



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 11ATEX2041** Issue: **10**

4 Equipment: **Personal Surveyor 2xx / PS2xx Gas Detector**

5 Applicant: **Gas Measurement Instruments**

6 Address: Inchinnan Business Park
Renfrew
Scotland PA4 9RG
UK

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

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment 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 60079-1:2004 EN 60079-11:2007
EN 60079-0:2009 (used for guidance in respect of marking)

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, 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 2G
Ex ia d IIC T* Gb
(Ta = -20°C ≤ Ta ≤ +50°C)
* T4 or T3 depending on battery type



II 1G
Ex ia IIC T* Ga
(Ta = -20°C ≤ Ta ≤ +50°C)
* T4 or T3 depending on battery type

Project Number 0438

Signed:

Title: Director of Operations

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CSA Group Netherlands B.V.
Utrechtseweg 310,
6812 AR, Arnhem,
Netherlands



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13 DESCRIPTION OF EQUIPMENT

The Personal Surveyor 2xx / PS2xx Gas Detector, Personal Surveyor 2xx+ / PS2xx+ Gas Detector, Personal Surveyor 2xx-LMP / PS2xx-LMP Gas Detector are portable, hand held, gas sensing instrument that is designed for confined space monitoring, e.g. in sewers, underground piping or within tanks and other personal monitoring applications. The instrument consists of three, PCB parts, these being the Display, Sensor and Power that are all connected via flexible connections. In addition to the three, PCB parts, the instrument contains a single pump assembly.

The Display PCB is fitted with a single liquid crystal display unit (LCD), two micro switches, a vibration motor and various electronic components including a number of LEDs for visual warning indication. The Sensor PCB is fitted with three, different types of gas sensor (LEL, CO/H₂S, and O₂) and an audible alarm with various electronic components. The Power PCB is a semi-potted assembly that houses a single lithium polymer battery with the associated charger circuit. All parts are housed in a plastic enclosure held together by six, individual screws. Two push buttons are mounted on the front of the enclosure; these operate the instrument and interrogate the measurements displayed on the LCD.

Charging of the equipment (lithium polymer batteries) is only permitted in a non-hazardous area.

The Personal Surveyor Gas Detector has three sensor positions that are designated either 'PELL1', TOX1' or 'CELL1', each of which is fitted with one of the sensors listed below:

Explanation of the product variant:

Models	Descriptions.
Personal Surveyor 2xx / PS2xx Gas Detector	Original certified product.
Personal Surveyor 2xx+ / PS2xx+ Gas Detector	Adds Bluetooth and optional switched LEL sensor.
Personal Surveyor 2xx-LMP / PS2xx-LMP Gas Detector	Identical to Personal Surveyor 2xx+ / PS2xx+ Gas Detector. The model have been labelled differently for a specific market.

Sensor Position: PELL1 ('Ex d', flameproof sensors)

Manufacturer	Part no.	Certificate no.
Alphasense Ltd	Type A	Sira 07ATEX1088X Issue 1 IECEX SIR 07.0031X Issue 1
City Technology Ltd	4P-75, 4P-75C, 4P-75C(T4), 4P-75M, 4P-75M(T4)	Sira 01ATEX1205X Issue 9 IECEX SIR 04.0013U Issue 5
SGX Sensortech	VQ548ZD/W, VQ500 series	SIRA 01ATEX1073U Issue 4 IECEX SIR 04.0014U Issue 3
GMI Ltd	As determined by GMI Ltd	Not applicable, fully assessed as part of this certificate, refer to drawing 67018A SIRA V2 revision 1 originally listed on Sira report no. R51A14936A.
MIPEX	MIPEX-03-X-XX-X.2	ITS11ATEX27418U IECEX ITS 11.0047U
Dynamant Ltd.	MSH2-LP/HC/3/ series	FTZU 14 ATEX 0213U IECEX FTZU 15.0002U
Dynamant Ltd.	MSH2ia LP/HC/3/ series	FTZU 14 ATEX 0213U IECEX FTZU 15.0002U



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Sensor Position: PELL1, (intrinsically safe sensor)

Manufacturer	Part no.	Certificate no.
SGX Sensortech	VQ548MP	DEMKO 14 ATEX 1266U

Sensor Position: TOX1 (Simple apparatus)

