



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 00ATEX2061X** Issue: **6**

4 Equipment: **TX6363 Infra Red Gas Sensor/Transmitter**

5 Applicant: **Trolex Limited**

6 Address: **Newby Road
Hazel Grove
Stockport
Cheshire SK7 5DY
UK**

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:

TX6363 Infra Red Gas Sensor/Transmitter

EN 50014:1997 including amendments A1 and A2 EN 50018:1994 EN 50020:1994

TX6363 Mk2 Infra Red Gas Sensor/Transmitter


EN 60079-0:2006 EN 60079-11:2007 EN 60079-1:2007
EN 60079-0:2009 (used for guidance in respect of marking)

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:

TX6363 Infra Red Gas Sensor/Transmitter

 II 2G
EEx ia d T4 IIB (T_a = -20°C to +44°C)

TX6363 Mk2 Infra Red Gas Sensor/Transmitter

 II 2G
Ex ia d IIB T4 Gb (T_a = -20°C to +44°C)

Project Number 22890


C Ellaby
Deputy Certification Manager

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13 DESCRIPTION OF EQUIPMENT

The TX6363 Infra Red Gas Sensor/Transmitter takes a signal from a flameproof gas sensing head. The head is covered by certificate number Sira 99ATEX1121U and is coded EEx d IIC. The head is mounted on the sensor board in the sensor enclosure; this signal is conditioned and an analogue signal is then transmitted to other monitoring equipment.

The sensing head can detect both flammable and toxic gases. The signal requires compensation for pressure and temperature changes, so a pressure sensor is fitted on the pressure sensor PCB and a temperature-measuring integrated circuit is located on the sensor head PCB. The equipment comprises an output board connected to an optional display board plus a control board, which is connected to two sensor conditioning boards (pressure sensor and infra-red sensor). The assembly is housed in a polycarbonate housing. The sensor may be mounted on the main unit, or in a remote location connected by up to 10 m of cable.

The TX6363 is a 4-20 mA device and has the following safety description at terminals 1 to 5:

Input Parameters Group IIB 4-20 mA			
	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)
Ui	15 V (Note 1)	15 V	15 V
Ii	150 mA (Note 1)	150 mA	300 mA
Pi	0.6 W (Note 1)	0.6 W	1.2 W
Ci	1.2 nF	0.566 µF	2.881 µF
Li	0	0	0
Output Parameters Group IIB 4-20 mA			
	T1-T2 (signal)		
Uo	15 V		
Io	110 mA		
Po	0.4 W		
Co	300 nF		
Lo	1 mH		

Note 1: T1 is an output but the input values of Ui, Ii and Pi may be applied to T1 without affecting intrinsic safety.

Note 2: T4 and T5 are inputs. However, for system assessment purposes, T4 and T5 may be assumed to act as supplies with a voltage of 7.14 V via 495 Ω.

Variation 1 - This variation introduced the following change:

- i. The use of 'Faradex' stainless steel filled nylon 6 as an alternative anti-static enclosure material.

Variation 2 - This variation introduced the following change:

- i. The addition of two Pull Up resistors (RM1 and RM2) to the Control PCB.



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Variation 3 - This variation introduced the following change:

- i. The introduction of the TX6363 Mk2 Infra Red Gas Sensor/Transmitter that incorporates the following modifications:
 - The Output Board has been redesigned and replaces the previous version.
 - A new LCD Display has been introduced to replace the previous version.
 - The use of an alternative pressure sensor on the Head PCB
 - An alternative housing material with anti-static properties

This new version conforms to the requirements of the specific EN 60079 series of standards detailed in section 9 and bears the marking shown below:



II 2G
Ex ia d IIB T4 Gb (T_a = -20°C to +44°C)

The following safety description is applicable to this version:

Input Parameters Group IIB 4-20 mA			
	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)
U _i	15 V	15 V	15 V
I _i	-	150 mA	300 mA
P _i	-	0.6 W	1.2 W
C _i	0	0.675 µF	2.971 µF
L _i	0	0	0
Output Parameters Group IIB 4-20 mA			
	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)
U _o	15 V	7.14 V	7.14 V
I _o	164 mA	15 mA	15 mA
P _o	0.626 W	26 mW	26 mW
C _o	3.55 µF	-	-
L _o	5.99 mH	-	-

