well as those of the standards quoted on the cover sheet.

Zertifizierungsstelle Explosionsschutz

By order

Dr.-Ing. U. Klausmeyer
Regierungsdirektor



Braunschweig, January 17, 2003

1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 1072

(Translation)

Equipment: Controller Type GR...L...CN

Marking:  II 2 G EEx d IIC T6 or T5

Manufacturer: Killark, Div. of Hubbell Inc. (Delaware)

Address: St. Louis, MO 63113
USA

Description of supplements and modifications

Into the controller type GR...L...CN can be built in - separately certified - push button pilot lights type series GOB4 and GOL4 and pilot light type series GOB3 and GOL3.

These push button pilot lights and pilot lights are approved for the gas group IIB + H₂.
The marking changes to read:

 II 2 G EEx d IIB + H₂ T6 or T5

The empty housing type GR...L...CN can be used, which is approved in the 1st supplement of EC-type examination certificate PTB 02 ATEX 1071 U.

Shock protection, protection against solid bodies,
and protection against ingress of water

IP56 according to EN 60529
as a minimum

Test report: PTB Ex 03-13345

Zertifizierungsstelle Explosionsschutz

By order:

Dr.-Ing. U. Klausmeier
Regierungsdirektor



Braunschweig, February 02, 2004

Sheet 1/1

2. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 02 ATEX 1072

(Translation)

Equipment: Controller Type GR...L...CN

Marking:  II 2 G EEx d IIC T6 or T5 or EEx d IIB + H₂ T6 or T5

Manufacturer: Killark, Div. of Hubbell Inc. (Delaware)

Address: St. Louis, MO 63113
USA

Description of supplements and modifications

The type designation of the controller type GR...L...CN is supplemented. Alternatively it can be read: type GR...L...CEN.

The controller may also be used in areas in which explosive atmospheres produced by dust/air mixtures may occur.

The marking will be supplemented to:

 II 2 G EEx d IIC T6 or T5 or EEx d IIB + H₂ T6 or T5

 II 2 D IP66 T 80 °C or T 95 °C

Protection against foreign bodies

and ingress of liquids: IP 66 according to EN 60529

Applied standards

EN 50281-1-1:1998

Test report: PTB Ex 05-15016

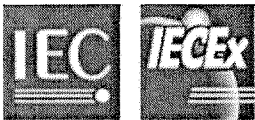
Zertifizierungsstelle Explosionsschutz

By order:

Braunschweig, June 24, 2005

Dr.-Ing. U. Klausmeyer
Direktor und Professor





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 PTB 05.0029**

Issue No.: **0**

Status: **Current**

Date of Issue: **2005-11-24**

Page **1** of **4**

Applicant: **Killark, Div. of Hubbell Inc (Delaware)**
3940 Dr. Martin Luther King Drive
St. Louis, MO 63113
United States Of America

Electrical Apparatus: **Controller Type *GR** *-***L *** ****
Optional accessory:

Type of Protection: **Flameproof Enclosure**

Marking: **Ex d IIC or Ex d IIB + H2 T6 or T5**
Ex tD A21 IP66 T 80 °C or T 95 °C

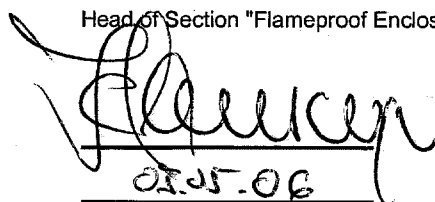
Approved for issue on behalf of the IECEx
Certification Body:

Dr.-Ing. Klausmeyer

Position:

Head of Section "Flameproof Enclosure"

Signature:
(for printed version)


05.05.06

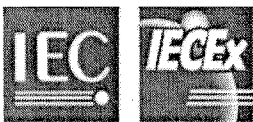
Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Physikalisch-Technische
Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany





IECEX Certificate of Conformity

Certificate No.: IECEx PTB 05.0029

Date of Issue: 2005-11-24

Issue No.: 0

Page 2 of 4

Manufacturer: **Killark, Div. of Hubbell Inc. (Delaware)**
3940 Dr. Martin Luther King Drive
St. Louis, MO 63113
United States of America

