



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 07ATEX2117X** Issue: **5**

4 Equipment: **Extrima® Hydrogen Leak Detector**

5 Applicant: **INFICON AB**

6 Address: **Westmannsgatan 49
SE-582 16 Linköping
Sweden**

7 This equipment and any acceptable variation thereto is 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 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 60079-11: 2007

EN 60079-26: 2004

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

11 This EC 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 1G

Ex ia IIC T3 (Ta = -20°C to +50°C)

Project Number 25248

C Ellaby
Deputy Certification Manager

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SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

The Extrima Hydrogen Leak Detector is a portable device used to detect hydrogen leaks and is powered by a rechargeable Lithium ion battery. The equipment has a main housing (which is referred to as the detector), interconnected by a pluggable cable to a PX50 series probe unit. The interconnecting cable is fitted with a Lemo connector at each end enabling it to be removed from both the probe and detector.

The detector housing, is made from extruded aluminium, which is anodized and protected by conductive rubber face seals fitted to the front and rear panels. The side panels and corners of the enclosure are fitted with protective rubber ribs. The front and rear panels are secured to the main detector housing by four fasteners.

The front panel is fitted with the following; glass LCD, piezo speaker, four rubber pushbuttons, two LEDs and a Lemo connector for connecting to the probe. On the outside, the back panel has a socket for connecting to the battery charger/barcode reader and a Gortex seal. The battery charger has the following maximum parameters, 12.6V, 770 mA.

Internally the equipment comprises a potted lithium battery pack fitted to the rear of the back panel, and the following PCBs:

- Main
- Keyboard
- Backlight
- LCD

Externally, the probe comprises a conductive plastic enclosure with a single switch and two LEDs. The nozzle, which varies in length and type, is fitted into the end of the probe. A hydrogen sensor fits inside the nozzle and plugs into a connector that is wired back to the probe electronics. The probe is fully encapsulated, however, the switch, two LEDs and the hydrogen sensor are located outside of the encapsulation.

Internally, the probe comprises a single circuit board. The sensor wires are fitted at one end of the board and the Lemo connector at the other.

The Extrima® Hydrogen Leak Detector has an Ingress Protection rating of IP67 (1 m, for 30 minutes).

Variation 1 - This variation introduced the following changes:

- To prolong the battery life, the probe power generation and protection circuit on the MAIN PCB in the Detector Unit has been redesigned. The circuit contains voltage enhancement and controlled semiconductor voltage shunts. These changes give increased output parameters to the probe.
- PX50x Series Probe Assembly now uses a housing made from an alternative plastic material and may incorporate a hydrogen sensor that is not component approved. The circuit has been modified to provide increased power to the sensor to improve its sensitivity.
- The applicant's name was changed from Adixen Sensistor AB to that currently shown.



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Variation 2 - This variation introduced the following changes:

- i. The LCD module for the Extrima® Hydrogen Leak Detector was modified and now includes components with a surface area of less than 20 mm².
- ii. The bill of material drawings, KK1012-BOM-1H-CERT and KK1018-BOM-R7-CERT, were amended to:
 - Bring them into line with Sira report number R20666A/01.
 - Remove the manufacturer's name from the specification of various safety resistors.

Variation 3 - This variation introduced the following change:

- i. The recognition of a change in the company name from Adixen Scandinavia AB to INFICON AB.

Variation 4 - This variation introduced the following changes:

- i. The outline of the hand probe and the track layout of the hand probe PCB were amended.
- ii. The material of the hand probe was changed from injection moulded plastic to metal.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	10 October 2007	R52A16411B	The release of the prime certificate.
1	18 December 2009	R20666A/00	The introduction of Variation 1 (Note: the date was revised by Issue 3 to correct a typographical error).
2	30 April 2010	R20666A/01	Issued to allow report R20666A/01 to replace report R20666A/00
3	20 October 2010	R23373A/00 R23526A/00	The introduction of Variation 2.
4	16 February 2012	R25248B/00	The introduction of Variation 3.
5	14 March 2012	R25248A/00	The introduction of Variation 4.

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

- 15.1 As aluminium is used at the accessible surface of this equipment, in the event of rare incidents, ignition sources due to impact and friction sparks could occur. This shall be considered when the Extrima® Hydrogen Leak Detector is being used in locations that specifically require group II, category 1 equipment.

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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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.
- 17.3 The battery pack shall be constructed from three, series connected SAFT type MP174865IS or type MP174865 Lithium ion rechargeable cells all encapsulated in Wacker Elastosil RT675.
- 17.4 The products covered by this certificate incorporate previously certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of their products.

