



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 09ATEX2352X** Issue: **5**

4 Equipment: **Sentro Sensor/Transmitter TX635x.01i.xx and TX9081.01i.xx**

5 Applicant: **Trolex Limited**

6 Address: **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:

EN 60079-0:2012

EN 60079-11:2012

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:



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Ex ia I Ma

Project Number 70005348

C Ellaby  
Deputy Certification Manager

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**SCHEDULE**

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**13 DESCRIPTION OF EQUIPMENT**

The Sentro Sensor/Transmitter is designed to monitor an input from sensor modules. The sensor module is a component approved item fully integrated into the Sentro to give direct monitoring of the toxic and flammable gas concentrations, ambient air temperature, atmospheric pressure and humidity, etc, or alternatively the monitoring channel may be connected to a remote sensor to measure airflow, pressure, vibration, etc.

The Sentro Sensor/Transmitter comprises the following models:

- TX6351.01i (4/6 wire Gas Sensor/Transmitter)
- TX6352.01i (2 wire Gas Sensor/Transmitter)
- TX9081.01i.xx (4/6 wire Sensor/Transmitter)

Note:

- When fitted with an rModule, model numbers TX6351 and TX6352 become TX9081.
- TX6351.01i and TX9081.01i are identical except they use a different range of plug-in-modules.

The Sentro Sensor/Transmitter number is determined by the module fitted.

The unit comprises a Display PCB, Control PCB and an Output PCB, assembled on a plastic carcass, which in turn is encased in an outer polycarbonate ABS enclosure with antistatic properties with a polycarbonate window for the LCD display. The enclosure provides a degree of ingress protection to at least IP54. External circuit connections are made through the two gland entries at the bottom of the housing.

The Sentro has the option of three Output PCBs; 4-20 mA 2 Wire, Relay/Frequency and Comms/Analogue 4 Wire. These options give rise to the following products:

Model	Output PCB
TX6351.01i.11 and TX9081.01i.11	0.4-2 V Option Comms/ Analogue Output
TX6351.01i.12 and TX9081.01i.12	4-20 mA 4 Wire Option Comms/ Analogue Output
TX6351.01i.15 and TX9081.01i.15	RS485 Option Comms/ Analogue Output
TX6351.01i.14 and TX9081.01i.14	Dual relay Option Relay PCB
TX6351.01i.13 and TX9081.01i.13	5-15 Hz Option Frequency PCB
TX6352.01i.12	4-20 mA 2 Wire (loop powered)

As part of this certification, the above models can be used with any of the following sensors:

- TX6350 eModule – Flammable Gas Sensor (Group I), Sira 10ATEX2046U
- TX6350 eModule – Toxic Gas Sensor (Group I), Sira 08ATEX2097U
- TX6350 eModule – Flammable Gas Sensor, Sira 08ATEX2225U
- TX6350 eModule – Infrared Gas Sensing eModule (Group I), Sira 10ATEX2356U
- TX9160 Series rModule, Sira 10ATEX2032U
- TX9160 Climate Sensing eModule, Sira 11ATEX2271U



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The following safety parameters are applicable to the Sentro Sensors/Transmitters:

Model	Terminals	Input Parameters			Output Parameters		
		Ui	Ii	Pi	Uo	Io	Po
TX6351.01i.11 and TX9081.01i.11	5 & 6	14.4 V	*	-	-	-	-
	1 & (2 or 3)	14.4 V	-	-	14.4 V	40 mA	135 mW
TX6351.01i.12 and TX9081.01i.12	5 & 6	14.4 V	*	-	-	-	-
	1 & (2 or 3)	14.4 V	-	-	14.4 V	477 mA	1.72 W
TX6351.01i.15 and TX9081.01i.15	5 & 6	14.4 V	*	-	-	-	-
	1 & 3	6.88 V	-	-	5.88 V	66 mA	97 mW
	2 & 3						
TX6351.01i.14 and TX9081.01i.14	5 & 6	14.4 V	*	-	-	-	-
	1 & 2	30 V	-	-	0	0	0
	3 & 4	30 V	-	-	0	0	0
TX6351.01i.13 and TX9081.01i.13	5 & 6	14.4 V	*	-	-	-	-
	1 & 2	16.5 V	-	2.5 W	0	0	0
TX6352.01i.12	1 & 2	14.4 V	-	-	-	-	-

\*Ii = Io of the externally connected IS supply

**Variation 1** - This variation introduced the following changes:

- i. The use of an alternative material for the enclosure housing was approved.
- ii. The encapsulation used on the fuses was allowed to have an alternative specification.
- iii. An alternative design of the 2-Wire 4-20 mA Loop Powered Output PCB was acknowledged.
- iv. The recognition of minor changes to the circuits for the Control PCB to remove various components (marked 'Not Fitted') when it is used with the 2-wire 4-20 mA loop powered output board.
- v. The introduction of the TX9081 series of Sentro Sensors/Transmitters; the Description of Equipment has been amended to include these versions and a Special Condition for Safe Use has been applied necessitating the addition of an 'X' suffix to the certificate number.
- vi. A Condition of Certification that concerns previously certified devices was added.

**Variation 2** - This variation introduced the following changes:

- i. Following appropriate assessment to demonstrate compliance with the requirements of the latest EN 60079 series of standards, the documents previously listed in section 9, EN 60079-0:2006, EN 60079-11:2007 and EN 50303: 2000, were replaced by those currently listed.
- ii. Zener diodes, ZD1 and ZD2, on the Control PCB were approved to be changed from 4.7 V to 6.2 V on the TX6352.

**Variation 3** - This variation introduced the following change:

- i. For all models, with the exception of the TX6352 loop powered version, the Zener diodes ZD1 and ZD2, on the control PCB, were changed from 4.7 V to 5.6 V.



