1 **EU-TYPE EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 02ATEX2176X** Issue: **10**

4 Equipment: **Triple Plus+**

5 Applicant: **Crowcon Detection Instruments Ltd**

6 Address: 172 Brook Drive
Milton Park
Abingdon
Oxon
OX14 4SD
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:

IEC 60079-0:2007 EN 60079-1:2008 EN 60079-11:2007

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 2 G
Ex ib d IIC T4 Gb
T_a = -20°C to +50°C

Project Number 1833

Signed:

Title: Director of Operations

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

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13 **DESCRIPTION OF EQUIPMENT**

The Triple Plus+ gas detector (also known as the Tank-Mate or Gaseeker) is a portable, battery-powered instrument comprising the following pr ipal sub-assemblies:

1. Nominally 7.4 V lithium ion encapsulated battery pack (part number C01006) or a nominally 6.0 V lead-acid battery (part number C01253 or S01963) mounted in a separate compartment.
2. Triple Plus main board with an LCD on its own separate PCB mounted piggy-back to the underside – the assembly is mounted in the lid.
3. Safety PCB
4. Sounder PCB and sounder
5. Up to four sensor modules

The sensor modules may be chosen from the following:

- Oxygen
- Toxic
- Biased Toxic
- Flammable
- Thermal Conductivity
- Infra-Red

The modules may be used in any combination but with a maximum of one IR module.

The circuitry is housed in an enclosure manufactured from a non-conducting plastics material, with a separate compartment for the battery pack. The cover orporates a number of pushbuttons and LEDs, it also has a window to allow viewing of the liquid crystal display. A piezo-electric alarm buzzer is orporated into the device.

No external electrical connections are permitted while the equipment is in the hazardous area. Charging of the battery is only permitted in the non-hazardous area.

Variation 1 (16 January 2003, File No. 52V9881) - This variation introduced the following changes:

i. The introduction of minor track and component changes on the safety board.
ii. The critical parts list was corrected.

Variation 1 (11 November 2003, Re-issued 23 February 2004, File No. 52V10911) - This variation introduced the following change:

i. The use of a SAFT 40RF207 Ni-MH 2.4 V 70mAh battery as an alternative to a SAFT 40RF206 Ni-Cad 2.4 V 60mAh battery was allowed.
ii. Minor corrections to the critical parts list were recognised.

Variation 2 (23 February 2004, File No. 52V11592) - This variation introduced the following change:

i. 1N5817 were permitted to be used as an alternative to BYV10-20 diodes.

Variation 3 (17 August 2004, Report No. R52V12254A) - This variation introduced the following change:

i. The value of safety resistor R15 that is used in the biased toxic sensor was reased from 1.0 kΩ to 4.7 kΩ.

Variation 4 (10 February 2005, Report No. R52V12894A) - This variation introduced the following change:

i. The memory chip on the toxic bias, toxic, oxygen, flammable and thermal conductivity boards were modified, in addition, related component and track changes were recognised.

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Variation 5 (9 May 2005, Report No. R52V13441A) - This variation introduced the following change:

i. The introduction of a new model with a modified keypad; this model is known as the 'Gaseeker IR' and is distributed under the trade name Telegan.

Variation 6 (7 October 2005, Report No. R52A14080A) - This variation introduced the following changes:

i. Capacitor values were changed.
ii. An additional condition of certification was introduced to limit the build to only one IR module.

Variation 7 (11 October 2005, Report No. R52A13667A) - This variation introduced the following changes:

i. An alternative battery was allowed to be used.
ii. An alternative pump motor specification to be recognised.
iii. A correction of the encapsulated fuse material.

Variation 8 (14 October 2005, Report No. R52A13667A) - This variation introduced the following changes:

i. The name of the model known as the 'Gaseeker IR' to be changed to 'Gaseeker', this modification is detailed on previously certified drawing number P-5621-A4 revision C.
ii. The membrane keypad colours to be changed.
iii. The introduction of an additional drawing view on rear of label showing track details.

Variation 9 (23 May 2006, Report No. R52A15051A) - This variation introduced the following changes:

i. The addition of 100k Ohm resistor to main PCB and minor drawing amendments.
ii. The addition of 100 Kohm pull-up resistor to main PCB and correct connections of C24 and C26.
iii. The label drawing was changed, removal of manufacture date from printed label.
iv. TRP-1688-PCA through to PCD brought together into one drawing.

Variation 1 (7 October 2009, Report No. R52L21051A) - This variation introduced the following change:

i. To recognise modifications to the oxygen sensor PCB.