Manufacturing location(s):

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 manufacture'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 electrical 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 : 2000 Edition: 3.1	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
IEC 60079-1 : 2001 Edition: 4	Electrical apparatus for explosive gas atmospheres - Part 1: Flameproof enclosures 'd'
IEC 61241-0 : 2004 Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 0: General requirements
IEC 61241-1 : 2004 Edition: 1	Electrical apparatus for use in the presence of combustible dust - Part 1: Protection by enclosures "tD"

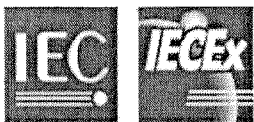
*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

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

IECEX ATR:
DE/PTB/05-031

File Reference:
B021072



IECEX Certificate of Conformity

Certificate No.: IECEx PTB 05.0029

Date of Issue: 2005-11-24

Issue No.: 0

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

Description of equipment

The Controller type *GR** *_***L *** ** is a series of cast aluminum enclosures with threaded covers that are either flat blank, contain a sight glass or domed. It contains different electrical apparatus.
The empty enclosure is approved under the number IECEx PTB 05.0028U

Connection is carried out by direct cable entry or through conduit entry. The controller can be provided with different operators (see list in the certificate of the empty enclosure).

The marking of the apparatus is: Ex d IIC.

The controller can also be provided with pilot lights and operators (see list in the certificate of the empty enclosure). In this case the gasgroup changes to IIB + H₂:

Technical data

Shock protection, protection against solid bodies and protection against ingress of water	IP 66 according to EN 60529
Ambient temperature	-20 °C to +40 °C
Rated voltage	max. 690 V
Conductor size (AWG)	max 120 mm ² (4/0)

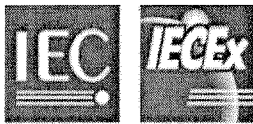
Rated values are maximum values, the actual electrical values are determined by mounted electrical apparatus. Within these limiting values complying with the appropriate standards the manufacturer specifies the final limiting values dependent on power supply specifications, operating mode, utilization category, etc.

Type designation

*	GR**	*	_***L***	***
1	2	3	4	5

Maximum Power Loss, Key of Type designation and List of Operators see Annex

CONDITIONS OF CERTIFICATION: NO



IECEx Certificate of Conformity

Certificate No.: **IECEx PTB 05.0029**

Date of Issue: **2005-11-24**

Issue No.: **0**

Page **4** of **4**

Additional information:

Maximum Power Loss, Type designation and G Series Operators**Controller type *GR** *-***L *** ******Killark, Div. of Hubbell Inc. (Delaware)**

Maximum power loss for use in temperature class		
Enclosure Type	T6	T5
GRB	30 W	40 W
2GRB	35 W	55 W
4GRB	45 W	65 W
GRE	55 W	85 W
GRM	75 W	115 W
3GRM	90 W	130 W
5GRM	95 W	140 W
GRK	100 W	145 W
4GRK	145 W	205 W
GRL	120 W	170 W
GRH	160 W	225 W
4GRH	190 W	265 W
8GRH	230 W	330 W
GRHC	180 W	255 W
4GRHC	220 W	310 W
8GRHC	245 W	355 W
GRHA	215 W	300 W
4GRHA	240 W	345 W
8GRHA	270 W	395 W

Type designation

*	GR**	*	-***L***	***
1	2	3	4	5

Key of type designation

1: Designation of the cover (height)	
Blank	Flat blank cover
2	2 inch height (50,8 mm)
3	3 inch height (76,2 mm)
4	4 inch height (101,6 mm)
5	5 inch height (127 mm)

8	8 inch height (203,2 mm)
---	--------------------------

2: Code number for the dimension of the enclosure / opening	
GRB	117,5 x 117,5 x 114,3 / 101,6 mm
GRE	168,3 x 139,7 x 136,5 / 114,3 mm
GRK	250,8 x 200,0 x 170,7 / 187,3 mm
GRM	174,6 x 174,6 x 161,9 / 136,5 mm
GRL	266,7 x 225,4 x 190,5 / 203,2 mm
GRH	304,8 x 279,4 x 209,6 / 247,5 mm
GRHA	304,8 x 279,4 x 419,1 / 247,5 mm
GRHC	330,2 x 295,3 x 257,2 / 247,5 mm