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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	18 February 2010	R17259A/00	The release of the prime certificate.
1	28 July 2010	R17259A/01	This Issue covers the following changes: <ul style="list-style-type: none"><li>• Report no. R17259A/01 replaced R17259A/00.</li><li>• A typographical error was corrected.</li></ul>
2	09 February 2012	R26386A/00	The introduction of Variation 1.
3	18 April 2012	R26386A/01	Report no. R26386A/00 was replaced by R26386A/01.
4	08 January 2013	R29423A/00	The introduction of Variation 2.
5	08 May 2014	R70005348A	The introduction of Variation 3.

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

15.1 When an external sensor is used with either a type TX9160.01i.301 (4-20mA), TX9160.01i.303 (0.4-2V), TX9160.01i.321 (4-20mA Differential) or TX9160.01i.323 (0.4-2V Differential) rModule and it is powered from a separate intrinsically safe power supply, the following restrictions shall be met:

- No connection shall be made to rModule terminal 1m (power).
- The 0V of the external sensor power supply shall be connected to the 0V input of the equipment.
- The Ui presented by the external sensor to the rModule terminals 2m and 3m shall not exceed the Uo of power supply that powers the rModule.

#### 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 printed circuit boards applied with conformal coating shall be inspected to ensure that no conductive parts protrude through the coating.

17.4 The cable glands shall be suitable to provide an ingress protection to at least IP54.

17.5 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 09ATEX2352X  
Equipment: Sentro Sensor/Transmitter TX635x.01i.xx  
and TX9081.01i.xx  
Applicant: Trolex Limited



## Issue 0 and 1

Drawing	Sheets	Rev.	Date	Title
P5536.100	1 of 1	B	18 Jan 10	General Arrangement
P5536.244	1 of 1	A	29 Jan 10	Label
P5536.224	1 of 1	B	25 Jan 10	Sentro Block Diagram
P5536.200	1 of 5	B	07 Oct 09	Circuit Master Analogue/Comms Output
P5536.200	2 of 5	B	07 Oct 09	Circuit 0.4-2V Analogue/Comms Output PCB
P5536.200	3 of 5	B	07 Oct 09	Circuit 4-20mA Analogue/Comms Output PCB
P5536.200	4 of 5	B	07 Oct 09	Circuit RS485 Analogue/Comms Output PCB
P5536.200	5 of 5	B	07 Oct 09	Circuit Parts Analogue/Comms Output PCB
P5536.201	1 of 1	B	14 Oct 09	PCB Analogue Output
P5536.202	1 & 2	B	23 Dec 09	Circuit Control PCB
P5536.203	1 of 1	B	14 Oct 09	PCB Control
P5536.204	1 & 2	B	07 Oct 09	Circuit Display
P5536.205	1 of 1	B	14 Oct 09	PCB Display
P5536.205	1 of 1	A5	14 Oct 09	PCB Display
P5536.212	1 of 1	B	14 Oct 09	PCB Connector
P5536.222	1 of 4	C	15 Jan 10	Circuit Master 5-15Hz Output PCB
P5536.222	2 of 4	C	15 Jan 10	Circuit Dual Relay Version
P5536.222	3 of 4	C	15 Jan 10	Circuit 5-15Hz Frequency Version
P5536.222	4 of 4	C	15 Jan 10	Circuit Parts 5-15Hz Output PCB
P5536.223	1 of 1	C	13 Jan 10	PCB Relay 5-15Hz
P5536.225	1 & 2	B	07 Oct 09	Circuit 4-20mA Loop Powered Output PCB
P5536.226	1 of 1	B	14 Oct 09	PCB 4-20mA Loop Powered
P5536.103	1 of 1	A	02 May 08	Relay
P5536-104	1 of 5	A	18 Jan 10	Relay Encapsulation

## Issue 2

Drawing	Sheets	Rev.	Date	Title
P5536.100	1 of 1	C	18 Jan 12	General Arrangement
P5536.244	1 of 1	B	10 Feb 12	Label
P5536.224	1 of 1	C	19 Oct 11	Sentro Block Diagram
P5536.200	1 of 5	C	22 Nov 10	Circuit Master Analogue/Comms Output
P5536.200	2 of 5	C	22 Nov 10	Circuit 0.4-2V Analogue/Comms Output PCB
P5536.200	3 of 5	C	22 Nov 10	Circuit 4-20mA Analogue/Comms Output PCB
P5536.200	4 of 5	C	22 Nov 10	Circuit RS485 Analogue/Comms Output PCB
P5536.200	5 of 5	C	22 Nov 10	Circuit Parts Analogue/Comms Output PCB
P5536.201	1 of 1	C	08 Dec 10	PCB Analogue Output
P5536.202	1 & 2	C	19 Oct 11	Circuit Control PCB
P5536.222	1 of 4	D	29 Nov 10	Circuit Master 5-15Hz Output PCB
P5536.222	2 of 4	D	29 Nov 10	Circuit Dual Relay Version
P5536.222	3 of 4	D	29 Nov 10	Circuit 5-15Hz Frequency Version
P5536.222	4 of 4	D	29 Nov 10	Circuit Parts 5-15Hz Output PCB
P5536.225	1 & 2	C	13 May 11	Circuit 4-20mA Loop Powered Output PCB
P5536.226	1 of 1	C	10 May 11	PCB 4-20mA Loop Powered

## Issue 3 (No new drawings were introduced.)

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# Certificate Annexe

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Applicant: Trolex Limited

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## Issue 4

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
P5536.202	1 to 2	D	19-Dec-12	Circuit Diagram Control PCB (Group I Build)

## Issue 5

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
P5536.202	1 to 2	E	30-Apr-14	Circuit Control PCB

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