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

Certificate No.: IECEx SIR 12.0066X

Issue No: 6

Certificate history:
Issue No. 6 (2018-09-05)
Issue No. 5 (2016-06-22)
Issue No. 4 (2016-04-04)
Issue No. 3 (2015-11-09)
Issue No. 2 (2015-03-20)
Issue No. 1 (2014-12-19)
Issue No. 0 (2012-12-13)

Status: **Current**

Date of Issue: **2018-09-05**

Applicant: **General Monitors Inc**
26776 Simpatica Circle
Lake Forest
California 92630
United States of America

Equipment: **Model S4000CH, S4000TH and Model TS4000H Intelligent Gas Sensors**

Optional accessory:

Type of Protection: **Flameproof**

Marking:
Refer to the Annexe

Approved for issue on behalf of the IECEx Certification Body: R A Craig for C Ellaby

Position: Deputy Certification Manager

Signature:
(for printed version)

Date: 2018-09-05

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.

Certificate issued by:

SIRA Certification Service
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

IECEx Certificate of Conformity

Certificate No: IECEx SIR 12.0066X Issue No: 6

Date of Issue: **2018-09-05** Page 2 of 4

Manufacturer: **General Monitors Inc.**
26776 Simpatica Circle
Lake Forest
California 92630
United States of America

Additional Manufacturing location(s):

General Monitors Ireland Limited
Ballybrit Business Park
Galway
Ireland

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 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:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-1 : 2014-06 Edition:7.0	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
IEC 60079-31 : 2013 Edition:2	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

*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/ExTR12.0256/00 GB/SIR/ExTR14.0300/00 GB/SIR/ExTR15.0087/00
GB/SIR/ExTR15.0297/00 GB/SIR/ExTR16.0072/00 GB/SIR/ExTR16.0161/00
GB/SIR/ExTR18.0147/00

Quality Assessment Report:

GB/SIR/QAR07.0014/03 US/UL/QAR10.0004/01

IECEx Certificate of Conformity

Certificate No:	IECEx SIR 12.0066X	Issue No: 6
Date of Issue:	**2018-09-05**	Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The Model S4000CH and S4000TH Intelligent Gas Sensor is intended to detect the presence of hydrocarbon or hydrogen sulphide gases in air. It comprises a two-part rectangular enclosure and a Universal Gas Sensor manufactured by General Monitors (IECEx SIR 07.0007U). The main enclosure is manufactured from cast aluminium alloy or stainless steel and consists of a base, with mounting lugs on its two longer sides, and a flanged cover, these may be powder coated. The main enclosure contains the equipment electronics and a seven-segment display. The cover is attached to the base by four M6 recessed socket head cap screws and contains a glass window to allow the display to be viewed. The base has four female ¾" cable entry holes tapped into its side walls; the ¾" containing the Universal Gas Sensor. All variants of the Model S4000 Intelligent Gas Sensor use the same main enclosure and have the following electrical parameters.

U nom 24 V dc; Ui 36 V dc; Pi 7 W

The Universal Gas Sensor has two forms, the HC Head and the H2S Head. Both options use the same enclosure with only the internal arrangement differing. They are manufactured from stainless steel and are cylindrical in shape with a hexagonal shoulder in the middle. One end has a 250 µm sinter fused into the enclosure to allow gas penetration to be detected by the internal equipment, the other end contains a setting compound through which the equipment wiring passes. A ¾" thread form allows it to be mounted into the main enclosure.
The equipment is fitted with O-rings for the prevention of water and dust ingress and have been independently tested according to the requirements of IEC 60529 to meet IP 66.
Refer to the Annexe for Additional Information

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to the Annexe

IECEx Certificate of Conformity

Certificate No: IECEx SIR 12.0066X Issue No: 6

Date of Issue: **2018-09-05** Page 4 of 4

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

Refer to the Annexe

Annex:

IECEx SIR 12.0066X Annexe Issue 6.pdf

Annexe to:	**IECEx SIR 12.0066X Issue 6**
Applicant:	**General Monitors Inc**
Apparatus:	**Model S4000CH, S4000TH and TS4000H Intelligent Gas Sensors**

Marking

Model S4000CH
Ex db IIB+H_2 T4 Gb
Ex tb III C T135 °C Db
(Ta -40°C to +70°C)

Model S4000TH
Ex db IIB+H_2 T4 Gb
Ex tb III C T135 °C Db
(Ta -40°C to +70°C)

Model TS4000H
Ex db IIB+H_2 T5 Gb
Ex tb III C T100 °C Db
(Ta -40°C to +70°C)

Design options

- Other certified detector elements may be used, but only at remote locations via a suitable cable entry device and when mounted in accordance with the requirements detailed in their respective certificates and local installation requirements.
- The cover may be manufactured without the viewing window.
- The alternative cable entry thread forms ¾"-14 NPT are included.

