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 11.0069X	issue No.:5

Certificate history:
Issue No. 5 (2014-7-4)
Issue No. 4 (2012-7-13)
Issue No. 3 (2012-3-28)
Issue No. 2 (2012-2-10)
Issue No. 1 (2011-8-5)
Issue No. 0 (2011-6-28)

Status: Current

Date of Issue: 2014-07-04   Page 1 of 4

Applicant:
Rae Systems Inc
3775 North First Street
San Jose
California 95134
United States of America

Electrical Apparatus: Portable combustible and toxic gas detector Models PGM62a0x, PGM62a6x and PGM62a8x

Optional accessory:

Type of Protection: **Intrinsically Safe**

Marking:

With RAE LEL sensor
Ex ia I Ma   or   Ex ia IIC T4 Ga TA = -20°C $\leq$ Tamb $\leq$ +50°C

With Dynament LEL sensor
Ex ia I Ma   or   Ex ia d IIC T4 Gb TA = -20°C $\leq$ Tamb $\leq$ +50°C

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

Position: Deputy Certification Manager

Signature:
(for printed version)

Date: 2014-07-04

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
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira CERTIFICATION   CSA Group

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Manufacturer: **Rae Systems Inc**
3775 North First Street
San Jose
California 95134
United States of America

Additional Manufacturing location(s):
RAE Systems (Shanghai)
INC
No. 990 E. Huiwang Road,
JIADING DISTRICT
Shanghai 201815
China

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:

IEC 60079-0 : 2011   Explosive atmospheres - Part 0: General requirements
Edition: 6.0
IEC 60079-11 : 2011   Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition: 6.0
IEC 60079-26 : 2006   Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
Edition: 2

*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/ExTR11.0156/00	GB/SIR/ExTR11.0189/00	GB/SIR/ExTR12.0010/00
GB/SIR/ExTR12.0066/00	GB/SIR/ExTR12.0173/00	GB/SIR/ExTR14.0152/00

Quality Assessment Report:

NO/DNV/QAR06.0003/03	NO/DNV/QAR06.0004/03	NO/DNV/QAR06.0004/04

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Schedule

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

The Model PGM62xxx is a handheld, battery powered, multiple Gas Detector for the continuous display of toxic or combustible gas concentrations. The Gas Detector is provided either with a pump to bring the air sample to the sensors or provided as a diffusion model (designated with the suffix D.) The Gas Detector is supplied by a rechargeable Battery Pack containing two or three Li-ion battery cells connected in parallel. The Li-ion Battery Pack has two variations: one with four power outputs rated from 0.80W to 1.82 W and the other with power outputs rated from 1.16 W to 1.82 W. The Battery Pack is fully encapsulated and contains safety circuits including infallible resistors and five fuses. An alternative Battery Adapter uses four replaceable AA alkaline batteries, Duracell MN1500 type only. The alkaline Battery Adapter also has two variations: one with four outputs rated from 0.78 W to 1.12 W and the other rated from 1.11 to 1.12 W. The alkaline Battery Adapter also contains safety circuits including infallible resistors and fuses. The fuses are encapsulated. Three push buttons facilitate the access to measured levels or alarms, and the mode button makes it possible to change preset limits and setting.Audible and visual alarm indicators are included. The visual alarm comprises a red LED bar visible from the top and the side. Two imbalanced motors produce a vibration alert when in alarm mode.

Refer to the Annexe for additional information.

CONDITIONS OF CERTIFICATION: YES as shown below:

1	The PGM62xxx shall only be fitted with RAE Systems Battery Pack types: M01-3051-000, M01-3053-000, M01-3055-000 or MO1-3056-000 or Battery Adapter M01-3052-000 or M01-3054-000 fitted with Duracell MN1500 batteries.
2	The PGM62xxx shall only be charged outside the hazardous area.
3	No precautions against electrostatic discharge are necessary for portable equipment that has an enclosure made of plastic, metal or a combination of the two, except where a significant static generating mechanism has been identified. Activities such as placing the item in a pocket or on a belt, operating a keypad or cleaning with a damp cloth, do not present a significant electrostatic risk. However, where a static-generating mechanism is identified, such as repeated brushing against clothing, then suitable precautions shall be taken, e.g. the use of anti-static footwear.

