



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Component intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: Sira 02ATEX2015U Issue: 7

4 Component: IR2xxxxxxx-Series Gas Sensing Head

5 Applicant: SGX Sensortech (IS) Ltd

6 Address: 2 Hanbury Road  
Widford Industrial Estate  
Chelmsford  
Essex CM1 3AE  
UK

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

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this component has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of a component intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.


9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2006 EN 60079-11:2007 EN 50303:2000  
IEC 60079-0:2007 used as reference for guidance on the marking

10 The sign 'U' is placed after the certificate number to indicate that the product assessed is a component and may be subject to further assessment when incorporated into equipment. Any special conditions for safe use are listed in the schedule to this certificate.

11 This EC type-examination certificate relates only to the design and construction of the specified component. If applicable, further requirements of this Directive apply to the manufacture and supply of this component.

12 The marking of the component shall include the following:

 I M1  
Ex ia I Ma  
T<sub>a</sub> = -20°C to +60°C

Project Number 29090

C. Ellaby  
Deputy Certification Manager

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Form 9401 Issue 1

Page 1 of 4

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## SCHEDULE

### EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX2015U  
Issue 7

#### 13 DESCRIPTION OF COMPONENT

The IR2xxxxxxx-series Gas Sensing Head comprises a stainless steel body, which houses an infra-red emitter and detector(s). Electrical connections are made via pins that pass through a potting compound at the rear of the device. Gas enters the device via two wire meshes, one of which is brazed into the inside of the front face of the enclosure, the assembly offering protection against dust ingress of IP5X.

There may be two or three detector circuits and the pyroelectric detector itself may be varied to detect a number of different gases. There are six, seven and eight pin versions; a thermistor or a temperature sensor may also be fitted.

The IR2xxxxxxx is a galvanically isolating device with infallible separations between the lamp and detector circuits up to 10 V. When used as an intrinsically safe galvanically-isolating device, the various versions of the IR2xxxxxxx have the following safety descriptions:

#### 7-pin and 8-pin versions (IR2xEx, IR2xFx, IR2xGx, IR2xHx & IR2Tx)

Lamp circuit	Detector circuit	Lamp + detector circuits
Ui = 7.2 V	Ui = 10 V	Pi = 2.71 W
	Pi = 1.2 W	

#### All other versions

Lamp circuit	Detector circuit	Lamp + detector circuits
Ui = 7.2 V	Ui = 10 V	Pi = 2.71 W

**Variation 1** - This variation permitted the following changes:

- The introduction of an 8-pin twin-gas version, incorporating an additional receiver and consequential changes to the PCB layout.
- The modification of the special condition for safe use relating to the thermal resistance of the enclosure.
- The change of type designation from IR1xxx-series to IR2xxxxxxx-series.
- The replacement of drawing N24106R in the original certificate with drawing N30090A.

**Variation 2** - This variation permitted the following changes:

- Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents originally listed in section 9, EN 50014:1997 (amendments A1 to A2), EN 50020:1994 and EN 50303:2000 were replaced by those currently listed, the markings in section 12 were updated accordingly.
- The introduction of a 7-pin version with a temperature IC or thermistor fitted.
- The addition of a thermistor to the existing 8-pin version.
- An amendment of the product description and the safety description.
- Minor track layout changes to the 6-pin and 8-pin boards.

**Variation 3** - This variation permitted the following changes:

- The artwork drawings were changed to omit the reference to the supplier of the FR4 board material and specify another (non-certification) drawing.
- An alternative lamp with a filament support was introduced to improve mechanical robustness.
- The inclusion of mesh support and glass perform items to the main assembly.

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Form 9401 Issue1

Page 2 of 4

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## SCHEDULE

### EC TYPE-EXAMINATION CERTIFICATE

Sira 02ATEX2015U  
Issue 7

**Variation 4** - This variation introduced the following changes:

- i. The label, drawing number N30090A, was amended to include a new product identity for the end user and an optional bar code.
- ii. The product title was changed from IR2xxx to IR2xxxxxxx, the previous references in the description and variations being modified accordingly.

**Variation 5** - This variation introduced the following changes:

- i. The introduction of a solder resist (mask) layer was approved.
- ii. The introduction of alternative sourced Pyroelectric detectors was endorsed.
- iii. The correction of minor typographical errors on drawings was accepted.
- iv. The introduction of an alternative PCB, reflector material and polycarbonate housing was acknowledged.

