



# 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](http://www.iecex.com)

Certificate No.: **IECEx SIR 07.0085X** issue No.:9  
Status: **Current**  
Date of Issue: **2015-02-11** Page 1 of 4  
Applicant: **Spectrex Ltd**  
218 Little Falls Rd  
Cedar Grove  
NJ 07009  
**United States of America**

Certificate history:  
Issue No. 9 (2015-2-11)  
Issue No. 8 (2013-5-21)  
Issue No. 7 (2012-12-17)  
Issue No. 6 (2012-2-1)  
Issue No. 5 (2011-5-5)  
Issue No. 4 (2010-5-11)  
Issue No. 3 (2009-7-14)  
Issue No. 2 (2009-1-7)  
Issue No. 1 (2008-6-11)  
Issue No. 0 (2008-1-25)

Electrical Apparatus: **40/40 Series Flame Detectors**  
Optional accessory:

Type of Protection: **Flameproof Increased Safety and Dust**

Marking: Ex d e IIC T5 Gb or Ex d e IIC T4 Gb  
Ex tb IIIC T96°C Db Ex tb IIIC T106°C Db  
(-55°C ≤ Ta ≤ +75°C) (-55°C ≤ Ta ≤ +85°C)

Approved for issue on behalf of the IECEx  
Certification Body:

R A Craig

Position:

Certification Support Officer

Signature:  
(for printed version)

Date:

2015-02-11

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:

**SIRA Certification Service**  
Rake Lane  
Eccleston  
Chester  
CH4 9JN  
United Kingdom

**sira**  
CERTIFICATION



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Manufacturer: **Spectrex Ltd**  
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**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:

<b>IEC 60079-0 : 2011</b> Edition: 6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-1 : 2007-04</b> Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
<b>IEC 60079-31 : 2008</b> Edition: 1	Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure 't'
<b>IEC 60079-7 : 2006-07</b> Edition: 4	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/SIR/ExTR08.0006/00  
GB/SIR/ExTR09.0098/00  
GB/SIR/ExTR12.0024/00  
GB/SIR/ExTR15.0010/00

GB/SIR/ExTR08.0074/00  
GB/SIR/ExTR10.0103/00  
GB/SIR/ExTR12.0282/00

GB/SIR/ExTR08.0169/00  
GB/SIR/ExTR11.0095/00  
GB/SIR/ExTR13.0116/00

#### Quality Assessment Report:

GB/SIR/QAR08.0002/00



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The 40/40 Series Flame Detectors are manufactured from stainless steel. They are cylindrical in shape and are of three-part construction. They comprise a central assembly that is divided into two compartments, an electronics compartment and a terminal compartment, each with their own cover. The electronics compartment cover contains a circular glass window that allows the equipment to provide its monitoring function.

The cover is secured by three ¼"-20 UNC-2A socket head cap screws. The cover window aperture has two moulded lugs that, along with a flat bar which is secured by cement and a No. 4-40 UNC-2A screw, provide protection of the window against impact.

The terminal compartment, which contains Bartec Ex e component approved terminals and which communicates with the electronics compartment via a potted bushing, has its cover secured by three ¼"-20 UNC-2A socket head cap screws.

The central assembly has either two M25 x 1.5 or ¾" x 14 NPT threaded holes in its sidewall to allow the fitting of suitably certified cable entry devices.

Refer to the ANNEXE for additional description and Conditions of Manufacture.

### CONDITIONS OF CERTIFICATION: YES as shown below:

Refer to the ANNEXE.



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

Refer to the Annexe for Details of Certification Changes.

**Annexe to:** IECEx SIR 07.0085X Annexe Issue 9  
**Applicant:** Spectrex Ltd  
**Apparatus:** 40/40 Series Flame Detectors



The 40/40 Series Flame Detectors comprise the following models:

40/40I-XXXXC	IR3 Flame Detector
40/40M-XXXXC	Combined Hydrocarbon & Hydrogen Flame Detector
40/40R-XXXXC	Single IR Detector
40/40L-XXXXC	UV/IR Flame Detector without BIT
40/40L4-XXXXC	UVIR (4.5 $\mu$ m) Flame Detector without BIT
40/40U-XXXXC	UV Flame Detector without BIT
40/40UB-XXXXC	UV Flame Detector with BIT
40/40LB-XXXXC	UV/IR Flame Detector with BIT
40/40L4B-XXXXC	UV/IR (4.5 $\mu$ m) Flame Detector with BIT

### Conditions of Manufacture

The Manufacturer shall note the following conditions of manufacture:

- i. Each 40/40 Series Flame Detector shall be subject to a routine pressure test of 19.0 bar for at least 10 s as required by clause of 16.1 IEC 60079-1:2003. There shall be no permanent deformation or damage to the enclosure.
- ii. Each 40/40 Series Flame Detector shall be subject to a routine dielectric strength test of 500 V rms applied between the terminal block and the enclosure for a period of 60 s as required by clause 6.1 of IEC 60079-7:2001. Alternatively, the test voltage may be 600 V for a period of 100 ms.

### Conditions of Certification

The user/installer shall comply with the following:

- i. The dimensions of the flamepaths are other than the relevant minimum or maximum, as required by Table 2 of IEC 60079-1:2007, as detailed below:

Flamepath Location	Type of Joint	Maximum Gap, $i_c$	Minimum Length, L
Sapphire Window	Flanged	0.04 mm	10.5 mm
Main Spigot	Cylindrical	0.15 mm	15.5 mm

Gaps,  $i_c$ , shall not be modified to be any larger and lengths, L, shall not be modified to be any shorter than the values shown in the table above.