Variation 2 (30 October 2009, Report No. R20258A) - - This variation introduced the following changes:

i. To permit the replacement of the lead-acid battery with a type C01006 encapsulated battery pack, designed to be used with the same charger when the equipment is in the non-hazardous area; this battery pack is compatible with previous versions of the equipment
ii. To amend the product description to include the new battery pack and remove the reference to lead-acid batteries
iii. The introduction of two Conditions of Manufacture

Variation 3 (12 November 2009, Report No. R20258B) - This variation introduced the following changes:

i. An assessment against the latest standards and a corresponding update of the certification marking.
ii. A minor modification to the lithium ion battery pack circuit.
iii. The introduction of Condition of Manufacture.

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Variation 4 (12 August 2010, Report No. R23084A/00) - This variation introduced the following changes:

i. The addition of a window to the leather case which allows viewing of the certification information.
ii. The recognition of a change of part number of the lithium-ion battery pack from C01007 to C01006 on label drawing 2298.

Variation 5 (31 May 2012, Report No. R23776A/00) - This variation introduced the following changes:

i. The removal of the references to the C01007 battery pack in the Description of Equipment, Variation 2 and Conditions of Manufacture.
ii. The introduction of the Tenergy 18650-30012 Li-ion cell (green jacket) as an alternative to the existing GP 1865L220 cell in the C01006 battery pack.

Variation 6 (07 October 2013, Report No. R31603A/00) - This variation introduced the following change:

i. The inductor L2 in the battery pack was changed from type TDK ACM3225-601-2P to type TDK ACP3225-102-2P.

Variation 7 (06 August 2014, Report No. R70008482A) – This variation introduced the following changes:

i. The recognition of a change of company address from 2 Blacklands Way, Abingdon, OX14 1DY to 172 Brook Drive, Milton Park, Abingdon, Oxon OX14 4SD.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	24 December 2002	R52A9131A	The release of the prime certificate.
1	15 October 2003	R52A9131B	Re-issued to include variation 1 dated 16 January 2003 and to permit report number R52A9131A to be replaced by report number R52A9131B.
2	16 February 2007	R52L15432B	Re-issued to Introduce the changes described in report number R52L15432B (Note: this report reviewed and revised all the associated conditions, considered design changes and rationalised the drawing list). Variations 1 to 9 dated 23 February 2004, 23 February 2004, 17 August 2004, 10 February 2005, 9 May 2005, 7 October 2005, 11 October 2005, 14 October 2005 and 23 May 2006 respectively were also orporated.
3	07 October 2009	R52L21051A	This Issue covers the following changes: • 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. • The introduction of Variation 1.
4	30 October 2009	R20258A	The introduction of Variation 2

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Issue	Date	Report no.	Comment
5	12 November 2009	R20258B	The introduction of Variation 3
6	12 August 2010	R23084A/00	The introduction of Variation 4.
7	31 May 2012	R23776A/00	The introduction of Variation 5.
8	07 October 2013	R31603A/00	The introduction of Variation 6.
9	15 August 2014	R70008482A	This Issue covers the following changes: • The history of the certificate was reviewed; consequently, existing information was recognised. • The introduction of Variation 7.
10	31st October 2019	1833	• Transfer of certificate Sira 02ATEX2176X from Sira Certification Service to CSA Group Netherlands B.V.. • EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. *(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.)*

15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)

15.1 If the Triple Plus+ is used in the gases associated with apparatus groups IIC (i.e. hydrogen, acetylene or carbon disulphide), it shall be used such that the risk of mechanical impact to the enclosure is low.

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.

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Certificate Annexe

Certificate Number: **Sira 02ATEX2176X**

Equipment: **Triple Plus+**

Applicant: **Crowcon Detection Instruments Ltd**

Issues 0 to 1 The drawings listed with these Issues were rationalised and have been superseded by those detailed in Issue 2.