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

Issue 1 – this Issue introduced the following changes:
1.   The manufacturing location in China was added to the certificate
2.   The revision status of drawing number C03-1008-000 was corrected and drawing C03-1113-S00 is removed

Issue 2 – this Issue introduced the following changes:
1.   It was recognised that:
- the pump model has two buzzers.
- the diffusion model has one buzzer actuated by an associated Diffusion Board.

2.   An alternative construction of the EC Sensor Board was acknowledged.

Issue 3 – this Issue introduced the following change:
1.   The products were allowed to be used for mining purposes, additional marking was introduced for these applications, the table showing the model numbers was amended accordingly.

Issue 4 – this Issue introduced the following change:
1.   The metal panel on the enclosure was allowed to be made to an alternative design.
2.   The use of alternative O2 Sensors was recognised.
3.   The equipment may now be used with an alternative battery pack, this has an additional cell (making a total of three cells); the Equipment description and Conditions of Certification were amended accordingly.
4.   An alternative construction of the Main Board was acknowledged.

Issue 5 – this Issue introduced the following changes:
1.   The introduction of the following alternative items:
- Gamma Sensor assembly.
- main board.
- pump motor board.
- NDIR-D sensor board (digital NDIR sensors).
- temperature sensor board.
- diffusion temp board.
- combustible gas sensor.
- mining rating update

2.   Following appropriate assessment to demonstrate compliance with the requirements of the latest technical knowledge, IEC 60079-0:2004 Ed 4, IEC 60079-0:2007 Ed 5 and IEC 60079-11:2006 Ed 5 were replaced by IEC 60079-0:2011 Ed 6 and IEC 60079-11:2011 Ed 6.

sira
C E R T I F I C A T I O N

There are three variations of the Gas Detector with the following variations:

Model	Battery pack wattage	LEL Sensor (zone)	NDIR Sensors
PGM-62a0x	1.2 W	RAE (zone 0)	No
PGM-62a6x	0.8 W	RAE (zone 0)	No
PGM-62a8x	0.8 W	Dynament (zone 1)	Yes

The types of sensors are LEL (either catalytic bead or NDIR), electrochemical (EC), PID and Gamma. The Gas Detector has five sensor slots to accommodate sensors as follows;

Sensor Type	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5
PID					X
LEL (catalytic bead)	X				
NDIR					X
EC	X	X	X	X	X
Dual EC	X		X		X
Gamma				X	

Note: NDIR includes CO_2, methane LEL and methane VOL sensors

The various variations of the PGM-62a0x, PGM-62a6x and PGM-62a8x reflect sensor combinations that are unique to specific end-use applications as shown in the following table.

Model no.	Marking	PID	Gamma	RAE LEL	Dynament NDIR	EC
PGM-62a0x	I M1 Ex ia I Ma II 1G, Ex ia IIC T4 Ga	Optional	Optional	Optional	No	Optional
PGM-62a6x	I M1 Ex ia I Ma II 1G, Ex ia IIC T4 Ga	Optional	Optional	Optional	No	Optional
PGM-62a8x	I M1 Ex ia d I Ma II 2G, Ex ia d IIC T4 Gb	Optional	Optional	Optional	Optional	Optional
Notes :	Where a = 0, 2, 4, 6, 8 or 9 to show type The model no. may contain following suffixes: • T to denote a unit without any combustible sensors. • D to denote a diffusion unit with RAE LEL sensor (PGM-62a0, PGM-62a6 and PGM-62a8) or Dynament LEL sensor(PGM-62a8) • TD to denote a diffusion unit without any combustible sensors.					

Conditions of manufacture

The Manufacturer shall comply with the following:

1. 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.