- ii. Units may be painted or fitted with optional accessories; some of which are made of a non-metallic material or have a non-metallic coating which could potentially generate an ignition-capable level of electrostatic charge under certain extreme conditions. Therefore, these units shall not be installed in a location where they may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on the non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
- iii. The three fastening screws used to secure the cover of the flameproof compartment have a yield stress of 344 N/mm<sup>2</sup>. Any replacement fasteners shall have a yield stress of at least this value.
- iv. When the duct mount is fitted and the equipment is intended to be mounted to a heated/cooled air duct/process vessel, it shall be verified that the temperature of the air duct/process vessel shall not be capable of heating or cooling any part of the equipment enclosure to a temperature outside the marked maximum ambient temperature range prior to switching the equipment on, when taking into account surrounding ambient temperature.

**Date:** 11 February 2015

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**Form 9530 Issue 1**

### Sira Certification Service

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**Annexe to:** IECEx SIR 07.0085X Annexe Issue 9  
**Applicant:** Spectrex Ltd  
**Apparatus:** 40/40 Series Flame Detectors



**Details of Certificate Changes (for issues 1 and above):**

<b>Issue 1</b> - this Issue introduced the following changes:	
1.	The introduction of minor machining dimension changes and the reformatting of drawing details.
2.	The introduction of a spacing disc on the bushing.
3.	The optional use of aluminium as a material of manufacture of the enclosure.
<b>Issue 2</b> - this Issue introduced the following changes:	
1.	A change of the aluminium specification.
2.	Minor machining and dimensional changes.
<b>Issue 3</b> - this Issue introduced the following change:	
1.	The recognition of minor drawing modifications; these changes are administrative and do not affect the aspects of the product that are relevant to explosion safety
<b>Issue 4</b> - this Issue introduced the following changes:	
1.	Minor dimensional changes to the terminal compartment were endorsed.
2.	The recognition of minor drawing modifications; these changes are administrative and do not affect the aspects of the product that are relevant to explosion safety
<b>Issue 5</b> - this Issue introduced the following changes:	
1.	The recognition of minor enclosure dimension changes was approved.
2.	Changes to certificate schedule drawings text were endorsed.
3.	The cover securing screws were permitted to be changed from 304 Stainless Steel to 316 Stainless Steel.
<b>Issue 6</b> - this Issue introduced the following change:	
1.	The gas group was changed from IIB + H <sub>2</sub> to IIC.
<b>Issue 7</b> - this Issue introduced the following changes:	
1.	The introduction of two new models, type 40/40UFL-XXXXC fast UV/IR flame detector and 40/40UFI-XXXXC ultra fast triple IR3 flame detector. Each new model may be housed within either the aluminium or stainless steel enclosure previously approved. There are no changes to the enclosures; the changes are to the internal circuitry. The power dissipation is the same as that previously approved.
2.	Changes to marking label to introduce the electrical ratings, as required for increased safety protection was approved.
<b>Issue 8</b> - this Issue introduced the following changes:	
1.	The introduction of minor constructional changes, not affecting compliance. This includes the addition of four 'strength poles' in the lid of the Increased Safety compartment.
2.	Additional information added to marking labels. The certification code and essential marking for IECEx is unchanged.
<b>Issue 9</b> - this Issue introduced the following changes:	
1.	Following appropriate re-assessment, reference to any previous standards, IEC 60079-0:2004 Ed 4, IEC 60079-1:2003 Ed 5, IEC 60079-7:2006 Ed 4, IEC 61241-0:2004 Ed 1, and IEC 61241-1:2004 Ed 1 were replaced by, IEC 60079-0:2011 Ed 6, IEC 60079-1:2007 Ed 6, IEC 60079-7:2006 Ed 4 and IEC 60079-31:2008 Ed 1, the markings were updated accordingly. Conditions of Certification were introduced to recognise the requirements of the latest standards and therefore an 'X' suffix was added to the certificate number.
2.	The O-ring material was changed to address new requirements for elastomeric materials detailed in the latest standards.
3.	The external earth facility arrangement was modified.
4.	The introduction of optional, external accessories which are described as follows: <ul style="list-style-type: none"> <li>• Weather Cover, P/N 777263 (plastic) or P/N 777163 (stainless steel) - This part consists of a partial cylindrical stainless steel or plastic hood covering the top and back of the enclosure. It is secured to the enclosure by two hexagon socket screws, one in the top and one in the back of the enclosure. The stainless steel version may be painted.</li> <li>• Air Shield, P/N 777650 - This part consists of a clamp for attachment to the front of the enclosure. There are six screws which secure the clamping part to the main body of the air shield. The main body is cylindrical with a hole in the centre situated over the enclosure window, with a sintered part around the inside edge. There is a valve/connector on the top for connection of a pipe. The pipe carries air which blows through the sinter for the purpose of cleaning the sapphire window of the enclosure. The process temperature range is detailed in the manufacturer's instructions.</li> <li>• Duct Mount, P/N 777670 - This part is for mounting the enclosure to the outside wall of an air duct. It has a bar which is mounted to the existing brackets on the base of the enclosure. The bar runs along the base of the enclosure to a plate with a window which is situated in front of the existing window on the front of the enclosure. Another square plate is mounted to this plate with a gasket in between and secured by four studs and nuts. On the front face there is a gasket for mounting on the outside wall of the air duct and two strips with studs which are intended to come through from the inside wall of the air duct and are secured by four nuts. The process temperature range is detailed in the manufacturer's instructions.</li> <li>• Tilt Mount, P/N 40/40-001 - This part consists of a square plate with four holes for screws which are used to mount the assembly. Mounted on the square plate is a hinged arrangement to allow for positioning of the flame detector, which is secured to the tilt mount by two screws.</li> </ul> <p>These accessories are fixed to mounting arrangements already present on the enclosures.</p>