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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	16 June 2000	R52A6522A	The release of the prime certificate.
1	28 June 2000	N.A.	The certificate was re-printed to correct a printing error
2	13 August 2001	R52A7207A	Issued to permit: <ul style="list-style-type: none">• The re-design of the output board circuit.• The re-design of the infra-red sensor head board circuit.• The existing safety parameters for the Group I build to be replaced by a new set of figures.• The introduction of a Group II build.• The removal of the option of an enclosure without stainless steel filling.• The removal of P5486.03 and P5486.06 from the list of certified drawings.• The introduction of new condition of certification, refer to clause 17.4.
3	30 September 2002	R52A8726A	Issued to permit: <ul style="list-style-type: none">• The scope of the certificate to be restricted to Group II only.• The recognition of minor drawing and component changes.
4	24 March 2003	R52A9400A	The introduction of Variation 1.
5	19 March 2007	R52A16400A	The introduction of Variation 2.
6	10 June 2011	R22890B/00	This Issue covers the following changes: <ul style="list-style-type: none">• All previously issued certification was rationalised into a single certificate, Issue 4, Issues 0 to 3 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.• The introduction of Variation 3.

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

- 15.1 The equipment shall be mounted such that the sensor housing is vertical and underneath the main enclosure. Alternatively, the enclosure may be mounted in any orientation provided additional protection is given such that the risk of impact is low.

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 This certificate relies on attributes of the following previously-certified products. When these products are used as part of the TX6363, the key attributes listed in the report shall still be maintained by their original certificate.

Item	Certificate No	Key attribute
e2v Technologies (UK) Ltd IR1xxx gas sensing head	Sira 99ATEX1121U	Ex d IIC, T _a = -20°C to +55°C

- 17.4 Each manufactured product shall be marked with a unique serial number.

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Certificate Annexe

Certificate Number: Sira 00ATEX2061X
Equipment: TX6363 Infra Red Gas Sensor/Transmitter
Applicant: Trolex Limited



Issue 0 to 2 (The drawings listed with these Issues were rationalised and superseded by those detailed in Issue 3.)

Issue 3

Drawing	Sheets	Rev.	Date	Description
P5432.01	1 of 2	C	21 Aug 02	Certified Circuit Diagram Head PCB Assemblies
P5432.01	2 of 2	C	21 Aug 02	Certified Circuit Diagram Parts List For Head PCB Assemblies
P5432.02	1 of 1	C	22 Jul 02	General Arrangement
P5432.03	1 of 7	B	21 Aug 02	Certified Circuit Diagram Output PCB
P5432.03	6 of 7	B	21 Aug 02	Certified Circuit Diagram Output PCB GpII 4 to 20mA Build Option
P5432.03	7 of 7	B	21 Aug 02	Certified Circuit Diagram Parts List For GpII Output PCB
P5432.11	1 of 1	A	28 Jun 01	Head PCB, Sensor Head PCB Artwork
P5432.17	1 of 1	A	28 Jun 01	Output PCB Artwork
P5432.20	1 of 1	C	28 Jun 02	Certification Labels
P5487.04	1 of 4	A	01 Sep 99	Display PCB – Top Overlay
P5487.04	2 of 4	A	01 Sep 99	Display PCB – Top Layer
P5487.04	3 of 4	A	01 Sep 99	Display PCB – Bottom Overlay
P5487.04	4 of 4	A	01 Sep 99	Display PCB – Bottom Layer
P5487.07	1 of 1	B	14 Dec 99	Certified Circuit Diagram Display PCB

Issue 4

Drawing	Sheets	Rev.	Date	Title
P5432.02	1 of 1	E	03 Feb 03	General arrangement

Issue 5

Drawing	Sheets	Rev.	Date(Sira Stamp)	Title
P5432.01	1 to 2	D	15 Mar 07	Head PCB Assemblies
P5432.57	1 of 1	A	15 Mar 07	Fixing of Pull Up Resistors

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Drawing	Sheets	Rev.	Date(Sira Stamp)	Title
P5432.01	1 of 2	E	25 May 11	Certified Circuit Diagram Head PCB Assemblies
P5432.01	2 of 2	E	25 May 11	Certified Circuit Diagram Parts List for Head PCB Assemblies
P5432.02	1 of 1	F	25 Mar 11	General Arrangement
P5432.60	2 of 5	E	25 Mar 11	Output Board 4 to 20mA Version
P5432.60	5 of 5	E	25 Mar 11	Output Board Parts List
P5432.17	1 of 1	E	16 Mar 11	Output PCB Artwork
P5487.100	1 of 1	C	16 Mar 11	LCD Board Circuit
P5487.101	1 of 1	E	16 Mar 11	LCD PCB
P5432.20	1 of 1	D	18 Apr 11	Certification Label

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