



# 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 11.0089X** issue No.:2

Status: **Current**

Certificate history:  
Issue No. 2 (2014-5-14)  
Issue No. 1 (2013-4-9)  
Issue No. 0 (2011-10-5)

Date of Issue: **2014-05-14** Page 1 of 6

Applicant: **Geotechnical Instruments (UK) Limited**  
Sovereign House  
Queensway  
Leamington Spa  
Warwickshire CV31 3JR  
United Kingdom

Electrical Apparatus: **GA5000, GEM5000 and Biogas 5000 Methane Detector (also known as the GA5K range)**  
Optional accessory:

Type of Protection: **Intrinsic Safety**

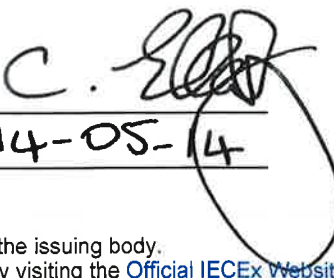
Marking: **Ex ib IIA T1 Gb**  
(Ta = -10°C to +50°C)

Approved for issue on behalf of the IECEx Certification Body: **C Ellaby**

Position: **Deputy Certification Manager**

Signature:  
(for printed version)

Date:

  
2014-05-14

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: **Geotechnical Instruments (UK) Limited**  
Sovereign House  
Queensway  
Leamington Spa  
Warwickshire CV31 3JR  
United Kingdom

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 : 2004</b> Edition: 4.0	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
<b>IEC 60079-0 : 2007-10</b> Edition: 5	Explosive atmospheres - Part 0: Equipment - General requirements
<b>IEC 60079-11 : 2006</b> Edition: 5	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*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/ExTR11.0237/00](#)

[GB/SIR/ExTR13.0083/00](#)

[GB/SIR/ExTR14.0104/00](#)

##### Quality Assessment Report:

[GB/SIR/QAR11.0021/00](#)

[GB/SIR/QAR11.0021/01](#)



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## Schedule

### EQUIPMENT:

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

The GA5K range of analysers includes the following models: GA5000, GEM5000 and Biogas5000 Portable battery-powered methane detectors. The models are identical except for different firmware and plumbing. The equipment is housed inside an IP54 enclosure that is made from PC/ABS with a TPE over-moulded hand grip and splash-proof seal. The battery pack consists of six, rechargeable, Nickel Metal Hydride (Ni-MH) cells. Internally, there are five PCBs, which include a Windows CE (Processor) PCB, a Sensor PCB, a Display PCB, a Pyro PCB and a Bulb PCB. There is also included a motor-driven sample pump. A solenoid is included to enable pressure readings to be taken in addition to the gas samples. There are several gas-sensitive cells and pressure sensors. Measurement of hydrocarbons is made with an infrared source that is produced by a standard tungsten filament bulb.

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

1. This equipment is not designed for use in oxygen-enriched atmospheres i.e. greater than 21% oxygen.
2. This equipment can contain gas sensing heads for the detection of particular gasses. The inclusion of a sensor does not infer that the equipment is suitable for the use of gases with a temperature class of less than T1
3. Do not re-charge the battery or connect to USB port in hazardous locations.
4. The maximum input voltage,  $U_m$ , at the USB port Connector 'A' of the GA5K shall not exceed 6 V. The safe area apparatus that is to be connected to the USB Port shall be a Safety Extra Low Voltage (SELV) or Protective Extra Low Voltage (PELV) circuit
5. Only Battery Charger Type GF3.9 shall be used to recharge the batteries via Connector 'B'.
6. Only Geotechnical Instrument battery packs part numbers 20087 or 2011113 are permitted as a replacement. These battery packs shall only be changed in a safe area (non-hazardous area).



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## EQUIPMENT(continued):

**Connector 'A' - USB Data Port:** The GA5K may be connected to a USB Data Port whilst in the Safe Area via Connector 'A',  $U_m = 6\text{ V}$ .

**Connector 'B' - Battery Charger:** The GA5K may be recharged whilst in the Safe Area via Connector 'B' with a Battery Charger,  $U_m = 10.1\text{ V}$ .

**Connector B - Temperature Probe:** Alternatively, a Temperature Probe, Type GF5.2 (part of this certificate), may be attached to Connector 'B', this probe may be used in the hazardous area, in which case:

$U_o = 5\text{ V}$      $I_o = 6\text{ mA}$      $P_o = 7\text{ mW}$      $C_i = 0$      $L_i = 0$      $C_o = 100\text{ }\mu\text{F}$      $L_o = 1000\text{ mH}$

**Connector 'C' - Anemometer**

$U_o = 10\text{ V}$      $I_o = 5\text{ mA}$      $P_o = 50\text{ mW}$      $C_i = 0$      $L_i = 0$      $C_o = 100\text{ }\mu\text{F}$      $L_o = 1000\text{ mH}$



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

<b>Issue 1 – this Issue introduced the following changes:</b>	
1.	The introduction of a modified version of the Display Board, which incorporated minor track changes, allowing adjustment of the viewing angle, and the connector was increased from 110 ways to 112 ways.
2.	Changes to the Processor Board Power circuit, resistor R124 (5R6 ± 5%) on the Sensor board has been altered to a (6R8 ± 5%). This has reduced the circuit current from 902 mA to 815 mA.
3.	The circuitry associated with the voltage regulators has been redesigned to reduce the current drain on the Windows CE (Processor) board.
4.	Changes were made to the BOM to correct minor errors relating to components that were deemed to be safety components and were not shown as such.
5.	To permit the Varta VH400 4/3A 1.2V 4Ahr cells used in the battery pack to be replaced by Panasonic HHR-450A/FT 1.2V 4.5A. This battery pack has a part number 2011113, the Conditions of Certification were amended accordingly.
6.	Resistor R150 (470K) has been added to the circuit, this has no effect on the original intrinsic safety assessment.
<b>Issue 2 – this Issue introduced the following changes:</b>	
1.	A new 'Biased Cell Regulator Circuit' was added to the Sensor PCB.
2.	The bulb PCB was modified to include two separate holes for connecting the bulb and the wires.
3.	The PIC circuit area in the Sensor PCB was modified to incorporate the changes required to connect to the new 'Biased Cell Regulator Circuit'.
4.	The wider use of electrochemical cells was allowed.
5.	The speaker wiring colours were corrected.
6.	The display insulator was modified.
7.	The use of an alternative GPS Antenna was recognised.
8.	GB/SIR/ExTR13.0083/00 was replaced by GB/SIR/ExTR13.0083/01 to correct typographical errors



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## Additional information:

### Conditions of manufacture

The Manufacturer shall comply with the following:

1. The equipment incorporates the following, component-certified device as listed below; 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.

PID Hydrocarbon Sensors			
Manufacturer	Type	Certificate no.	Code
Baseline Mocon	piD-Tech Plus	IECEX UL 06.0011U	Ex ia IIC (-20°C≤Ta≤+60°C)