



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx TSA 07.0032X**

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Certificate history:

Status: **Current**

Issue No: 4

Issue 3 (2011-02-10)

Issue 2 (2010-04-27)

Issue 1 (2008-02-01)

Issue 0 (2007-07-23)

Date of Issue: 2015-11-17

Applicant: **RAE Systems**
3775 North First Street
San Jose
California 95134
United States of America

Equipment: **Wireless Single Gas Detector FTD-2000**

Optional accessory:

Type of Protection: **Ex ia**

Marking: RAE Systems
FTD-2000
Ex ia IIC T4 Ga
Ex ia I Ma
-40°C ≤ Ta ≤ + 50°C
IECEx TSA 07.0032X
S/N XXXXXXXXXX

Approved for issue on behalf of the IECEx
Certification Body:

Ujen Singh

Position:

Quality and Certification Manager

Signature:
(for printed version)

Date:

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 www.iecex.com or use of this QR Code.



Certificate issued by:

TestSafe Australia
919 Londonderry Road
Londonderry NSW 2753
Australia





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

Additional manufacturing locations: **RAE Systems (Shanghai)**
No. 990 E. Huiwang Road
Jia Ding, 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 equipment 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

This Certificate **does not** indicate compliance with 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 Reports:

[AU/TSA/ExTR07.0029/00](#)
[AU/TSA/ExTR11.0004/00](#)

[AU/TSA/ExTR07.0029/01](#)
[AU/TSA/ExTR15.0036/00](#)

[AU/TSA/ExTR10.0013/00](#)

Quality Assessment Reports:

[NO/DNV/QAR06.0003/05](#)

[NO/DNV/QAR06.0004/05](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

Wireless Single Gas Detector FTD – 2000 is a single toxic gas detector integrated with a wireless mesh network enabled transmission radio module. It can work as a fixed device. It has a LCD display, three push buttons and a opening for the buzzer sound out put. On the top of the enclosure there is a threaded connector for the antenna and at the bottom of the enclosure there are two openings covered with threaded caps. The larger opening is for the D size battery replacement and the smaller opening is for the gas sensor. The apparatus is powered by a single D size, Lithium-thionyl Chloride, non rechargeable cell.

The circuit consists of three printed circuit boards. The FTD-2000 main board, FTD-2000 sensor board and the RF module.

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to the Annexe of the certificate.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Issue 4:

1. Upgrade the standards to IEC 60079-0:2011 and IEC 60079-11:2011
2. Inclusion of external power adaptor drawing and other minor drawing changes.
3. Instruction document updated to Rev. B.

Annex:

[Annex IECEx TSA 07.0032X-4.pdf](#)



IECEx Certificate of Conformity Annexe

Annexe for Certificate No.:	IECEx TSA 07.0032X	Issue No.:	4
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Drawing list pertaining to Issue 0 of this Certificate:

Drawing/Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
D01-1100-BOM	2	MeshGuard Main Board BOM	3	2007-05-30
D01-1100-000	5	MeshGuard(FTD-2000) Main Board <i>Schematic</i>	2	2007-05-01
D01-1000-000	10	FTD-2000 Main PCB Mechanical	3	2007-05-15
D01-1101-BOM	1	MeshGuard Sensor Board BOM	3	2007-05-30
D01-1101-000	1	MeshGuard(FTD-2000) Sensor Board <i>Schematic</i>	2	2007-04-10
D01-1001-000	8	FTD-2000 Sensor PCB Mechanical	1	2007-04-20
D01-xxxx-IEC	1	FTD-2000 nameplate, IECEx	B	2007-07-16
D01_MODM_000	1	FTD 2000 Safety Component specification	A	2007-04-16
904-0501-017	6	FTD-2000 Operation Manual controlled part	A	2007-06-20
D01-1100-ISA	1	MeshGuard FTD-2000 Intrinsic Safety Analysis Equivalent Circuit Block Diagram	4	2007-06-18
D01-1100-Sen	1	List of Electrochemical Sensors for Meshguard Detector FTD2000	A	2007-06-18

Conditions of Certification pertaining to Issue 0 of this Certificate:

1. It is a condition of manufacture that the RF Module will be connected to the U8 port of the main board. This module should not contain any voltage boost circuits.
2. It is a condition of manufacture that the following output parameters must be considered when connecting the RF Module:
U_o = 6.51 V
I_o (thermal) = 425 mA
I_o (Spark) = 2.227 A
P_o = 1.142 W
C_o = 12 µF
L_o = 2.5 µH
3. It is a condition of safe use that the apparatus must be powered by one of the two types of non rechargeable cells only.