3. Code number for mounting plate	
empty	No mounting pan
P	Mounting pan on the bottom of the enclosure

4. Code number for the window	
275L	Diameter 69,85 mm
300L	Diameter 76,20 mm
375L	Diameter 95,25 mm
537L	Diameter 136,40 mm
600L	Diameter 152,40 mm
775L	Diameter 196,85 mm
375L52	Diameter 69,85 mm, with mounting pan
537L52A	Diameter 136,40 mm, with mounting pan
600L52B	Diameter 152,40 mm, with mounting pan
600L52C	Diameter 152,40 mm, with mounting pan
775L52B	Diameter 196,85 mm, with mounting pan

5. Code number for the suffix	
doesn't influences the explosion protection	
SU6	Mounting lugs removed
SU8	Pan mounting studs less pan
SU9	Special finish
SU14	Fungus proofing
CEN, CN	Modified for Cenelec approval
MOD	Modified enclosure to specified customer requirements

Killark G Series Operators

G Series Operators Type designation	Description The * indicates additional numbers and letters which designates the device color and contact block (circuit) arrangement.
GO1 **** N34	Single pushbutton, maintained contact
GOM1-****	Single pushbutton, maintained contact, Mushroom head, Pull type
GO2-***** N34	Double pushbutton, momentary contact
GOR11-**** N34	Double pushbutton, maintained contact
GO5-**** N34	Selector switch, maintained contact, 2, 3, or 4 position
GO6-** N34	Selector switch, spring return, two position, return to left
GO7-** N34	Selector switch, three position, spring return to center from right or left
GO14-** N34	Selector switch, three position spring return to center from right, maintained in left
GO15-** N34	Selector switch, three position, spring return to center from left, maintained in right
GO8-***** N34	Key selector switch, maintained contact, 2 or 3 position
GO36-**** N34	Key selector switch, 2 position, spring return to left
GOL1**	Single pushbutton, momentary contact, extended length
GOL2****	Double pushbutton, maintained contact, extended length
GOL5***	Selector switch, maintained contact, 2, 3, or 4 position, extended length
GOL6*	Selector switch, 2 position, spring return to left, extended length
GOL7*	Selector switch, 3 position, spring return to center from right or left, extended length
GOL14*	Selector switch, 3 position, spring return to center from right, maintain in left, extended length
GOL15*	Selector switch, 3 position, spring return, to center from left, maintain in right, extended length
GOL8*****	Key selector switch, maintained contact, 2 or 3 position, extended length
GOL36****	Key selector switch, 2 position, spring return to left, extended length
GO37-**** N34	Key selector switch, 3 position, spring return to center, from right or left, extended length
GO38-**** N3	Key selector switch, 3 position, spring return to center, from right, maintained in left, extended length
GO39-**** N34	Key selector switch, 3 position, spring return to center, from left, maintained in right, extended length
GO10-*** N34	Snap switch operator, Single pole, single throw, or single pole double throw

GO113 N34	Potentiometer and Rheostat operator, single turn
GO114 N34	Potentiometer and Rheostat operator, 15 turn
GO-RST	Reset Operator, plunger type with 152.4 mm adjustable extension
GO50	Rotary or motor shaft operator, NPSM thread, 12.7 mm diameter shaft, type male to male shaft connection
GO-SP**	Factory Configured for mounting special device
GOL37****	Key selector switch, 3 position, spring return to center, from right or left, extended length
GOL38****	Key selector switch, 3 position, spring return to center, from right, maintained in left, extended length
GOL39****	Key selector switch, 3 position, spring return to center, from left, maintained in right, extended length
GOL113	Potentiometer and Rheostat operator, single turn, extended length
GOL114	Potentiometer and Rheostat operator, 15 turn, extended length
GOLRST	Reset Operator, plunger type with 152.4 mm adjustable extension, extended length
GO51	Rotary or motor shaft operator, 12.7 mm diameter shaft, type male to male shaft connection
GOLSP**	Factory Configured for mounting special device, extended length

G Series Pilot Lights, Type designation	Description The * indicates additional numbers and letters which designates the device color and contact block (circuit) arrangement.
GOB3-**** N34CN	Pilot light, 120 V max. 3 Watt lamp
GOL3**CN ¹	Pilot light
GOB4-**** N34CN ¹	Push button pilot light, 120 V max. 3 Watt lamp
GOL4**CN ¹	Push button pilot light



CERTIFICATION RECORD

The company named below has been authorized by CSA International to represent the products listed in this record as "CSA Certified" and to affix the CSA Mark to these products according to the terms and conditions of the CSA Service Agreement and applicable CSA program requirements (including additional Markings).

