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 SIR 15.0041X	Issue No: 1	Certificate history:
			Issue No. 2 (2016-05-31)
Status:	**Current**	Page 1 of 5	Issue No. 1 (2016-02-04)
			Issue No. 0 (2015-04-20)
Date of Issue:	**2016-02-04**		

Applicant: **Spectrex Inc.**
218 Little Falls Road
Cedar Grove
New Jersey 07009
United States of America

Equipment: **FS-1100 IR3, FS-1200 UV/IR and FS-1300 IR Flame Simulators**

Optional accessory:

Type of Protection: **Flameproof, Intrinsically Safe Optical Isolation and Dust Protection by Enclosure**

Marking:

Model FS-1100
Ex d ib op is IIB+H2 T5 Gb
Ex ib op is tb III C T135°C Db
Ta = -20°C to +50°C

Models FS-1200 and FS-1300
Ex d ib op is IIB+H2 T5 Gb
Ta = -20°C to +50°C

Approved for issue on behalf of the IECEx Certification Body: A G Boyes

Position: Certification Support Officer

Signature:
(for printed version)

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:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden
Deeside
CH5 3US
United Kingdom

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Manufacturer:	**Spectrex Inc.** 218 Little Falls Road Cedar Grove New Jersey 07009 **United States of America**	

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 : 2007-10 Edition:5	Explosive atmospheres - Part 0:Equipment - General requirements
IEC 60079-1 : 2007-04 Edition:6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-28 : 2015 Edition:2	Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
IEC 60079-31 : 2008 Edition:1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'

*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/SIR/ExTR15.0080/00 GB/SIR/ExTR16.0024/00

Quality Assessment Report:

GB/SIR/QAR08.0002/05

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The FS-1100 IR3 Flame Simulator comprises an aluminium, cylindrical, main enclosure with a handle fitted onto the side. Mounted on the handle is an intrinsically safe switch that is used to operate the Flame Simulator. The wires from the switch enter the enclosure via a component approved flameproof bushing.

At the front of the enclosure, there is an end-cap which has a 3 mm thick sapphire window mounted against the inside wall of the enclosure forming a flanged flamepath. The window is secured internally with a threaded retaining ring. This end-cap is secured to the main enclosure by three, M16 x 1, hexagon headed fastening screws, this forms a spigot joint at the front of the enclosure.

Externally, there is an integral guard arrangement which protects the window from impact. Optionally, a reflector may be mounted to the front of the enclosure.

There is a knurled M55 threaded cover on the back of the enclosure, this is tool secured by an M3 grub screw. Internally, there is a battery pack intended to be charged only in a safe area and when removed from the enclosure. The ratings of the battery pack are 2200 mAh, 14.8 V (nominal).

Also mounted in the enclosure are a circular PCB and an optical source which emits optical radiation through the sapphire window. The FS-1100 IR3 Flame Simulator uses a Class 1 laser to IEC 60825-1 and an infrared source.

All fasteners have yield strength 344 N/mm^2.

Refer to EQUIPMENT (continued) for additional information

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The dimensions of the flameproof joints are other than the relevant minimum or maximum values required by table 2 of IEC 60079-1:2007 for IIB + H_2, as detailed below:

Flamepath Description	Type of joint	Minimum Width 'L' (mm)	Maximum Gap i_C (mm)
Joint formed by window against the enclosure	Flanged	10.75	0.02
Enclosure end-cap spigot	Cylindrical	15	0.08

Gaps shall not be machined to be any larger than the values of 'i_C', and widths shall not be modified to be any smaller than the values of 'L', shown in the table above.

2. The equipment shall only be charged in a safe area with the batteries removed from the flameproof enclosure. The charge conditions are as follows:

Maximum charge voltage: 4.2 V per cell

Maximum charge current: 2200 mA

The charge voltage and current shall not exceed these values.

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EQUIPMENT (continued):

The Flame Simulator meets level of protection IP6X and has been independently tested according to the requirements of IEC 60529 to also meet IPX5.

Conditions of manufacture

The Manufacturer shall comply with the following:

1. Each unit shall be subjected to a routine overpressure test of 24 bar for at least 10 s as required by clause 16.4 of IEC 60079-1:2007. There shall be no permanent deformation of the joints or damage to the enclosure.

2. The circuit of each unit shall be configured such that once the trigger is pressed, the equipment will operate for a maximum period of 60 s, following which the equipment cannot be operated for a minimum period of 20 s

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1 – this Issue introduced the following changes:

1. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-28:2006 Ed 1 was replaced by IEC 60079-28:2015 Ed 2 , the markings applied to the models used for dust were updated to recognise 'op is'.
2. The introduction of two, new models that use a halogen optical source located in a flameproof enclosure light passing out to the external environment via a window. The new models are designated as FS-1200 or FS-1300 Halogen Flame Simulators and are marked:

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   Ta = -20°C to +50°C
3. The recognition of minor drawing modifications that include correcting the omission of the enclosure paint specification.
4. The voltage protection circuit and fuse location were modified.
5. The edition number to standard IEC 60079-0 was amended from Ed 6 to Ed 5 to correct a typographical error.