EVE ER34615 Lithium-thionyl Chloride, Size D, 3.6 Volts
Xeno XL-205F Thionyl Chloride Lithium, Size D, 3.6 Volts

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Schedule of Variations

Variations permitted by Issue 1 of this Certificate:

A new drawing is added.

Drawing list pertaining to Issue 1 of this Certificate:

Drawing/Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
D01-ESD-001	1	MeshGuard LCD window ESD film	A	2007-10-11

Conditions of Certification pertaining to Issue 1 of this Certificate:

The conditions of manufacture and condition of safe use remain unchanged from the issue 0.

Variations permitted by Issue 2 of this Certificate:

1. R3, R4 changed from 1.2 Ω to 1 Ω ;
2. Optionally, F2 and R9 can be removed, and L2 is jumped with 0 Ω resistor;
3. Changed ambient temperature range from “-20 $^{\circ}\text{C}$ to + 50 $^{\circ}\text{C}$ ” to “-40 $^{\circ}\text{C}$ to + 50 $^{\circ}\text{C}$ ”;
4. Define input entity parameters for 3.6 V external power supply;
5. Changed IP20 to IP55;
6. Added Group I application.

The changes have been assessed in Test Report 32247 (AU/TSA/ExTR10.0013/00).

Drawing list pertaining to Issue 2 of this Certificate:

Drawing/Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
D01-1100-000	5	MeshGuard (FTD-2000) Main Board	3	2010-02-25
D01-1100-BOM-CSA	2	MeshGuard Main Board BOM	5	2010-02-25
D01-xxxx-IEC	1	FTD-2000 Nameplate	C	2010-03-10
500-0111-000	1	Battery, Lithium, Non-rechargeable, 3.6V, Size D	A	2007-07-08

Conditions of Certification pertaining to Issue 2 of this Certificate:

1. The conditions of manufacture and condition of safe use remain unchanged from the issue 0 except using external power supply.
2. The following parameters shall be taken into account when using external power supply:

Maximum Input Voltage U_i	3.6 V d.c.
Maximum Internal Capacitance C_i	63 μF
Maximum Internal Inductance L_i/R_i	3.5 $\mu\text{H} / \Omega$

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Variations permitted by Issue 3 of this Certificate:

Added a new oxygen sensor board.

The changes have been assessed in Test Report 32810 (AU/TSA/ExTR11.0004/00).

Drawing list pertaining to Issue 3 of this Certificate:

Drawing/Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
D01-1101-SCH	1	MeshGuard (FTD-2000) EC (Oxy) Sensor Board	2	2010-10-15
D01-1101-BOM-1	2	MeshGuard (FTD-2000) EC (Oxy) Sensor Board BOM	2	2010-11-15
D01-1001-001	8	FTD-2000 Sensor PCB Mechanical	A	2010-09-26

Conditions of Certification pertaining to Issue 3 of this Certificate:

The conditions of manufacture and condition of safe use remain unchanged from the issue 2.

Variations permitted by Issue 4 of this Certificate:

1. Upgrade the standards to IEC 60079-0:2011 and IEC 60079-11:2011
2. Inclusion of external power adaptor drawing and other minor drawing changes.
3. Instruction document updated to Rev. B.

The above have been assessed in Test Report 35379 (AU/TSA/ExTR15.0036/00).

The apparatus is unchanged from the previously tested and assessed in earlier reports 28833A, 32247 and 32810.


Drawing list pertaining to Issue 4 of this Certificate:

Drawing/Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
D01-ESD-001	1	MeshGuard LCD window ESD film	B	2015-11-05
D01-3EPA-001	1	FTD-3000 External Power Adaptor	3	2009-04-27
D01-xxxx-IEC	1	FTD-2000 Nameplate	E	2015-11-04
904-0501-017	9	FTD-2000 operation manual controlled part	B	2015-10-14

Conditions of Certification pertaining to Issue 4 of this Certificate:

All previous conditions still apply.

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