



# 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](http://www.iecex.com)

Certificate No.: **IECEX SIR 09.0120X** issue No.: **2**

Status: **Current**

Certificate history:  
Issue No. 2 (2013-7-3)  
Issue No. 1 (2010-7-30)  
Issue No. 0 (2010-3-31)

Date of Issue: **2013-07-03** Page 1 of 4

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

Electrical Apparatus: **TX9165.01.i Sentro 8 Sensor Station**  
Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: **Ex ia I Ma**

Approved for issue on behalf of the IECEx  
Certification Body:

A C Smith

Position:

Certification Manager

Signature:  
(for printed version)

Date:

2013-07-03

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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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 : 2006** Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition: 5

*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/ExTR10.0062/01](#)

[GB/SIR/ExTR12.0094/00](#)

##### Quality Assessment Report:

[GB/SIR/QAR07.0017/00](#)

[GB/SIR/QAR07.0017/01](#)

[GB/SIR/QAR07.0017/02](#)



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The Sentro 8 Sensor Station TX9165.01i is designed to monitor up to eight sensors, these are component approved items that are fully integrated into the Sensor Station to give direct monitoring of the toxic and flammable gas concentrations, ambient air temperature, atmospheric pressure and humidity, alternatively, the monitoring channels may be connected to remote sensors to measure airflow, pressure, vibration, etc. The Sensor 8 can be programmed to control a number of output relays and give various audio and visual alarms.  
Refer to the Annexe for additional information

### 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 an externally powered sensor to any rModule, terminals 2m or 3m, shall not exceed the 14.4 V..



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

<b>Issue 1</b> – this Issue introduced the following changes:	
1	ExTR No. GB/SIR/ExTR10.0062/01 replaced GB/SIR/ExTR10.0062/00.
<b>Issue 2</b> – this Issue introduced the following changes:	
1	The addition of the following were approved
	• a pull down Resistor on the Control PCB
	• Relay Diodes to the Power Supply PCB
	• further eModules/rModules
2	The input and output parameters are amended, the table of approved Sensor Modules is added to the description and new Conditions of Manufacture and Certification are included and an 'X' is subsequently added to the certificate number.

**Annexe to:** IECEx SIR 09.0120X Issue 2  
**Applicant:** Trolex Limited  
**Apparatus:** TX9165.01.i Sentro 8 Sensor Station



The Sentro 8 Sensor Station TX9165.01i comprises a sub-assembly of several printed circuit boards (PCB) fitted behind a terminal guard, within an inner plastic enclosure. The sub-assembly is made from the Main PCB, Power PCB, Control PCB, Upper Interface PCB and Lower Interface PCB. An LCD display is mounted on the Control PCB. The inner enclosure is housed inside an external enclosure that is made from either plastic filled with stainless steel or polycarbonate ABS with antistatic properties, and has a polycarbonate window for the LCD display. The enclosure provides a degree of ingress protection to at least IP54. External circuit connections are made in the terminal chamber. The terminals are fitted with a plastic cover to protect the live parts. Access into the terminal chamber is through the eight gland entries at the bottom of the housing..

**Input Parameters:**

**Power Terminals 14 & 15**

When no TX9160 rModules are fitted:

$U_i = 14.4 \text{ V}$

$C_i = 0$

$L_i = 0$

When a number of TX9160 rModule are fitted:

$U_i = 14.4 \text{ V}$

$C_i = 0.38 \mu\text{F}$  multiplied by the number of TX9160 rModules, plus total  $C_i$  of all external sensors connected to TX9160 rModules.

$L_i =$  Total  $L_i$  of all external sensors connected to rModules.

**RS485 Terminals 17 & 18**

$U_i = 6.88 \text{ V}$

$C_i = 0$

$L_i = 0$

**Relay Terminals 1, 2 & 3; 4, 5 & 6;**

**7, 8 & 9; 10, 11 & 12**

$U_i = 30 \text{ V}$

**Output Parameters:**

**Relay Terminals 1, 2 & 3; 4, 5 & 6;**

**7, 8 & 9; 10, 11 & 12**

$U_o = 0$

**RS485 Terminal 17 & 18**

$U_o = 5.88 \text{ V}$

$I_o = 66 \text{ mA}$

$P_o = 97 \text{ mW}$

$C_o = 1000 \mu\text{F}$

$L_o = 26 \text{ mH}$

**MODULE\_A to H**

**Pin 1 wrt 2**

$U_o = 14.4 \text{ V}$

$I_o = I_o$  of the supply connected at the Power Terminal 14

**Pin 3 & 4**

$U_o = 6.51 \text{ V}$

$I_o = 460 \text{ mA}$

$P_o = 1.38 \text{ W}$

$C_o = 1000 \mu\text{F}$

$L_o = 2.06 \text{ mH}$

**Pin 5 wrt 2**

$U_o = 5.88 \text{ V}$

$I_o = 27 \text{ mA}$

$P_o = 40 \text{ mW}$

$C_o = 1000 \mu\text{F}$

$L_o/R_o = 565.5 \text{ mH}$

**Pin 6**

$U_o = 5.88 \text{ V}$

$I_o = 27 \text{ mA}$

$P_o = 40 \text{ mW}$

$C_o = 1000 \mu\text{F}$

$L_o/R_o = 565.5 \text{ mH}$

**Annexe to:** IECEx SIR 09.0120X Issue 2  
**Applicant:** Trolex Limited  
**Apparatus:** TX9165.01.i Sentro 8 Sensor Station



When a TX9160 rModule is fitted, the external sensors connected to terminals 1m, 2m and 3m have the following parameters, dependant on the sensor type fitted:

Sensor Type		rModule Terminals	Output Parameters				
			Uo	Io	Po	Ci	Li
TX9160.01i.301 and TX9160.01i.303	0.4-2V /4-20 mA Input	1m wrt 3m	Uo = Uo of external power supply connected to base unit where maximum Uo = 14.4V Io = Io of external power supply connected to base unit. Po = Po of external power supply connected to base unit. Ci = Ci of external power supply connected to base unit. Li = Li of external power supply connected to base unit.				
		2m wrt 3m	14.4 V	5 mA	17 mW	0	0
TX9160.01i.321 and TX9160.01i.323	0.4-2V /4-20 mA Differential Input	1m	Not Connected				
		2m to 3m	14.4V	5 mA	17 mW	0	0
TX9160.01i.306	PT100 Input	1m wrt 3m	14.4V	28mA	100mW	120nF	0
		2m wrt 3m	14.4V	5 mA	17 mW	0	0
TX9160.01i.501 and TX9160.01i.502	Namur/ Monitored Input	1m wrt 2m	14.4V	42mA	151mW	0.77uF	0
		3m not used					

**Conditions Of Manufacture**

The following condition is added as a result of this variation.

- i. 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.

Sensor Module	Certificate Numbers	Markings
TX6350 eModule – Flammable Gas Sensor (Group I)	IECEX SIR 10.0018U	I M1 Ex ia I Ma (-20°C ≤ T <sub>a</sub> ≤ +40°C)
TX6350 eModule – Toxic Gas Sensor (Group I)	IECEX SIR 08.0036U	
TX6350 eModule – Flammable Gas Sensor	IECEX SIR08.0046U	
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	