



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: IECEx SIR 09.0147X issue No.:5

Status: **Current**

Date of Issue: **2014-05-09** Page 1 of 4

Certificate history:
Issue No. 5 (2014-5-9)
Issue No. 4 (2013-1-14)
Issue No. 3 (2012-4-18)
Issue No. 2 (2012-2-29)
Issue No. 1 (2010-7-30)
Issue No. 0 (2010-2-24)

Applicant: **Trox Limited**
Hazel Grove
Stockport
Cheshire SK7 5DY
United Kingdom

Electrical Apparatus: **Sentro Sensor/Transmitter TX635x.01i.xx and TX9081.01i.xx**
Optional accessory:

Type of Protection: **Intrinsically Safe**

Marking: **Ex ia I Ma**

Approved for issue on behalf of the IECEx Certification Body: **C Ellaby**

Position: **Deputy Certification Manager**

Signature:
(for printed version)

Date:

2014-05-09

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira
CERTIFICATION





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Certificate No.: IECEx SIR 09.0147X

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Page 2 of 4

Manufacturer: **Trox Limited**
Hazel Grove
Stockport
Cheshire SK7 5DY
United Kingdom

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition: 6.0

IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition: 6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/SIR/ExTR10.0035/01
GB/SIR/ExTR14.0116/00

GB/SIR/ExTR12.0032/01

GB/SIR/ExTR13.0003/00

Quality Assessment Report:

GB/SIR/QAR07.0017/00
GB/SIR/QAR07.0017/03

GB/SIR/QAR07.0017/01
GB/SIR/QAR07.0017/04

GB/SIR/QAR07.0017/02



IECEx Certificate of Conformity

Certificate No.: IECEx SIR 09.0147X

Date of Issue: 2014-05-09

Issue No.: 5

Page 3 of 4

Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

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
Refer to the annexe for additional information

The Manufacturer shall comply with the following conditions of manufacture:

1. The printed circuit boards applied with conformal coating shall be inspected to ensure that no conductive parts protrude through the coating.
2. The cable glands shall be suitable to provide an ingress protection to at least IP54.
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.

CONDITIONS OF CERTIFICATION: YES as shown below:

1. Where 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 conditions 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 U_i presented by the external sensor to the rModule terminals 2m and 3m shall not exceed the U_o of power supply that powers the rModule.



IECEx Certificate of Conformity

Certificate No.: IECEx SIR 09.0147X

Date of Issue: 2014-05-09

Issue No.: 5

Page 4 of 4

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1 – this Issue introduced the following changes:	
1	ExTR No. GB/SIR/ExTR10.0035/01 replaced GB/SIR/ExTR10.0035/00.
2	A typographical error was corrected.
Issue 2 – this Issue introduced the following changes:	
1	Alternative material for the enclosure housing was approved.
2	Alternative specification of the encapsulation used on the fuses was endorsed.
3	Connection of Terminal T3 to 0V on the Analogue/Comms Board and the addition of alternative sensor eModules. With these modules the TX9081 series of Sentro Sensor/Transmitter is introduced.
4	An alternative design of the 2-Wire 4-20mA Loop Powered Output PCB was acknowledged.
5	Minor changes to the circuits for the Control PCB to remove various components (marked 'Not Fitted') when it is used with the 2-wire 4-20mA loop powered output board.
6	The description above is amended accordingly and a new Special Condition for safe use and Manufacture were introduced therefore an 'X' is added to the certificate number.
Issue 3 – this Issue introduced the following changes:	
1	ExTR No. GB/SIR/ExTR12.0032/01 replaced GB/SIR/ExTR12.0032/00.
2	The Equipment description was clarified.
Issue 4 – this Issue introduced the following changes:	
1.	Following appropriate assessment to demonstrate compliance with the requirements of the latest IEC 60079 series of standards, the documents previously listed, IEC 60079-0:2006 and IEC 60079-11:2007, were replaced by those currently listed
2.	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.
Issue 5 – this Issue introduced the following change:	
1.	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.

Annexe to: IECEx SIR 09.0147X Issue 5
Applicant: Trolex Ltd
Apparatus: Sentro Sensor/Transmitter TX635x.01i.xx and TX9081.01.xx



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; 4-20mA 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), IECEx SIR 10.0018U.
- TX6350 eModule – Toxic Gas Sensor (Group I), IECEx SIR 08.0036U.
- TX6350 eModule – Flammable Gas Sensor, IECEx SIR 08.0046U.
- TX6350 eModule – Infrared Gas Sensing eModule (Group I), IECEx SIR 10.0185U.
- TX9160 Series rModule, IECEx SIR 10.0013U.
- TX9160 Climate Sensing eModule, IECEx SIR 11.0139U.

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

Model	Terminals	Input Parameters			Output Parameters		
		U _i	I _i	P _i	U _o	I _o	P _o
TX6351.01i.11 and TX9081.01i.11	5 & 6	14.4V	*	-	-	-	-
	1 & (2 or 3)	14.4V	-	-	14.4V	40mA	135mW
TX6351.01i.12 and TX9081.01i.12	5 & 6	14.4V	*	-	-	-	-
	1 & (2 or 3)	14.4V	-	-	14.4V	477mA	1.72W
TX6351.01i.15 and TX9081.01i.15	5 & 6	14.4V	*	-	-	-	-
	1 & 3	6.88V	-	-	5.88V	66mA	97mW
	2 & 3						
TX6351.01i.14 and TX9081.01i.14	5 & 6	14.4V	*	-	-	-	-
	1 & 2	30V	-	-	0	0	0
	3 & 4	30V		-	0	0	0

Annexe to: IECEx SIR 09.0147X Issue 5
Applicant: Trolex Ltd
Apparatus: Sentro Sensor/Transmitter TX635x.01i.xx
and TX9081.01.xx



Model	Terminals	Input Parameters			Output Parameters		
		U _i	I _i	P _i	U _o	I _o	P _o
TX6351.01i.13 and TX9081.01i.13	5 & 6	14.4V	*	-	-	-	-
	1 & 2	16.5V	-	2.5 W	0	0	0
TX6352.01i.12	1 & 2	14.4V	-	-	-	-	-

*I_i = I_o of the externally connected IS supply