File No: 011716_C_000

Class No: 4418 02 OUTLET BOXES AND FITTINGS Boxes - For Hazardous Locations

SUBMITTOR

4501218 Killark Electric Manufacturing Co.
3940 Martin Luther King Dr
St. Louis, MO 63113
USA

FACTORIES

4501218 Killark Electric Manufacturing Co.
3940 Martin Luther King Dr
St. Louis, MO 63113
USA

September 21, 2006(Replaces:May 17, 2006)

Class I, Groups B, C, and D; Class II, Groups E, F and G; Class III, CSA Enclosures 3 and 4 (complete enclosures and component packaged).

- HK and 2HK Series instrument enclosure (Component Packaged): HKB, HKSB, HKBD, 2HKB, or 2HKSB box with optional covers: HFC, HFSC, HKGL, HKSG, HK2D, HKS2D, HK4D, HKS4D, HK1GLD, HK2GLD, or HKS2GLD, denoting flat (F), dome (D), and window covers (GL); with 3/4 in. conduit entries.
- HK and 2HK Series instrument enclosures, Cat No: HKB, HKSB, HKBD, 2HKB, or 2HKSB; may be followed with the suffix 01, 02, 20, 21, 22, 01S, 02S, 21S, 22S, 2S1S, 2S2S, 2SO, 2S1, or 2S2.
- HK Series instrument enclosures, Cat No: HKB, HKSB, or HKBD followed by Suffix B, 2D, 4D, GL, or 2GLD; may be followed with the suffix letter C; with 3/4 in. max conduit entries.
- 2HK Series instrument enclosures Cat No: 2HKB, 2HKSB followed by suffix B, 2D, 4D, GL, or 2GLD, followed by suffix B, 2D, 4D, GL, or 2GLD; may be followed with the suffix letter C; may be followed with the suffix -MOD; with 3/4 in. conduit entries.

Note: Series HK, 2HK and HKB instrument enclosures with or without optional covers (component packaged) when suffix S is added to the Cat No it denotes 316 stainless steel construction. In addition, when suffix -4X is added to the Cat No it denotes enclosure type rating 4X.

- Outlet Boxes, Cat No SPM25131N34 and SPM25132N34, conduit size 4 in. max.
- Series GR outlet boxes (component packaged); Cat No GRBB conduit size 1-1/2 in max with optional covers GRB-BC, 2GRBD, 4GRBD, GL-275; Cat No GREB conduit size 2 in max with optional covers GRE-BC, GL-300; Cat No GRKB conduit size 3 in max with optional covers GRK-BC, 4GRKD, GL-537; Cat No GRLB conduit size 3 in max with optional covers GRL-BC, GL-600; Cat No GRMB conduit size 3 in max with optional covers GRM-BC, 3GRMD, 5GRMD, GL-375; Cat Nos GRHB, GRHAB, GRHCB conduit size 4 in max with optional covers GRH-BC, 4GRHD, 8GRHD, GL-775. All may be followed by P and/or suffixes SU6, SU8, SU9, SU14 and CEN.
- Series GR outlet boxes; Cat No GRB may be prefixed by 2 or 4 followed by P or -275L conduit size 1-1/2 in max; Cat No GRE followed by P or -300L conduit size 2 in max; Cat No GRK may be prefixed by 4, followed by P, -537L, -537L52A or -537L52B; Cat No GRM may be prefixed by 3 or 5, followed by P, -375L or -375L52; Cat No GRL followed by P, -600L, -600L52B or -600L52C conduit size 3 in max; Cat No GRH may be prefixed by 4 or 8, followed by P, -775L or -775L52B, Cat No GRHA may be prefixed by 4 or 8, followed by P or -775L; Cat No GRHC may be prefixed by 4 or 8, followed by P or -775L conduit size 4 in max. All may have suffixes SU6, SU8, SU9, SU14, -CEN and/or MOD.

