Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE MINE HEALTH AND SAFETY ACT, ACT NO 29 OF 1996 (AND REGULATIONS), THE OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993) AND REGULATION 17 OF THE ELECTRICAL MACHINERY REGULATIONS

IA CERTIFICATE	MASC MS/11-358X	**Issue**	6
Issue Date	02 August 2023	**Expiry Date**	02 August 2026
**** Based on Certificate No**	Sira 02ATEX2052X	**Issue / Variations / Amendment**	7
Requested by	**Trolex Limited** Hazel Grove, Stockport Cheshire SK7 5DY, United Kingdom		
Manufacturer	**Trolex Limited** Hazel Grove, Stockport Cheshire SK7 5DY, United Kingdom		
Description	The TX6373 Toxic Gas Sensor/Transmitters take a signal from an electrochemical gas sensing head mounted on the sensor board; this signal is conditioned and an analogue signal is then transmitted to other monitoring equipment. The apparatus comprises an output board connected to sensor head boards 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. There are the following versions of the TX6373: TX6373.01.11: Group I, 0.4 to 2 V Output TX6373.01.12: Group I, 4 to 20 mA Output (2 wire) TX6373.01.13: Group I, 5 to 15 Hz Output TX6373.02.12: Group II, 4 to 20 mA Output (2 wire) See Base certificate** for further descrition.		
Equipment	Toxic Gas Sensor/Transmitter	**Type**	TX6373
MARKING: **Original marking as per certificate ** remains applicable.** **IA number must be added.**	**Type:** **Ex Marking:** **IA Number:** **Warnings:**	TX6373 Toxic Gas Sensor/Transmitter Ex ia I Ma (T_a = -20°C to +60°C) Ex ia IIC T4 Ga (T_a = -20°C to +60°C) MASC MS/11-358X (To be additionally marked on equipment) See Base Certificate ** (original marking must be applied)	
Quality Assurance report (QAR) / Notification (QAN):		"It is a requirement under ATEX that all equipment for category 1 and 2 areas must have 3rd party quality assurance from a notified body. This is accepted to cover the equipment's quality requirements."	

Compliance:

The equipment as described above has been allocated the rating Explosion Protected 'as above' utilizing the SANS/IEC Standards:

- SANS (IEC) 60079-0: 2012 Equipment - General requirements
- SANS (IEC) 60079-11: 2012 Equipment protection by intrinsic safety "i"
- SANS (IEC) 60079-26: 2007 Equipment with equipment protection level (EPL) Ga

Note: This certificate covers only the listed standards and does not imply compliance to any other standard, related or inferred. It is up to the manufacturer to ensure that the product complies to all relevant standards for the application.

Special conditions of safe use "X":

- Refer to Annex A below for more details.

Conditions of manufacture:

- Refer to Annex A below for more details.

S. JORDAAN
TECHNICAL SPECIALIST

N. VILOJEN
TECHNICAL OFFICER

This certificate covers all units sold as long as the QAR/QAN remains valid.
According to the relevant requirements of the MHS Act and the OHS Act, production units of explosion protected equipment are required to comply with third party quality assurance (an approved mark scheme or batch testing by an accredited test laboratory).

Apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:
SANS 10086 requirements;
Any conditions mentioned in the above certificate;
Any relevant requirements of the MHS Act;
Any restrictions and conditions enforced by the chief inspector of mines, principal inspector (Group I equipment) or chief inspector of factories (Group II equipment).

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Unit 5 Lelyta Park, 45 Jurg Avenue, Hennopspark, Ext 87
Centurion 0157

ANNEX A

This document is based on and must be read in conjunction with certificate Sira 02ATEX2052X.	
Description (According to Base Certificate) **	
"Refer to description in Base Certificate ** (and any applicable schedules/issues/variations)."	
Standard compliance	See Base Certificate ******
Special conditions of safe use ("X")	• Under certain extreme circumstances, the polycarbonate window may store an ignition-capable level of electrostatic charge. Therefore, when it is used for applications that specifically require group II, category 1 equipment, the TX6373 shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge. Additionally, the equipment shall only be cleaned with a damp cloth.
Conditions of manufacture	• None.
Conditions of Certification	• This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate. • As per ARP 0108 a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date). • The apparatus must be additionally marked with the MASC marking details above. • This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date. • The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate. • The certification on which this IA Certificate is based must remain valid. • The extent of the requirements in the ARP 0108 (or regulations), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged. • The Ex-quality assurance notification/report for the equipment must remain valid.
Conclusion:	• From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate **. • The routine tests for production units according to the Base Certificate ** must be complied with (if applicable).

