



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 02ATEX2167X** Issue: **3**

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 plus amendments A1 and A2 EN 50020:1994 EN 50303:2000

TX6363 Mk2 Infra Red Gas Sensor/Transmitter


EN 60079-0:2006 EN 60079-11:2007 EN 50303:2000
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

 I M1
EEx ia I (T_a = -20°C to +60°C)

TX6363 Mk2 Infra Red Gas Sensor/Transmitter

 I M1
Ex ia I Ma (T_a = -20°C to +60°C)

Project Number 22890


C Ellaby
Deputy Certification Manager

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SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

The TX6363 Infra Red Gas Sensor/Transmitter takes a signal from a component-certified gas sensing head that 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 anti-static polycarbonate housing with a polycarbonate window. The sensor may be mounted on the main unit, or in a remote location connected by up to 10 m of cable.

There are three versions of the equipment:

- 1 Group I, 5 to 15 Hz
- 2 Group I, 0.4 to 2 V
- 3 Group I, 4 to 20 mA

The TX6363 has the following safety description at terminals 1 to 5:

	4-20 mA			0.4-2 V			5-15 Hz		
	T1-T2 (signal) (Note 1)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)	T1-T2 (signal) (Note 2)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)
I _i	666 mA	-	-	666 mA	-	-	-	-	-
P _i	-	-	-	1.5 W	-	-	1.5 W	-	-
U _i	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V
C _i	1.2 nF	1.2 nF	1.2 nF	1.2 nF	1.2 nF	1.2 nF	0	0	0
L _i	0	0	0	0	0	0	0	0	0

Note 1: **4-20 mA Group I build only:** the power and signal terminals have been assessed as a single intrinsically safe circuit. However, if it is required to assess these as separate intrinsically safe circuits, then the signal circuit should be considered to have a resistance of 73 Ω in series with its terminals.

Note 2: **0.4-2 V Group I build only:** the power and signal terminals have been assessed as a single intrinsically safe circuit. However, if it is required to assess these as separate intrinsically safe circuits, then the signal circuit should be considered as a supply of 7.14 V with a resistance of 218 Ω in series with its terminals.

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 was permitted.

Variation 2 - This variation introduced the following change:

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

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Sira Certification Service

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Variation 3 - This variation introduced the following changes:

- 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.
 - The use of Bedford opto-isolator Type OPI1264D approved under BAS 01ATEX1278U coded Ex ia IIC as an alternative to that approved under BAS Ex 89C2096U/2 coded EEx ia IIC.
 - The use of Littelfuse fuse 259 approved under Baseefa02ATEX0071U coded EEx ia as an alternative to that approved under BAS Ex 832303.

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:

Ex ia I Ma (Ta = -20°C to +60°C)

The following safety description is applicable to this version:

Input Parameters

	Group I 4-20 mA			Group I 0.4-2 V			Group I 5-15 Hz		
	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)
U _i	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V	16.5 V
P _i	-	-	-	-	-	-	1.5W	-	-
C _i	0	1.1 nF	1.1 nF	0	1.1 nF	1.1nF	0	1.1nF	1.1nF
L _i	0	0	0	0	0	0	0	0	0

Output Parameters

	Group I 4-20 mA			Group I 0.4-2 V			Group I 5-15 Hz		
	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)	T1-T2 (signal)	T4-T3 (main circuit supply)	T5-T3 (lamp supply)
U _o	16.5 V	7.14 V	7.14 V	16.5 V	7.14 V	7.14 V	-	7.14 V	7.14 V
I _o	540mA	15mA	15mA	29mA	15mA	15mA	-	15mA	15mA
P _o	1.765W	24mW	24mW	120mW	24mW	24mW	-	24mW	24mW
C _o	11.7µF	-	-	11.7µF	-	-	-	-	-
L _o	1.5mH	-	-	493mH	-	-	-	-	-

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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	30 September 2002	52A8726	The release of the prime certificate.
1	24 March 2003	52A9400	The introduction of Variation 1.
2	19 March 2007	52A16400	The introduction of Variation 2.
3	10 June 2011	R22890A/00	This Issue covers the following changes: <ul style="list-style-type: none">All previously issued certification was rationalised into a single certificate, Issue 3, Issues 0 to 2 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 user should note that internal components may exceed 150°C under fault conditions and care should be taken to prevent the ingress of coal dust when opening the enclosure.

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.

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 the original certificates.

Item	Certificate No	Key attribute
Bedford opto-isolator, type OPI1264D	BAS Ex 89C2096U/2 or BAS 01ATEX1278U	EEx ia IIC Ex ia IIC
e2v Technologies (UK) Ltd IR2xxx sensing head	Sira 02ATEX2015U	Ex ia I; T _a = -20°C to +60°C
Littelfuse fuse 259	BAS Ex 832302 or Baseefa02ATEX0071U	EEx ia

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Certificate Annexe

Certificate Number: Sira 02ATEX2167X
Equipment: TX6363 Infra Red Gas Sensor/Transmitter
Applicant: Trolex Limited



Issue 0

Drawing No.	Sheets	Rev.	Date	Title
P5432.01	1 to 2	C	21 Aug 02	Head PCB – schematic
P5432.02	1 of 1	C	22 Jul 02	General Arrangement
P5432.03	1 of 7	B	21 Aug 02	Output PCB – master schematic
P5432.03	2 of 7	B	21 Aug 02	Output PCB – Group I 0.4-2 V output schematic
P5432.03	3 of 7	B	21 Aug 02	Output PCB – Group I 4-20 mA schematic
P5432.03	4 of 7	B	21 Aug 02	Output PCB – Group I 5-15 Hz schematic
P5432.03	5 of 7	B	21 Aug 02	Output PCB – Group I parts list
P5432.11	1 of 1	A	28 Jun 01	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
P5460.24	1 of 1	A	07 Jul 97	5-15Hz module – artwork
P5460.109	1 of 1	A	18 May 98	5-15Hz Module – schematic
P5487.04	1 to 4	A	01 Sep 99	Display PCB – artwork
P5487.07	1 of 1	B	14 Dec 99	Display PCB – schematic

Issue 1

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

Issue 2

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

Issue 3

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	1 of 5	E	25 Mar 11	Output Board Overall Circuit
P5432.60	2 of 5	E	25 Mar 11	Output Board 4 to 20mA Version
P5432.60	3 of 5	E	25 Mar 11	Output Board 0.4 to 2V Version
P5432.60	4 of 5	E	25 Mar 11	Output Board 5Hz to 15Hz 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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