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Certificate Annexe

Certificate Number: Sira 07ATEX2117X
 Equipment: Extrima® Hydrogen Leak Detector
 Applicant: INFICON AB



Issue 0

Number	Sheet	Rev.	Date (Sira stamp)	Description
500131 CERT	1 of 1	-	10 Aug 07	General assembly
500137	1 of 1	-	10 Aug 07	Extrima internal separations
150748	1 of 1	-	10 Aug 07	Fixing of CS Fuses
900	1 to 3	3	10 Aug 07	Certification label details, ATEX & IECEx
500100 CERT	1 of 1	-	10 Aug 07	General assembly
Sensistor 16-5 Probe R5 CERT	1 to 2	R5	10 Aug 07	Probe circuit diagram
KB1012-SCH	1 of 1	1A	10 Aug 07	KB1012 Sensor
KK1018-R6	1 to 3	R6B	11 Sep 07	Parts list for probe PCB
16-5	1 to 6	R5	12 Sep 07	SENSISTOR PROBE-R5 LAYOUT-CERT
Sensistor Probe R6	1 to 6	R6	10 Aug 07	Probe PCB artwork details
815	1 of 1	2	10 Aug 07	Specification unpopulated Critical Extrima PCBs
KB1001	1 of 1	1A	10 Aug 07	KB1001 – Probe Cable, CX21 Series ATEX
500113 CERT	1 of 1	-	10 Aug 07	General assembly
PR1003-PST	1 of 1	1C	10 Aug 07	Extrima - Detector – PR1003 (block diagram)
KK1012-SCH	1 of 14	1F	11 Sep 07	Main board circuit diagram
KK1012-SCH	2 of 14	1F	11 Sep 07	Main board circuit diagram
KK1012-SCH	3 of 14	1F	11 Sep 07	Main board circuit diagram, power switch
KK1012-SCH	4 of 14	1F	11 Sep 07	Main board circuit diagram, logic power
KK1012-SCH	5 of 14	1F	11 Sep 07	Main board circuit diagram, MCU
KK1012-SCH	6 of 14	1F	11 Sep 07	Main board circuit diagram, LCD_power 1
KK1012-SCH	7 of 14	1F	11 Sep 07	Main board circuit diagram, LCD_power 2
KK1012-SCH	8 of 14	1F	11 Sep 07	Main board circuit diagram, LCD_bias
KK1012-SCH	9 of 14	1F	11 Sep 07	Main board circuit diagram, audio_interface
KK1012-SCH	10 of 14	1F	11 Sep 07	Main board circuit diagram, backlight_power
KK1012-SCH	11 of 14	1F	10 Aug 07	Main board circuit diagram, serial_interface
KK1012-SCH	12 of 14	1F	11 Sep 07	Main board circuit diagram, probe_power
KK1012-SCH	13 of 14	1F	11 Sep 07	Main board circuit diagram, audio_power
KK1012-SCH	14 of 14	1F	11 Sep 07	Main board circuit diagram, revision history
KK1012-SCH	1 to 9	1E	11 Sep 07	Extrima Main board Parts List
MK1018	1 to 7	3.0.1	10 Aug 07	Main board PCB (artwork details)
500136 Cert	1 of 1	-	10 Aug 07	Mainboard Overview
500130 CERT	1 of 1	-	10 Aug 07	Batteripack
KK1013-SCH	1 of 1	-	10 Aug 07	Backlight board (circuit diagram)
MK1019	1 to 3	1.1.0	10 Aug 07	Backlight board Artwork
KK1014-SCH	1 of 1	1B	10 Aug 07	Keyboard circuit diagram
MK1017	1 to 2	2.0.0	10 Aug 07	Keyboard Artwork
KK1019	1 to 2	1	10 Aug 07	Display circuit diagram
KB1002	1 of 1	1B	10 Aug 07	Cable assembly, Display PCB to Main PCB
KB1003	1 of 1	1A	10 Aug 07	KB1003 Display LCD Bias Cable assembly
KB1004	1 of 1	1B	10 Aug 07	KB1004 Keyboard Cable assembly
KB1005	1 of 1	1B	10 Aug 07	KB1005 Backlight Cable assembly
KB1006	1 of 1	1A	10 Aug 07	KB1006 Piezo sounder Cable assembly
KB1007	1 of 1	1A	10 Aug 07	KB1007 LED Cable assembly
KB1008	1 of 1	1B	10 Aug 07	KB1008 Probe, Cable assembly
KB1009	1 of 1	1C	10 Aug 07	KB1009 Charge and Barcode