Manufacturer	Part no.
Alphasense Ltd	COAF, COAX, COAE, D2 +D2 (adaptor) H2SA1, H2SAH, H2SAE SO2AE, SO2AF, NO-A1, NO-AE, NO2-A1, NO2-AE, CL2-A1
City Technology Ltd	COSH, 4CO, 4CF, 4CF+, CO3E300, CO3E500S 4HS, 4HS+, 4HS/LM, H2S3E100, H2S3E100S, 4H, 4H/LM, H2S3E30 4S, 4HYT, H23E1%, H23E4%, 4HN, HCN3E30F
SGX Sensortech	EC4-500-CO, EC4-2000-CO EC4-100-H2S, EC4-1000-H2S EC4-20-SO2, EC4-2000-SO2, EC4-250-NO, EC4-2000-NO, EC4-20-NO2
DD Scientific Ltd	GS+4DT, GS+4CO GS+4H2S

Sensor Position: CELL1 (Simple apparatus)

Manufacturer	Part no.
Alphasense Ltd	O2A2, O2A1, O2A3
City Technology Ltd	4OX2, 4OX1, 4OXV, 4OXLL
SGX Sensortech	EC410
DD Scientific Ltd	S+4OX

Variation 1 - This variation introduced the following changes:

- i. An alternative battery type/option, GEB102649, manufactured by General Electronics Battery Co. Ltd. When fitted with this alternative battery, the Personal Surveyor 2xx / PS2xx Gas Detector maybe marked with a temperature class of T4.
- ii. PCB modifications.
- iii. An additional CELL 1 position sensor type/option (City Technology Ltd type 4OXV Oxygen Sensor).

Variation 2 - This variation introduced the following changes:

- i. A reduction of the maximum charger voltage from Um: 30 V to Um: 6 V; safety components rated on this maximum voltage were approved.
- ii. Following successful completion of a non-metallic enclosure static test- measurement of capacitance, the Special Condition for Safe Use was removed and the 'X' suffix removed from the certificate number.



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Variation 3 - This variation introduced the following changes:

- i. Two of the above tables were modified to recognise that the part numbers and supplier of the following sensors have been altered, this is an administrative change only and the replacement sensors are technically equivalent to those previously used:

Sensor Position: TOX1 (Simple apparatus)

Previous sensor details	
Manufacturer	Part no.
MRB Scientific Ltd.	S+4DT, S+4CO, S+4H2S

Replacement sensor details	
Manufacturer	Part no.
DD Scientific Ltd.	GS+4DT, GS+4CO, GS+4H2S

Sensor Position: CELL1 (Simple apparatus)

Previous sensor details	
Manufacturer	Part no.
MRB Scientific Ltd.	S+4OX

Replacement sensor details	
Manufacturer	Part no.
DD Scientific Ltd.	S+4OX

- ii. The casting compound was changed.

Variation 4 - This variation introduced the following changes:

- i. The recognition of a distributor's label.

Variation 5 - This variation introduced the following changes:

- i. A new model option was introduced into the range of Personal Surveyor 2XX / PS2XX Gas Detectors, this option uses an intrinsically safe sensor as detailed below:

Sensor Position: PELL1, intrinsically safe sensor:

Manufacturer	Part no.	Certificate no.
SGX Sensortech	VQ548MP	DEMKO 14 ATEX 1266U

The following marking is applicable to this option:

II 1G
 Ex ia IIC T* Ga
 (Ta = -20°C ≤ Ta ≤ +50°C)
 * T4 or T3 depending on battery type

As a result of this change, EN 60079-26:2007 was added to the list of certifying standards.

- ii. The label material was previously, specifically defined but the specification has now been changed to allow an equivalent material to be used.
- iii. The manufacturer of the sensors has changed name from "E2V" to "SGX Sensortech".

Variation 6 - This variation introduced the following changes:

- i. The introduction of an optional alternative sensor pcb to permit the use of the MIPEX3 series (MIPEX-03-X-XX-X.2) sensor manufactured by Optosense LLC \ Mipex Technology, Ex certified by certificate ITS11ATEX27418U as an intrinsically safe Ex component, the description is amended to reflect this change.

II 1G
 Ex ia IIC T* Ga
 (Ta = -20°C ≤ Ta ≤ +50°C)
 * T4 or T3 depending on battery type



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- ii. As a result of a change to the scope in IEC60079-26:2014 (Edition 3) of this standard it cannot now be applied to equipment certified to a single type of protection and therefore EN 60079-26 is removed from the list of assessment standards.

Variation 7 - This variation introduced the following change:

- i. To permit the use of:

- A new type of O₂ sensor, City Technology Ltd., part no. 4OxLL, on the sensor PCB. The table, Sensor Position CELL1 (Simple apparatus), of permitted sensors is revised to include this type as follows:

Manufacturer	Part no.
City Technology Ltd	4OX2, 4OX1, 4OXV, 4OxLL

- An alternative type of tilt switch.
- An alternative (universal) set of printed circuit boards.