1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 02ATEX2052X** Issue: **7**

4 Equipment: **TX6373 Toxic Gas Sensor/Transmitter**

5 Applicant: **Trolex Limited**

6 Address: Newby Road
Hazel Grove
Stockport 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 CSA Group Netherlands B.V., Notified Body Number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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:

IEC 60079-0:2011 EN 60079-11:2012 EN 60079-26:2007 EN 50303:2000

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-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 (T_a = -20°C to +60°C)

II 1G
Ex ia IIC T4 Ga (T_a = -20°C to +60°C)

Project Number 2363

Signed:

Title: Director of Operations

CSA Group Netherlands B.V.
Utrechseweg 310,
6812 AR, Arnhem,
Netherlands

SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE **Sira 02ATEX2052X**
Issue 7

13 **DESCRIPTION OF EQUIPMENT**

The TX6373 Toxic Gas Sensor/Transmitters take a signal from an electrochemical gas sensing head mounted on the sensor board; this signal is conditioned and an analogue signal is then transmitted to other monitoring equipment. The apparatus comprises an output board connected to sensor head boards 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. There are the following versions of the TX6373:

- TX6373.01.11: Group I, 0.4 to 2 V Output
- TX6373.01.12: Group I, 4 to 20 mA Output (2 wire)
- TX6373.01.13: Group I, 5 to 15 Hz Output
- TX6373.02.12: Group II, 4 to 20 mA Output (2 wire)

The TX6373 has the safety description listed in the tables below:

Group I and II 4-20mA 2-wire			
Group I, T4/T1 (power/signal)		Group II, T4/T1 (power/signal)	
Ui	16.5 V	Ui	28 V
Ii	-	Ii	100 mA
Pi	-	Pi	0.7 W
Ci	50 nF ①	Ci	50 nF ①
Li	0	Li	0

Note ①: In addition to the terminal capacitance at the supply voltage, for system assessment purposes, the installer should note that there is a terminal capacitance of 7.0 μF at 7.08 V.

Group I 0.4-2 V and 5-15 Hz					
T4/T3 (power)		T1/T2 (sensor output signal)			
		0.4-2 V ②		5-15 Hz ②	
Ui	16.5 V	Ui	16.5 V	Ui	16.5 V
Ci	0 ①	Uo	5.88 V	Uo	0
Li	0	Io	24 mA		
		Po	35 mW		
		Co	9.7 μF		
		Lo/Ro	≤40 μH/Ω		

Note ①: For system assessment purposes, the installer should note that there is a terminal capacitance of 7.0 μF at 7.08 V.

Note ②: The 0.4-2 V and 5-15 Hz output versions may be connected to supplies derived from a single power source or from two separate power sources. Where two separate powers sources are used, the power and signal circuits should be regarded as separate intrinsically safe circuits.

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SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE **Sira 02ATEX2052X**
Issue 7

Variation 1 - This variation introduced the following changes:

i. The output board circuit was modified.

Variation 2 - This variation introduced the following changes:

i. The addition of zener diodes D8 and D9 to the output board of the 4-20 mA 2-wire Groups I and II builds.
ii. The reduction of the capacitance value of C203 from 120 nF maximum to 12 nF maximum.

Variation 3 - This variation introduced the following changes:

i. The use of a TO-92 package for voltage regulator U1 on the output board as an alternative to the current TO-220 package was permitted.
ii. The addition of C17 to the output board of the 4-20 mA Group I and Group IIC builds only.
iii. The re-tabulation and introduction of new safety parameters, in the Description of Equipment in Issue 6, this list replaced that quoted in the prime certificate, therefore, the reader should refer to this document to view the previous values.

Variation 4 - This variation introduced the following changes:

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

Variation 5 - This variation introduced the following changes:

i. The L_o/R_o value at terminals T1/T2 was reased from 20 $\mu H/\Omega$ to 40 $\mu H/\Omega$, the new value being recognised in the list of safety parameters quoted in Issue 6.

Variation 6 - This variation introduced the following changes:

i. 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, EN 50020:1994, EN 50284:1999 and EN 50303:2000, were replaced by those currently listed, the markings in section 12 were updated accordingly.
ii. The addition of an alternative plastic enclosure material with anti-static properties.
iii. The marking details were allowed to be laser-etched on a stainless steel label that is attached to the front face of the apparatus.
iv. The status of the following devices was clarified, the Condition of Certification being amended accordingly:

Device	Status	Product	Certificate no.
Opto-isolator	Removed	Bedford opto-isolator, type OPI1264D	BAS Ex 89C2096U
	Recognised*	Bedford opto-isolator, Type OPI1264D	BAS 01ATEX1278U/4
Fuse	Removed	Littelfuse 259-series fuse	BAS Ex 832302U
	Replacement	Littelfuse 259-series fuse	BAS02ATEX0071U – Issue 3

* This particular device has always been an option on the drawings and is now formally recognised in the certificate

v. The Description of Equipment was amended in line with the changes of safety parameters introduced in Variations 3 and 5.