Class I, Groups B, C and D; Class II, Groups E, F and G; Class III; Encl. Types 3 and 4 where applicable :

- Cat Nos BRH, BRHA, 8BRH, SPM-11768, SPM-12761-A, SPM-13238-A, 2 in conduit max.
- Outlet boxes, Series EXB, with or without operator holes (91 max) or rectangular (5 x 9 in max) or round (GL275, -300, -375, -537, -600, -775) windows, Series Cat Nos: EXB-664, -886, -8104, -8106, -8126, -8128, -10106, -10108, -10146, -10148, -12126, -12128, -12186, -12188, -12246, -12248, -122412, -12368, -123610, -14146, -14148, -16166, -16168, -16248, -162410, -18186, -18188, -18248, -182410, -18368, -183610, -203611, -24248, -242410, -24308, -24368 and -243610; max conduit size 6 in.

Note: Series EXB outlet boxes may be furnished with blank mounting pans and Certified terminal blocks, Cat No may be followed with suffixes "SPM" followed with digits, denoting mechanical variations.

- Series GEB - Types GEBC, GEBL, GEBT, and GEBX, followed by -2, -3, -4, -5, -24, or -25, conduit size 3/4 to 1-1/2 in, Type 4X.
- Condulet Cat No GECUET-2, conduit size 3/4 in.
- Outlet Boxes, Cat No SPM25131 and SPM25132, conduit size 4 in. max.

Class I, Groups C and D; Class II, Groups E, F and G; Class III; Encl Types 3 and 4:

- Single run flow computer enclosures, Model Nos 17078AAAM and 17078BAAM, 1/2 in max conduit trade size.

Class I, Groups C and D; Class II, Groups, E, F and G; Class III:

- Series GE, Types GEC, -T, -UAT, -UE, -UEA, -UEAT, -UET, -UWT, -UU, -X, 1/2 or 3/4 in conduit; Series GEC, Types GEC, -CAT, -CT, -CFT, -EAT, -ET, -HT, -K, -L, -LA, -LAT, -LBT, -LET, -LT, -LTF, -MA, -ME, -MU, -NT, -T, -TAT, -TN, -TT, -TTF, -UE, -UET, -UU, -UW, -UWT, -X, -XAT, -XT, -XTF, 1/2, 3/4 or 1 in conduit; Series GEJ, Types GEJCT, -ET, -LBT, -LT, -TT, -XT, conduit sizes 1-1/2 in. and 2 in. with blank GRMBC cover, weatherproof (Type 3),

watertight (Type 4): Series GEM, Types GEM, -CA, -CF, -E, -EA, -L, -LA, -LB, -LF, -MN, -MT, -TA, -T, -C, -TF, -X, -XA, -XF, 1/2 or 3/4 in conduit; Series GES, (Component Packaged) Types GESLBT-3, GESLBT-3-2D, SPJ-13643 and SPJ-13644; 1 in conduit; Types GRB*, GRE, SPM10095A, watertight weatherproof, 1/2 to 2 in conduit; Type GRM, watertight, weatherproof 1/2 to 3 in conduit, Series GEJ, Type GEJLBT, 3/4 or 1 in conduit; Cat No GRHA*, 4 in conduit max; Type GRJ*, watertight, weatherproof, 1/2 to 3 in conduit; Types GRC, GRR, 1/2, 3/4 or 1 in conduit; Types GRS, GRSA, 3/4 in conduit; Type GRSS, 1/2, 3/4 or 1 in conduit; Type GRSSA, 1/2 or 3/4 in conduit; Series GRCD, HXB, JAL, 1/2 to 1 in conduit; Series JL, 1/2 or 3/4 in conduit.