Variation 8 - This variation introduced the following change:

- i. To permit the use of additional sensor types Dynament MSH2-LP/HC/3/ series and Dynament MSH2ia-LP/HC/3/ series on the sensor PCB.

- The table Sensor Position PELL1 in the certificate, listing permitted sensors, is revised to include these type as follows:

Manufacturer	Part no.
Dynament Ltd.	MSH2-LP/HC/3/ series
Dynament Ltd.	MSH2ia LP/HC/3/ series

Variation 9 - This variation introduced the following changes:

- i. The introduction of an additional Bluetooth circuit, which are identified by the following models 2xx+ / PS2xx+, 2xx-LMP / PS2xx-LMP, Gas Detector which is added to the certificate, with the following modifications.

- Circuit modification to add Bluetooth and NFC communication.
- Circuit modification to allow electronically switched operation of LEL sensor.
- PCB modification to accommodate changes listed above.
- Alternative F4 value, 125mA and 75mA for the VQ548MP and Dynament sensors respectively.
- Corrections to update the sensor list

- ii. The description was modified to recognise these changes.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	4 February 2011	R22719A/00	The release of prime certificate.
1	13 June 2011	R24740A/00	The introduction of variation 1.



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Issue	Date	Report number	Comment
2	07 December 2011	R25517A/00	The introduction of variation 2; as a result of change ii, the 'X' suffix in the certificate number was removed.
3	06 July 2012	R28210A/00	The introduction of variation 3.
4	19 March 2014	R33538A/00	The introduction of variation 4.
5	28 November 2014	R25517A/01 R70009198A	This Issue covers the following changes: <ul style="list-style-type: none"> Report R25517A/01 replaced R25517A/00. The introduction of variation 5.
6	24 August 2016	R70085244A	This Issue covers the following changes: <ul style="list-style-type: none"> EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. <i>(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)</i> The introduction of variation 6.
7	13 February 2018	R70142095A	The introduction of Variation 7.
8	25 June 2018	R70184461A	The introduction of Variation 8.
9	31 October 2018	R70194679A	The introduction of Variation 9.
10	15 October 2019	0438	<ul style="list-style-type: none"> Transfer of certificate Sira 11ATEX2041 from Sira Certification Service to CSA Group Netherlands B.V..

15 **SPECIFIC CONDITIONS OF USE** (denoted by X after the certificate number)

None

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.

Certificate Annexe



Certificate Number: Sira 11ATEX2041

Equipment: Personal Surveyor 2xx / PS2xx Gas Detector

Applicant: Gas Measurement Instruments

Issue 0

Number	Sheet	Rev.	Date (Sira stamp)	Description
64250A-SIRA-CERT	1 to 3	A	02 Feb 11	PS200 Basic Instrument Assembly Certification
64258A-SIRA-CERT	1 of 1	A	02 Feb 11	Pump Assy. Certification
64290A-SIRA-CERT	1 to 3	A	02 Feb 11	P.C.B. Assembly Certification
64290ibSCP	1 of 1	B	02 Feb 11	PS200 PCB Assy – Safety Critical Parts
64320cert	1 of 3	B	02 Feb 11	PS200 – Display
64320cert	2 of 3	B	02 Feb 11	PS200 – Sensor
64320cert	3 of 3	B	02 Feb 11	PS200 – Power PCB
64320-GERB	1 to 7	A+	02 Feb 11	PS200 PCB Gerbers
64317-SIRA-CERT	1 of 1	A	02 Feb 11	Sira Certification Label PS200
64321-SIRA-CERT	1 of 1	A	02 Feb 11	Battery PS200 Sira Certification
67018A SIRA V2	1 of 1	1	11 Jan 07	SR Flammable Sensor Assembly
67271 SIRA	1 of 1	1	11 Jan 07	Sensor Body
66463 SIRA	1 of 1	1	11 Jan 07	Sintered Disc
66072 SIRA	1 of 1	1	11 Jan 07	Sensor Contact Pin
66473	1 of 1	1	11 Jan 07	Insert Moulding 1
66474	1 of 1	1	11 Jan 07	Insert Moulding 2
66465A	1 of 1	1	11 Jan 07	Filter Assembly
66040 SIRA	1 of 1	1	11 Jan 07	Sensor Label
64290A-SIRA-CERT-F4-MOD	1 to 2	A	21 Feb 11	P.C.B. Assembly Sira Certification F4 Modification