**Variation 6** - This variation introduced the following change:

- i. The Applicant's name and address was changed from e2v Technologies (UK) Limited, 106 Waterhouse Lane, Chelmsford, Essex CM1 2QU, UK to SGX Sensortech (IS) Ltd 2 Hanbury Road, Widford Industrial Estate, Chelmsford, Essex CM1 3AE.

## 14 DESCRIPTIVE DOCUMENTS

### 14.1 Drawings

Refer to Certificate Annexe.

### 14.2 Associated Sira Reports and Certificate History

Issue	Date	Report No.	Comment
0	11 July 2002	R52A7947A	The release of the prime certificate.
1	12 May 2004	R52V9860A	The prime certificate was re-issued to permit the product to be re-branded in the name of e2v Technologies Ltd.
2	12 November 2004	R52A10469A	The introduction of Variation 1.
3	18 June 2008	R52A16883H	This Issue covers the following changes: <ul style="list-style-type: none"> <li>• All previously issued certification was rationalised into a single certificate, Issue 3, Issues 0 to 2 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.</li> <li>• The introduction of Variation 2.</li> </ul>
4	23 February 2009	R52L18828A	The introduction of Variation 3.
5	28 January 2011	R24261A/00	The introduction of Variation 4.
6	18 April 2012	R25570A/00	The introduction of Variation 5.
7	05 October 2012	R29090A/00	The introduction of Variation 6.

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Form 9401 Issue1

Page 3 of 4

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Issue 7

#### 15 SPECIAL CONDITIONS FOR SAFE USE

- 15.1 The IR2xxxxxxx-Series Gas Sensing Head shall only be used in an ambient temperature range of -20°C to +60°C.
- 15.2 The thermal resistance the IR2xxxxxxx-Series Gas Sensing Head does not exceed 25 K/W; this shall be taken into account when considering its surface temperature and the temperature classification of the equipment into which it is to be incorporated.
- 15.3 The IR2xxxxxxx Head is dust-proof (IP5x) but offers no protection against the ingress of water. Where protection in excess of IP50 is required, the apparatus into which the IR Head is installed shall provide the necessary ingress protection.

#### 16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

#### 17 CONDITIONS OF CERTIFICATION

- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.
- 17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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Form 9401 Issue1

Page 4 of 4

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## Certificate Annexe

Certificate Number: Sira 02ATEX2015U  
 Component: IR2xxxxxxx-Series Gas Sensing Head  
 Applicant: SGX Sensortech (IS) Ltd



### Issue 0

Drawing	Sheet	Rev.	Date	Title
N25541R	1 of 1	4	10 Dec 01	Label
H545535A	1 of 1	3	15 Mar 02	T-1 Incandescent Lamp
DAS546577BA	1 of 1	3	08 Jul 02	IR1xxx Series Certification Drawing

### Issue 1

Drawing	Sheet	Rev.	Date	Description
N25541R	1 of 1	5	28 Mar 03	Label
H545535A	1 of 1	4	29 Jan 03	T-1 Incandescent Lamp
DAS546577BA	1 of 1	4	21 Mar 03	IR1xxx Series Certification Drawing

### Issue 2

Drawing	Sheet	Rev	Date	Description
DAS546577CA	1 of 1	1	05 Oct 04	Constructional equivalence to IR1xxx
H545535A	1 of 1	4	29 Jan 03	T-1 incandescent lamp
N30090A	1 of 1	1	05 Oct 04	Label

### Issue 3

Drawing	Sheets	Rev	Date	Description
DAS546577CA	1 to 4	2	05 Jun 08	General assembly
H545535A	1 of 1	4	29 Jan 03	T-1 incandescent lamp
N30090A	1 of 1	2	06 Jun 08	Label – ATEX

### Issue 4

Drawing	Sheets	Rev	Date	Description
DAS546577CA	1 to 4	3	23 Feb 09	IR2 Series Gas Sensor General Assy
H766212A	1 of 1	1	23 Feb 09	T-1 Incandescent Lamp with Filament Support

### Issue 5

Drawing	Sheets	Rev	Date (Sira stamp)	Description
N30090A	2 of 2	3	26 Jan 11	Label

### Issue 6

Drawing	Sheets	Rev	Date (Sira stamp)	Description
DAS 546577CA	1 to 4	4	17 Apr 12	IR2 series Gas sensor General Assembly

### Issue 7

Drawing	Sheets	Rev	Date (Sira stamp)	Description
LBL - 0012	1 to 2	1	05 Oct 12	IR2 Label

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Form 9401 Issue 1

Page 1 of 1

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