- Type GETC-2, conduit size 3/4 in, with flat cover Type GESBC.
- Series X, Type XALB, pull boxes 1/2 to 3 in conduit; Series SWBC, Type XB, Cat No XB12126*, max 3 in conduit; Types XC, -LB, -LL, -LR, -T, -TA, -TB, -X, -XA, 1/2, 3/4 or 1 in conduit; Cat Nos SWBC-1 to -14 incl. -17 to -21 incl., -31 to -38 incl. and SWBC-83, Series X-10, -11 or -12 and Cat Nos SWB-48, SWB-49.
- Covers, blank, Types GECBC, GEMBC, GRBBC, GREBC, GRMBC, GRRBC, JACB, JAL, JCB, JL; X-10, -11, -12, dome, Types 2GOU, 4GOU, 2GRBD, 4GRBD, 6GRBD, 2GRED, 4GRED, 6GRED, 3GRMD, 5GRMD, 1/2 or 3/4 in. conduit hub. Types JAH-1, -2, JH-1, -2.
- Cat No SPJ-16090, 3/4 in conduit max. Type XB, threaded for rigid conduit, 2 in tradesize max, Cat No XB-8106.
- Type XB, threaded for rigid conduit, 2 in trade size max, Cat Nos XB-444*, -464*, -664, -684*, -884*, -886*, -10126*, -12126*; 4 in trade size max, -6186*, -6366*, -8106*, XB-12128*, -12168*, -12245*, -12328*, -123610*, -12248*. Type XJB, threaded for rigid conduit connections, 1 in trade size, Cat Nos XJB-8104*; 1 1/2 in trade size XJB-8105*, -8106*, -10166*, -10246*, -12196*, -12243*, -12246*; 2 in trade size max, XJB-444*, -464*, -5104*, -5105*, -5106*, -5133*, -5135*, -5136*, -5183*, -5186*, -6104*, -6105*, -6106*, -8136*, -8156*, -8186*, -8216*, -8138*, -12323*, -12326*, -12406*, -16166*, -16246*, -16326*, -16466*, -20246*, -20326*, -24246*; 3 in trade size max, XJB-12198*, -121910*, -16484*; 3 1/2 in trade size max, XJB-12245*, -12248*, -122410*, -8158*, -8188*, -81810*, -12325*, -12328*, -123210*, -16408*, -164010*; 4 in trade size -123211*, -123213*, -12408*, -124010*, -16168*, -161610*, -16248*, -162410*, -16328*, -163210*, -16488*, -164810*, -164812*, -20248*, -202410*, -20328*, -203210*, -204010*, -24248*, -242410*, -242411*, -242413*, -242416*. Series GES, Types GESTT-4, CT-4, XT-4, 1-1/4 in conduit; Blank Cover, dome Type SPI-13056.

Note: May be furnished with/without blank-mounting pans and/or with/without Certified terminal blocks Cat suffix for mounting studs "SU8" or suffix letters "L", "WL", "Y", or "P" to indicate various arrangements of terminal blocks and/or "SPM" followed by five numbers with or without suffix letter SU8.

Class I, Group D; Class II, Groups E, F, G; Class III:

- Series GEJ, Types GEJCT, -ET, -LBT, -LT, -TT, -XT, conduit sizes 1-1/2 in and 2 in, with optional -375L lens cover, weatherproof (Type 3), watertight (Type 4); Series GES, Types GES, -CAT, -CT, -L, -LAT, -LBT, -LT, -MU, -NT, -T, -TAT, -TT, -UE, -UU, -UW, -X, -XAT, -XT, 1/2 to 1-1/4 in conduit; Series GOU-2, 2GOU and 4GOU, 3/4 and 1 in conduit; Type GRD*, 1/2 to 2 in conduit; Series JAL, 1-1/4 and 1-1/2 in conduit.

Note: Suffixes SU-1, -2, -3, -8, -9, -10, -11, -12, -14, -46, -47 may be used on Type XB and XJB to denote special finish or special features added. Boxes may be furnished with blank back pans.

Class II, Groups E, F, G; Class III and Type 3:

32B

- Series DB, Cat No DB followed by numbers denoting width, length, depth respectively, (example 243010) - with one or more threaded rigid conduit connection 4 in max Cat Nos may include additional suffixes SU-1 through SU-15, also SU46 and PVC. Boxes may be furnished with blank mounting pans. Series DB, raintight, Cat Nos DB*, DBA*, -B*, -C*, -E*, -F*, -G*, -H* 664 through 367220; with one or more threaded rigid conduit connections 4 in max; Cat Nos may include, suffixes SU-1 through -15.