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Certificate Annexe

Certificate Number: Sira 07ATEX2117X
Equipment: Extrima® Hydrogen Leak Detector
Applicant: INFICON AB



Number	Sheet	Rev.	Date (Sira stamp)	Description
KB1010	1 of 1	1A	10 Aug 07	KB1010 Battery pack Cable assembly
KB1011	1 of 1	1A	10 Aug 07	KB1011 Probe resistors Cable assembly
955	1 to 4	1	30 Aug 07	Recovery of Defect Board 3_0_1
1004	1 to 4	1	11 Sep 07	Recovery of Defect boards Patch 2

Issue 1 (The drawing list associated with this Issue was removed because it was revised by Issue 2)

Issue 2

Drawing	Sheets	Rev.	Date	Title
900	1 & 2	6	10 Dec 09	Labels EXTRIMA
500100 CERT	1 of 1	1	12 Jan 09	Probe Handle
Sensistor 16-7 Probe R7 CERT	1 & 2	R7	20 Jan 09	Probe Circuit
KB1012-SCH	1 of 1	1B	23 Jul 09	KB1012 Sensor
KK1018-BOM-R7-CERT	1 to 4	R7	29 Jul 09	Parts List for probe PCB
150711 CERT	1 of 1	-	24 Apr 07	Header assembly TO18 hexode CERT
500118	1 of 1	-	13 Sep 07	P512-500118 PX50 TO18 Probe Tip Assembly
KK1012-SCH	1 to 15	1H	01 Dec 09	Extrima Main board
KK1012-BOM-1H-CERT	1 to 11	1H	10 Dec 09	Extrima Main board Parts List
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Fabrication
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Assy Top
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Assy Bot
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Top Trace
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Plane
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Inner
MK1018	1 of 1	4.0.1	23 Jul 09	Main PCB Bottom Trace
KB1002	1 of 1	1C	21 Jul 09	Cable assembly, Display to Main PCB
KB1003	1 of 1	1B	21 Jul 09	KB1003 Display LCD Bias Cable Assembly
KB1004	1 of 1	1C	21 Jul 09	KB1004 Keyboard Cable assembly
KB1005	1 of 1	1C	21 Jul 09	KB1005 Backlight Cable assembly
KB1006-SCH	1 of 1	1B	21 Jul 09	KB1006 Piezo
KB1007-SCH	1 of 1	1B	23 Jul 09	KB1007 LED Cable assembly
KB1008	1 of 1	1C	23 Jul 09	KB1008 Cable assembly
KB1009	1 of 1	1D	23 Jul 09	KB1009 Charge & Barcode Cable Assembly
KB1010	1 of 1	1B	23 Jul 09	KB1010 Battery
KB1012-SCH	1 of 1	1B	23 Jul 09	KB1012 Sensor Cable assembly

Issue 3

Drawings introduced by R23373A/00

Drawing no.	Sheets	Rev.	Date (Sira stamp)	Title
KK1019	1 to 2	3	05 Oct 10	Display circuit diagram

Drawings introduced by R23526A/00

Drawing no.	Sheets	Rev.	Date (Sira stamp)	Title
KK1012-BOM-1I -CERT	1 to 11	1I	14 Oct 10	Extrima - Main Board
KK1018-BOM- R8-CERT	1 to 4	R8	14 Oct 10	Extrima - Probe PX50

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Certificate Annexe

Certificate Number: Sira 07ATEX2117X
Equipment: Extrima® Hydrogen Leak Detector
Applicant: INFICON AB



Issue 4

Drawing no.	Sheets	Rev.	Date (Sira stamp)	Title
900	1 to 2	7	16 Feb 12	INFICON AB label

Issue 5

Drawing no.	Sheets	Rev	Date (Sira stamp)	Title
900	1 to 2	7	05 Mar 12	INFICON AB label
PX57 PROBE HANDLE	1 of 1	B	05 Mar 12	Probe Handle (exploded view of assembly)
ATEX (PX57) Probe PCB	1 to 4	01A	05 Mar 12	Probe PCB Schematics
ATEX (PX57) Probe PCB	1 to 2	01A	05 Mar 12	Probe PCB Bill of Materials
ATEX (PX57) Probe PCB	1 to 10	01B	05 Mar 12	Probe PCB Artworks
ATEX (PX57) Probe PCB (Assy.)	1 to 2	01A	05 Mar 12	Probe PCB Component Assembly

The following drawings were deleted.

Drawing Deleted
500100 CERT
Sensistor 16-7 Probe R7 CERT
KK1018-BOM-R7-CERT
Sensistor Probe R6
Sensistor Probe R6

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