Issue 1

Number	Sheet	Rev.	Date (Sira stamp)	Description
64290A-SIRA-CERT	1 to 3	B	10 Jun 11	P.C.B. Assembly Certification
64290i1SCP	1 of 1	1	10 Jun 11	PS200 PCB Assy – Safety Critical Parts
64320-GERB	1 to 7	1	10 Jun 11	PS200 PCB Gerber's
64321-SIRA-CERT	1 of 1	B	10 Jun 11	Battery PS200 Sira Certification
64317-SIRA-CERT	1 of 1	B	10 Jun 11	Sira Certification Label PS200

Issue 2

Number	Sheet	Rev.	Date (Sira Stamp)	Title
64290i2SCP	1 of 1	2	23 Nov 11	PS200 PCB Assy – Safety Critical Parts
64320cert	1 of 3	2	23 Nov 11	PS200 – Display
64320cert	2 of 3	2	23 Nov 11	PS200 – Sensor
64320cert	3 of 3	2	23 Nov 11	PS200 – Power PCB
64317-SIRA-CERT	1 of 1	C	02 Dec 11	Sira Certification Label PS200
64321-SIRA-CERT	1 of 1	B	23 Nov 11	Battery PS200 Sira Certification

Issue 3

Drawing no.	Sheets	Rev.	Date (Sira stamp)	Title
64290A-SIRA-CERT	1 to 3	C	05 Jul 12	P.C.B. Assembly Certification

Issue 4

Drawing	Sheets	Rev.	Date (Sira stamp)	Description
64317M Sira Cert	1 of 1	B	19 Mar 14	Certification Label Marine 4

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 6812 AR, Arnhem,
 Netherlands

Certificate Annexe



Certificate Number: Sira 11ATEX2041
Equipment: Personal Surveyor 2xx / PS2xx Gas Detector
Applicant: Gas Measurement Instruments

Issue 5

Drawing	Sheets	Rev.	Date (Sira stamp)	Description
64317_SIRA_CERT	1 of 1	E	12 Nov 14	Sira Certification Label PS200
64317M_SIRA_CERT	1 of 1	D	12 Nov 14	Sira certification Label

Issue 6

Drawing	Sheets	Rev.	Date(Sira stamp)	Description
64320M-cert	1 to 3	1	27 Jul. 16	Schematic
64320M-gerb	1 to 7	1	01 Aug. 16	PCB layout
64290MA_SIRA_CERT	1 to 3	1	27 Jul. 16	PCB assembly
64290Mi1SCP	1 of 1	1	27 Jul. 16	Safety critical parts list
64317_SIRA_CERT	1 of 1	F	23 Aug. 16	Certification label
64317M_SIRA_CERT	1 of 1	E	23 Aug. 16	Certification label

Issue 7

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
64320U-cert	1 of 3	1	30 Nov 17	Display PCB Universal schematic
64320U-cert	2 of 3	1	30 Nov 17	Sensor PCB Universal schematic
64320U-cert	3 of 3	1	30 Nov 17	Power PCB Universal schematic
64320U-gerb	1 to 7	2	09 Jan 18	Gerbers: display, sensor & power
64290UA-SIRA-Cert	1 to 2	1	30 Nov 17	PCB assembly
64290Umi1SCP	1 of 1	1	30 Nov 17	Safety critical parts, MIPEX sensor
64290Upi1SCP	1 of 1	1	30 Nov 17	Safety critical parts, Pellistor sensor

Issue 8 No new drawings were introduced.

Issue 9

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
64280-cert	1 to 4	2	17 Oct 18	PS200BT schematics
64280-gerb	1 to 7	2	17 Oct 18	PCB Gerbers
64290Bpi1SCP	1 of 1	1	17 Oct 18	Safety Critical Parts – Build with Pellistor Sensor
64290Bdi1SCP	1 of 1	1	17 Oct 18	Safety Critical Parts – Build with Dynament Sensor
64290Bvqi1SCP	1 of 1	1	17 Oct 18	Safety Critical Parts – Build with VQ548 Sensor
64250BA_SIRA_CERT	1 to 3	1	17 Oct 18	PS200 basic instrument assembly (bluetooth) Sira certification
64317_SIRA_CERT	1 of 1	G	17 Oct 18	Sira Certification Label.
64290BA_SIRA_CERT	1 to 2	1	17 Oct 18	PCB Assy (with Bluetooth) Sira Certification.

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