Notes:

1. The suffix on the above catalogue number indicates the nominal outside dimensions of the box (width, length and depth) in inches. Maximum of any one dimension of these boxes are: Width 36 in, length 72 in and depth 20 in.
2. * May be furnished with/without blank-mounting pans and/or with/without certified terminal blocks Cat suffix for mounting studs "SU8" or suffix letters "L", "WL", "Y", or "P" to indicate various arrangements of terminal blocks and/or "SPM" followed by five numbers with or without suffix letter SU8.

/sp



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KILLARK, DIV OF HUBBELL INC (DELAWARE)
MR. T J MICHALSKI
3940 MARTIN LUTHER KING DR
ST LOUIS MO 63115

Your most recent Certification is shown below. Please review the text and contact the Customer Service Professional who assisted with your project if revisions are required.

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FTRV

September 30, 2005

Enclosures for Use in Hazardous Locations

KILLARK, DIV OF HUBBELL INC (DELAWARE)
3940 MARTIN LUTHER KING DR, ST LOUIS MO 63115

E83969

(Mailing address: P. O. Box 5325, St. Louis, MO 63115)
Class I, Groups B, C and D; Class II, Groups E, F and G; Class III.

Class I, Groups B, C and D; Class II, Groups E, F and G; Class III .

Series B7, Cat. Nos. B7010, B7011, B7012, B7013, B7014, B7021, B7022, B7023, B7024, B7025 may be followed by additional suffix letters, may be followed by SU-3, -10 or -11, may be followed by MOD.

Series B7 followed by a single letter, followed by 20, 29, 41 or 50, may be followed by additional suffix letters, may be followed by KIT-251 or SU-3B.

Series B7C enclosures, Cat. Nos. B7CA, B7CB, B7CC, B7CD, B7CE, B7CF may be followed by additional suffix letters, may be followed by SU3B, -9, -10B, -11B or -14, may be followed by MOD; Series SPM followed by a six digit number.

Series B7E enclosures, Cat. Nos. B7EA, -B, -C, -D, E, -F, -G, -H, -J, -K, -L, -M, -N, may be followed by additional suffix letters, may be followed by SU3, SU3B, SU10 or SU11, may be followed by "MOD".

Cat. Nos. EXB-664, -886, -8104, -8106, -8126, -8128, -10106, -10108, -10146, -10148, -12126, -12128, -12186, -12188, -12246, -12248, -12368, -14146, -14148, -16248, -16166, -16168, -18186, -18188, -18248, -18368, -24248, -24308, -24368, -122412, -123610, -162410, -182410, -183610, -203611, -242410, -243610 may be followed by MOD or N34.

Cat. No. HKB, HKBD or HKSB may be prefixed by 2, followed by 1GLD, 2D, 2GLD, 4D, B or GL, may be followed by C, may be followed by 2D, 2GLD, 4D, B or GL, followed by -01, -01S, -02, -02S, -2S0, -2S1, -2S1S, -2S2, -2S2S, -20, -21, -21S, -22 or -22S, may be followed by -MOD.

Cat. No. SPJ-14046.

Series SPM followed by a six-digit number, followed by additional letters and numbers.

Cat. No. SPM-25220.

Series GCBB enclosures, Cat. Nos. GCBB may be prefixed by numbers and may be followed by additional suffix designations.

GFCS Series enclosure, Cat. No. GFCS followed by 05151, 05152, 05201, 05202, 05301, 05302, 30151, 30152, 30201, 30202, 30301, 30302.

Cat. No. GRB may be prefixed by 2 or 4, followed by P or -275L; Cat. No. GRE followed by P or -300L; Cat. No. GRK may be prefixed by 4, followed by P or -537L; Cat. No. GRM may be prefixed by 3 or 5, followed by P or -375L; Cat. No. GRL followed by P or -600L; Cat. No. GRH may be prefixed by 4 or 8, followed by P or -775L; Cat. No. GRHA may be prefixed by 4 or 8, followed by P or -775L; Cat. No. GRHC may be prefixed by 4 or 8, followed by P or -775L. All may have suffixes -CEN, -MOD, SU3B, -6, -8, -9, -10B, -11B, -14; Series B7C followed by a single letter, may be followed by additional suffix letters, may be followed by SU3B, -9, -10B, -11B, -14, may be followed by MOD.

