



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 01ATEX2299** Issue: **4**

4 Equipment: **TX6383 Flammable Gas Sensor/ Transmitter**

5 Applicant: **Trolex Ltd**

6 Address: **Hazel Grove
Stockport
Cheshire SK7 5DY
U.K.**

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:

EN 60079-0:2012

EN 60079-11:2012

EN 50303:2000

The above list of documents may detail standards that do not appear on the UKAS Scope of Accreditation, but have been added through Sira's flexible scope of accreditation, which is available on request.

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:



I M1
Ex ia I Ma

Project Number 27564

C Ellaby
Deputy Certification Manager

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13 DESCRIPTION OF EQUIPMENT

The TX6383-Series Flammable Gas Sensor/Transmitter is designed for mining use only as Category M1 equipment. It takes a signal from a gas sensing head (covered by certificate number Sira 00ATEX2059U and coded Ex ia I Ma) mounted on the sensor board; this signal is conditioned and an analogue signal is then transmitted to other monitoring equipment.

The TX6383 comprises an output board, which is connected to a sensor board and an optional display board. The assembly is housed in an anti-static plastic enclosure and a polycarbonate window is fitted to allow viewing of the liquid crystal display. The sensor head may be mounted on the main unit, or in a remote location connected by up to 10 m of cable.

There are three Group I versions of the TX6383 with safety description as shown below:

T4/T3 (power) (See note 1)			
U_i	16.5 V		
C_i	0 (See note 3)		
L_i	0		
T1/T2 (sensor output signal)			
	4-20 mA 4-wire	0.4-2 V	5-15 Hz
U_i	16.5 V	16.5 V	16.5 V
I_i	200 mA	200 mA	
P_i	0.271 W	0.271 W	
C_i			0
L_i			0
U_o	16.5 V (See note 2)	5.88 V	0
$I_{o(peak)}$	322 mA	24 mA	
$I_{o(continuous)}$	213 mA		
P_o	1.328 W	35 mW	
C_o	9.7 μ F	9.7 μ F	
L_o/R_o	$\leq 40 \mu$ H/ Ω	$\leq 40 \mu$ H/ Ω	

Note 1: The TX6383 may be connected to supplies derived from a single power source or from two separate power sources. Where two separate power sources are used, the power and signal supplies should be regarded as separate intrinsically safe circuits.

Note 2: The quoted U_o , $I_{o(peak)}$ and P_o parameters are worst-case values based on a U_i value of 16.5 V. U_o has the same value as U_i , so, if a U_i value of less than 16.5 V is used, the same lower value may be used for U_o . $I_{o(peak)}$ and P_o are also reduced. Terminals T4 and T1 are connected via a minimum resistance of 51.3 Ω . Terminal T4 has a U_o value of zero on account of blocking diodes.

Note 3: There is no terminal capacitance at the supply voltage but, for system assessment purposes, the installer should note that there is a terminal capacitance of 7.0 μ F at 5.88 V with one countable fault.



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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 approved.

Variation 2 - This variation introduced the following change:

- i. An increase in the L_0/R_0 value at terminals T1/T2 from 20 $\mu\text{H}/\Omega$ to 40 $\mu\text{H}/\Omega$ was recognised.

Variation 3 - This variation introduced the following changes:

- i. The introduction of an alternative plastic enclosure material with anti-static properties, the specification of the enclosure was clarified in the Description of Equipment.
- ii. The marking details were allowed to be laser-etched on a stainless steel label that is attached to the front face of the apparatus.
- iii. The option to fit the opto-isolator approved under BAS Ex 89C2096U was removed.
- iv. The Littelfuse 259-Series Fuse covered by BAS Ex 832302U was replaced by a Littelfuse 259-Series Fuse certified under Baseefa02ATEX0071U.
- v. The Condition of Certification was amended.
- vi. Following appropriate re-assessment to demonstrate compliance with the requirements of the latest standards, the documents previously listed in section 9, EN 50014:1997 plus amendments A1 & A2 and EN 50020:1994 were replaced by those currently listed, the marking in section 12 was updated accordingly.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report number	Comment
0	15 March 2002	R52A7931A	The release of the prime certificate.
1	25 June 2002	R52A9073A	Re-issued to permit the output PCB circuit and artwork to be modified with consequential changes to the safety description
2	24 March 2003	R52A9400A	The introduction of Variation 1.
3	10 October 2006	R52A15682A	The introduction of Variation 2.
4	16 November 2012	R27564A/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.

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- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
None
- 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 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.

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Certificate Annexe

Certificate Number: Sira 01ATEX2299
Equipment: TX6383 Flammable Gas Sensor/
Transmitter
Applicant: Trolex Ltd



Issue 0

Drawing No.	Rev.	Sheet	Date	Title
P5486.02	D	1 of 1	07 Mar 02	General Arrangement
P5486.101	b	1 of 1	05 Feb 02	Schematic & parts list – sensor head PCBs
P5486.110.1	B	1 of 1	24 Jan 02	Output board – master schematic
P5486.110.2	B	1 of 1	24 Jan 02	Output board – 4-20mA output schematic
P5486.110.3	B	1 of 1	24 Jan 02	Output board – 0.4-2 V output schematic
P5486.110.4	B	1 of 1	24 Jan 02	Output board – 5-15 Hz output schematic
P5486.110.5	B	1 of 1	06 Feb 02	Output board – parts list
P5486.111	B	1 of 1	24 Jan 02	Artwork – output PCB
P5486.129	A	2 of 2	05 Feb 02	Marking – Group I
P5487.100	C	1 of 1	06 Mar 02	Schematic & parts list – display PCB
P5487.101	E	1 of 1	06 Mar 02	Artwork – display PCB

Issue 1

Drawing No.	Rev.	Sheet	Date	Title
P5486.02	E	1 of 1	20 Jun 02	General Arrangement
P5486.101	C	1 of 1	24 Apr 02	Schematic & parts list – sensor head PCBs
P5486.110.1	C	1 of 1	10 Apr 02	Output board – master schematic
P5486.110.2	C	1 of 1	10 Apr 02	Output board – 4-20mA output schematic
P5486.110.3	C	1 of 1	10 Apr 02	Output board – 0.4-2 V output schematic
P5486.110.4	C	1 of 1	10 Apr 02	Output board – 5-15 Hz output schematic
P5486.110.5	C	1 of 1	24 Jun 02	Output board – parts list
P5486.111	C	1 of 1	24 Apr 02	Output board - artwork
P5486.129	A	2 of 2	05 Feb 02	Marking – Group I
P5487.100	C	1 of 1	06 Mar 02	Schematic & parts list – display PCB
P5487.101	E	1 of 1	06 Mar 02	Artwork – display PCB

Issue 2

Number	Rev	Sheet	Date	Title
P5486.02	F	1 of 1	04 Feb 03	General arrangement

Issue 3 No new drawings were introduced.

Issue 4

Drawing	Rev.	Sheets	Date (Sira Stamp)	Title
P5486.02	H	1 of 1	23 Oct 12	General Assembly
P5486.110.5	D	1 of 1	23 Oct 12	Certified Parts List
P5486.101	D	1 of 1	23 Oct 12	Sensor Head PCB Circuit and Parts List
P5486.129	C	2 of 2	23 Oct 12	Certification Labels

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