CSA Group Netherlands B.V.
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6812 AR, Arnhem Netherlands

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report no.	Comment
0	24 June2002	52A7351	The release of the prime certificate.
1	24 June2002	52V9074	The introduction of Variation 1.
2	25 November 2002	52V9688	The introduction of Variation 2.
3	18 February 2003	52L10006	The introduction of Variation 3.
4	24 March 2003	R52A9400A	The introduction of Variation 4.
5	10 October 2006	R52A15682A	The introduction of Variation 5.
6	17 April 2012	R27529A/00	This Issue covers the following changes: • All previously issued certification was rationalised into a single certificate, Issue 6, Issues 0 to 5 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 6.
7	31st October 2019	2363	• Transfer of certificate **Sira 02ATEX2052X** from Sira Certification Service to CSA Group Netherlands B.V.. • EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. *(In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)*

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

15.1 Under certain extreme circumstances, the polycarbonate window may store an ignition-capable level of electrostatic charge. Therefore, when it is used for applications that specifically require group II, category 1 equipment, the TX6373 shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge. Additionally, the equipment shall only be cleaned with a damp cloth.

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.

CSA Group Netherlands B.V.
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Certificate Annexe

Certificate Number: **Sira 02ATEX2052X**

Equipment: **TX6373 Toxic Gas Sensor/Transmitter**

Applicant: **Trolex Limited**

Issue 0

Drawing No.	Sheets	Rev.	Date	Title
P5486.110.1	1 of 1	B	24 Jan 02	Output board – master schematic
P5486.110.6	1 of 1	B	13 Mar 02	Output board – 4-20mA output schematic
P5486.110.7	1 of 1	B	13 Mar 02	Output board – 0.4-2 V output schematic
P5486.110.8	1 of 1	B	13 Mar 02	Output board – 5-15 Hz output schematic
P5486.110.9	1 of 1	B	13 Mar 02	Output board – parts list
P5486.111	1 of 1	B	24 Jan 02	Output board – artwork
P5487.02	1 of 1	D	20 Jun 02	General Arrangement
P5487.48	1 of 1	A	21 Mar 02	Certification Labels
P5487.100	1 of 1	C	06 Mar 02	Display PCB - schematic & parts list
P5487.101	1 of 1	E	06 Mar 02	Artwork – display PCB
P5487.103	1 to 6	B	20 Mar 02	Sensor head board – schematics and parts list

Issue 1

Drawing No.	Sheets	Rev.	Date	Description
P5486.110.1	1 of 1	C	10 Apr 02	Output Board – Master Schematic
P5486.110.6	1 of 1	C	01 May 02	Output board – 4-20mA Output Schematic
P5486.110.7	1 of 1	C	01 May 02	Output board – 0.4-2 V Output Schematic
P5486.110.8	1 of 1	C	01 May 02	Output board – 5-15 Hz Output Schematic
P5486.110.9	1 of 1	C	03 May 02	Output Board – Parts List
P5486.111	1 of 1	C	24 Apr 02	Output Board – Artwork

Issue 2

Drawing No.	Sheets	Rev.	Date	Description
P5486.110.6	1 of 1	D	28 Oct 02	Output board – 4-20mA output schematic
P5486.110.9	1 of 1	D	28 Oct 02	Output board – parts list

Issue 3

Drawing No.	Sheets	Rev.	Date	Description
P5486.110.1	1 of 1	D	06 Feb 03	Output board – master schematic
P5486.110.6	1 of 1	E	06 Feb 03	Output board – 4-20mA output schematic
P5486.110.9	1 of 1	E	06 Feb 03	Output board – parts list

Issue 4

Number	Sheet	Rev.	Date	Description
P5487.02	1 of 1	E	04 Feb 03	General arrangement

Issue 5 – no new drawings were introduced.

Issue 6

Drawing No.	Sheets	Rev.	Date (Sira Stamp)	Title
P5487.02	1 of 1	F	29 Mar 12	General Assembly
P5486.110.9	1 of 1	F	29 Mar 12	Certified Parts List
P5487.48	1 of 1	B	29 Mar 12	Certification Labels

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