Class I, Group C and D; Class II, Groups E, F and G; Class III.

Cat. No. GRB may be prefixed by 2 or 4, followed by P or -275L; Cat. No. GRE followed by P or -300L; Cat. No. GRK may be prefixed by 4, followed by P or -537L; Cat. No. GRM may be prefixed by 3 or 5, followed by P or -375L;

Cat. No. GRL followed by P or -600L; Cat. No. GRH may be prefixed by 4 or 8, followed by P or -775L; Cat. No. GRHA may be prefixed by 4 or 8, followed by P or -775L; Cat. No. GRHC may be prefixed by 4 or 8, followed by P or -775L. All may have suffixes -CEN, -MOD, SU3, -10, -11.

Series B7, Cat. Nos. B7010, B7011, B7012, B7013, B7014, B7021, B7022, B7023, B7024, B7025 may be followed by additional suffix letters, may be followed by SU-3, -10 or -11, may be followed by MOD.

Series SPH, Cat. No. SPH25010 may be followed by -X01AG, -X03AR and/or -XL0A.

Series B7C enclosures, Cat. Nos. B7CA, B7CB, B7CC, B7CD, B7CE, B7CF may be followed by additional suffix letters, may be followed by MOD, SU3, -9, -10 or -11.

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Series SPM, Cat. No. SPM followed by a six-digit number, followed by additional letters and numbers; Cat. No. SPM25034 may be followed by A; Cat. Nos. SPM25131, -25132.

Cat. Nos. SPM25107, -25108, -25659, -25660.

Series GCS-13 to -16 incl., -83, -85, -131, -141, -152, -161, -834, -835 may be followed by MOD.

Series SPM followed by a six-digit number, followed by additional numbers and letters.

Cat. No. XJB-5135.

XS-**CVR Series enclosure, Cat. No. XS followed by 01 through 14, 17 through 21, 32 through 38, 41 through 46, followed by CVR.

Class I, Group D; Class II, Groups E, F and G..

Cat. No. SPM13592.

Class I, Division 2, Groups B, C and D; Class II, Division 2, Groups F and G; Class III.

Cat. No. D2 followed by L or PC followed by 1 or 3 followed by a number 9 through 42, followed by ML, MBQ, MBED, MBGH, MBGC or MBJ followed by additional numbers.

LOOK FOR CLASSIFICATION MARK ON PRODUCT

EC Declaration of Conformity

Manufacturer: Focal Technologies Corporation
Address: 77 Frazee Avenue
Dartmouth, Nova Scotia, Canada
B3B 1Z4

Product Description: Electrical Slip Ring
Product Model Designation: Model 180-X

We, Focal Technologies Corporation, hereby declare that the Electrical Slip Ring Model 180-X (and the Model 180-X with intrinsically safe passes) to which this Declaration of Conformity relates, conforms to the requirements of ATEX Directive 94/9/EC for use as intended in potentially explosive atmospheres.

These electrical slip rings have been designed in accordance with the following standards:

EN 60079-0:2009	Electrical apparatus for explosive gas atmospheres – Part 0: General requirements
EN 60079-1:2007	Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures “d”
EN 60079-11:2007	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”

The electrical design of the slip rings is documented in the following documents:

700-0123-00	Model 180-X Design Document
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Markings:

CE 0344 Ex II 2 G Ex d IIB T5 Gb

CE 0344 Ex II 2 G Ex d ib IIB T5 Gb

EC Type Examination Certificate:

KEMA 04ATEX2084 X
DEKRA Certification B.V.
Utrechtseweg 310
6812 AR Arnhem
The Netherlands

Production Quality Assurance Notification:

DEKRA 13ATEXQ0093
DEKRA Certification B.V.
Utrechtseweg 310
6812 AR Arnhem
The Netherlands


Authorized ATEX Representative
Mr. Curtis Raynor