Issue 2

Number	Sheet	Rev.	Date (Sira stamp)	Title
IRSM-5152-A3	1 of 1	2	09 Nov 06	IR PCB schematic
P-5109-A4	1 of 1	1	09 Nov 06	Fuse encapsulation details
P-5620-A2	1 of 1	1	09 Nov 06	Membrane keypad detail
TRP-3657-A4	1 of 1	3	15 Feb 07	Certification label
TRP-1630-CL	1 of 1	9	09 Nov 06	Main PCB Silk Screen
TRP-1630-PCA	1 of 1	9	09 Nov 06	Main PCB layer 1 artwork
TRP-1630-PCB	1 of 1	9	09 Nov 06	Main PCB layer 2 artwork
TRP-1630-PCC	1 of 1	9	09 Nov 06	Main PCB layer 3 artwork
TRP-1630-PCD	1 of 1	9	09 Nov 06	Main PCB layer 4 artwork
TRP-1636-CD	1 of 1	12	09 Nov 06	Main PCB schematic
TRP-1637-CD	1 of 1	9	09 Nov 06	Safety PCB schematic
TRP-1638-CD	1 of 2	5	09 Nov 06	Flammable PCB schematic
TRP-1639-CD	1 of 1	6	09 Nov 06	Toxic PCB schematic
TRP-1640-CD	1 of 1	8	09 Nov 06	Oxygen PCB schematic
TRP-1658-CPL	1 of 1	4	09 Nov 06	Safety PCB silkscreen
TRP-1658-PCA	1 of 1	4	09 Nov 06	Safety PCB solder side copper
TRP-1658-PCB	1 of 1	4	09 Nov 06	Safety PCB component side copper
TRP-1663-CD	1 of 1	8	09 Nov 06	Biased toxic schematic
TRP-1688-A3	1 of 1	8	09 Nov 06	Biased toxic PCB artwork
TRP-2317-CD	1 of 1	5	09 Nov 06	TCS PCB schematic
TRP-3638-CD	1 of 1	1	09 Nov 06	Sounder PCB schematic
TRP-3639-CL	1 of 1	1	09 Nov 06	Sounder PCB silkscreen
TRP-3639-PCA	1 of 1	1	09 Nov 06	Sounder PCB component side copper
TRP-3639-PCB	1 of 1	1	09 Nov 06	Sounder PCB solder side copper
TRP-3665-A3	1 of 1	1	09 Nov 06	Thermal conductivity sensor artwork
TRP-3669-A3	1 of 1	1	09 Nov 06	Tripleplus + DCP 2114 Detail
TRPP-3633-A1	1 to 2	1	09 Nov 06	General arrangement
TRPP-3652-A3	1 of 1	1	09 Nov 06	Block diagram
TRPP-3653-A4	1 to 3	11	09 Nov 06	Critical parts list

Issue 3

Drawing No.	Sheets	Rev.	Date	Title
TRP-1640-CD	1 of 1	10	04 Sep 09	Oxygen PCB schematic

Issue 4

Drawing No.	Sheets	Rev.	Date	Title
2298	1 of 1	1	Oct 09	Battery pack cover label – old units
2299	1 of 1	1	Oct 09	Battery pack cover label – new units
40266-300	1 to 3	F	29 Oct 09	Battery pack internal assembly
40266-500	1 of 1	A	30 Oct 09*	Battery pack inner PCB schematic

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Certificate Annexe

Certificate Number: **Sira 02ATEX2176X**

Equipment: **Triple Plus+**

Applicant: **Crowcon Detection Instruments Ltd**

Drawing No.	Sheets	Rev.	Date	Title
40266-501	1 of 1	B	30 Oct 09*	Battery pack top PCB schematic
40266-503**	1 to 4	A	30 Oct 09*	Battery pack inner PCB artwork
TRP-3657-A4	1 of 1	4	Oct 09	Certification label
TRPP-3633-A1	1 to 2	2	Oct 09	General arrangement
TRPP-3652-A3	1 of 1	2	Oct 09	Block diagram
TRPP-3653-A4	1 to 3	12	Oct 09	Critical parts list

* Sira stamp date

** Sheet numbering added by Sira

Issue 5

Drawing No.	Sheets	Rev.	Date	Title
2296	1 of 1	1	04 Nov 09	Littlefuse 259.062 construction
2297	1 of 1	1	Oct 09	Certification label
3684-CERT	1 to 2	1	Nov 09	General assembly
40266-500	1 of 1	B	12 Nov 09*	Battery pack inner PCB schematic
40266-503**	1 to 4	B	12 Nov 09*	Battery pack inner PCB artwork

* Sira stamp date

** Sheet numbering added by Sira

Drawing 2297 supersedes drawing TRP-3657-A4

Drawing 3684-CERT supersedes drawing TRPP-3633-A1

Issue 6

Drawing No.	Sheets	Rev.	Date	Title
2298	1 of 1	2	July 10	Battery pack cover label – old units
3684-CERT	1 to 2	2	Jan 10	General assembly

Issue 7

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
MCAD-001446	1 to 3	1	23 May 12	Battery pack assembly

MCAD-001446 replaces drawing 40266-300.

Issue 8

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
3686-CD	1 of 1	2	7 Oct 13	Battery pack top PCB schematic

3686-CD replaces drawing 40266-501, to comply with Crowcon's new drawing numbering system

Issue 9

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Title
2297	1 of 1	2	06 Aug 14	Triple Plus+ Certification label for Holster
TRP-3657-A4	1 of 1	5	06 Aug 14	ATEX certification Label Triple Plus+
3683	1 of 1	2	06 Aug 14	ATEX 2007 certification Label Triple Plus+

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