The Toxic Gas Base Unit Model TS4000H comprises of a base unit fitted with an Intelligent Sensor Toxic Gas Interface Module Type TS4000(H) to Certificate No. IECEx SIR 10.0039U. The TS4000H is intended to detect the presence of toxic gases or the amount of oxygen present in the atmosphere. All TS4000H models have the following electrical parameters:

Um: 30 V dc; Pi: 3 W; Rated voltage: 24 V dc

Specific Conditions of Use

1. When alternative detector elements are utilised, they shall only be mounted remotely in a suitably certified enclosure in accordance with the requirements of their respective certificates and relevant local requirements. The associated cable shall be connected to the Intelligent Gas Sensors using a suitably certified, cable entry device with a ¾" thread form.
2. The maximum constructional gap (ic) is less than that required by Table 1 of IEC 60079-1 and hence is as detailed below:

Description	Form	Maximum Gap (ic)	Minimum Length (L)
Between the main body and cover	Flange	0.1 mm	11.30 mm
Between the glass and the cover	Flange	0.1 mm	13.49 mm

3. Only screw fasteners that have been supplied by the manufacturer shall be used as replacements, in addition, they shall be tightened to a torque value of 5.7 Nm (50 inch-pound).

Conditions of Manufacture

The Manufacturer shall comply with the following:

i. 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.
ii. Any non-isometric entries shall be clearly marked with their thread form.
iii. The input power to the component approved Intelligent Sensor Toxic Gas Interface Module Type TS4000H shall be limited to 1 W.
iv. Powder coating, when applied, is not to be applied to joint surfaces.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Full certificate change history

Issue 1 – this Issue introduced the following changes:

1. The prevention of water and dust ingress and have been independently tested according to the requirements of EN 60529 to meet IP 66, having been IP65 previously. The description was amended to show the new Ingress Protection rating.
2. The recognition of minor drawing modifications; Additional colour configurations and notes; these amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.

Issue 2 – this Issue introduced the following changes:

1. Alternative colour configurations were approved.
2. The recognition of minor drawing modifications; the addition of a warning to the products' nameplates, the addition of note 10 in Drawing 30380, the addition of note 4 in drawing 31178; these amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.

Issue 3 – this Issue introduced the following changes:

1. As a result of additional temperature rise testing, temperature limitations regarding cable selection and temperature rating of the cables were amended from 110°C to 80°C on the equipment marking label.
2. The property class of the screws used was added to the Conditions of Manufacture.
3. Following appropriate assessment to demonstrate compliance with the latest technical knowledge, IEC 60079-1:2007 Ed 6 was replaced by IEC 60079-1:2014 Ed 7, the products were also assessed against the requirements of IEC 60079-31:2013 Ed 2 to verify suitability for Group IIIC applications, the markings were updated accordingly.

Issue 4 – this Issue introduced the following changes:

1. The specification of the cover screws was reviewed and revised as detailed below:

- It was retrospectively recognised that carbon steel cover screws having a property class 8.8 have not been used on these products and that they were originally specified as 303 stainless steel with a property class A2-70; consequently, any reference to property class 8.8 has therefore been removed. In addition, the screw material has now been changed from 303 stainless steel with a property class A2-70 to 3i6 stainless steel with a property class A4-70.
- The tolerance of the cover screw's combined shank and thread length was changed to align with ISO 4762/DIN 912.
- A Condition of Certification was added; this is to ensure that any replacement screws are made from the correct material and constructed in accordance with the manufacturer's specification.

Issue 5 – this Issue introduced the following changes:

1. Incorporation of the temperature rise associated with the schedule of limitations/specific conditions of use previously certified component (Universal Gas Sensor Head), requiring a modification in temperature classification/maximum surface temperature marking, for the S4000CH and S4000TH only;
2. Perform a gap analysis for the Universal Gas Sensor Head to the requirements of IEC 60079-1:2014 Ed.7/EN 60079-1:2014 (previously certified to IEC 60079-1:2007/EN 60079-1:2007).
3. Modification of the manufacturer's company logo/trademark on the label drawings.

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org

Issue 6 – this Issue introduced the following changes:

1. A full rationalisation of the scheduled drawings including the removal of obsolete drawings together with the recognition of minor drawing modifications which are administrative or involve changes to the design that do not affect the types of protection provided by the equipment. Significant changes include:
   - Added passivation process standard reference;
   - Added clarification as to which assemblies utilise the equipment enclosure;
   - Added/removed non-ATEX/IECEx related certification markings to the product nameplates;
   - Added details relevant to INMETRO certification requirements;
   - Added assembly configurations that utilise the cover and enclosure components intended to be marked with newly introduced ATEX/IECEX and INEMETRO combined nameplates;
   - Removal of configuration options 31 to 38 inclusive currently specified on drawing number 32424.
2. Recognition of the optional use of the window O-ring gasket, and the bonded enclosure cover O-ring gasket.
3. To permit the full manufacturing address options to be applied to the name plates of models S4000CH & S4000TH.
4. The introduction of alternative product name plates that combine existing ATEX/IECEx related certification markings and INMETRO required certification markings.
5. The introduction of a stainless steel cover assembly to be yellow TGIC or ADMA colour coated.
6. Recognition that model numbers S4000T, S4000C and TS4000 are no longer manufactured,

Sira Certification Service
Unit 6 Hawarden Industrial Park,
Hawarden, CH5 3US, United Kingdom
Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: ukinfo@csagroup.org
Web: www.csagroupuk.org