



Issue Date: 31 October 2018  
Expiry Date: 31 October 2021



IA Certificate Number: **MASC M/11-419X**  
Our ref: 11-419 S5

## IA – CERTIFICATE

(Supplement Five: Supplemented for ARP Review)

(IN TERMS OF REGULATION 21.17.2 OF THE MINERALS ACT (INCORPORATION THE MINE HEALTH AND SAFETY ACT) AND REGULATION 9 (1) OF THE ELECTRICAL MACHINERY REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT)

### Sentro Sensor/Transmitter TX635x.01i.xx and TX9081.01i.xx

This document is based on and must be read in conjunction with IECEx SIR 09.0147X certificate. Further to your request, we have evaluated the supplied documentation. The following is applicable:

Description	Detail
Requested By :	Trolex Ltd. Hazel Grove, Stockport, Cheshire, SK7 5DY, United Kingdom
Equipment :	Sensor / Transmitter
Manufacturer :	Trolex Ltd. Hazel Grove, Stockport, Cheshire, SK7 5DY, United Kingdom
Model(s) / Type(s) :	TX635x.01i.xx and TX9081.01i.xx
Rating :	Ex ia I Ma
Certification body :	Sira Certification Service (Sira)
Type Certificate No :	IECEx SIR 09.0147X
Variations/Issue/Amendment :	Issue 5
Assessment Report No :	GB/SIR/ExTR10.0035/01 GB/SIR/ExTR12.0032/01 GB/SIR/ExTR13.0003/00 GB/SIR/ExTR14.0116/00
Quality Assurance report (QAR) / Notification (QAN) :	GB/SIR/QAR07.0017/07

Standards:	- IEC 60079-0 (2011)	“Explosive atmospheres – Part 0: Equipment — General requirements”
	- IEC 60079-11 (2011)	“Explosive atmospheres – Part 11: Equipment protection by intrinsic safety ‘i’”

The evaluation was conducted according to the requirements of:

- **SANS (IEC) 60079-0 : 2012 “Explosive atmospheres – Part 0: Equipment — General requirements”**
- **SANS (IEC) 60079-11 : 2012 “Explosive atmospheres – Part 11: Equipment protection by intrinsic safety ‘i’”**

**/ . COMPLIANCE...**

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**COMPLIANCE:**

The equipment as described below is hereby certified "Explosion Protected" "Ex ia I Ma" and is suitable for use in hazardous locations as stated below and as tested, assessed and inspected in accordance with the relevant requirements of SANS / IEC Standards:

Location	Zone 0, 1, 2	Mining / Underground
Hazard Frequency	---	Continuous as could occur under normal operating conditions in hazardous area
Environment	Group I	Methane / Coal dust
Surface Temperature	150°C	
Service/Ambient Temperature	(-20°C ≤ Ta ≤ +40°C)	

**DESCRIPTION OF EQUIPMENT (According to Sira Certificate):**

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.

Sentro Sensor / Transmitter comprise 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 the 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
TX6351.01i.11 and TX9081.01i.11	0.4-2V Option Comms / Analogue Output
TX6351.01i.12 and TX9081.01i.12	4-20mA 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 – 15Hz Option Frequency PCB
TX6352.01i.12	4-20mA 2 Wire (Loop powered)

**/.** As part...

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

- TX6350 eModule – Flammable Gas Sensor (Group I)
- TX6350 eModule – Toxic Gas Sensor (Group I)
- TX6350 eModule – Flammable Gas Sensor
- TX6350 eModule – Infrared Gas Sensing eModule (Group I)
- TX9160 Series rModule
- TX9160 Climate Sensing eModule

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

Model	Terminals	Input Parameters			Output Parameters		
		U <sub>i</sub>	I <sub>i</sub>	P <sub>i</sub>	U <sub>o</sub>	I <sub>o</sub>	P <sub>o</sub>
TX6351.01i.11 and TX9081.01i.11	5 & 6	14.4V	*	-	-	-	-
	1 & (2 or 3)	14.4V	-	-	14.4V	40mA	135 mW
TX6351.01i.12 and TX9081.01i.12	5 & 6	14.4V	*	-	-	-	-
	1 & (2 or 3)	14.4V	-	-	14.4V	477mA	1.72 W
TX6351.01i.15 and TX9081.01i.15	5 & 6	14.4V	*	-	-	-	-
	1 & 3	6.88V	-	-	5.88V	66mA	97m W
	2 & 3	6.88V	-	-	5.88V	66mA	97m W
TX6351.01i.14 and TX9081.01i.14	5 & 6	14.4V	*	-	-	-	-
	1 & 2	30V	-	-	0	0	0
	3 & 4	30V	-	-	0	0	0
TX6351.01i.13 and TX9081.01i.13	5 & 6	14.4V	*	-	-	-	-
	1 & 2	16.5V	-	2.5W	0	0	0
TX6352.01i.12	1 & 2	14.4V	-	-	-	-	-

\*I<sub>i</sub> = I<sub>o</sub> of the externally connected IS supply

**MARKING:**

Sira marking remains applicable and the marking for the relevant models will be as above. The following MASC Certificate number (IA number) must be additionally applied to the equipment.

IA No: MASC M/11-419X

**CONDITIONS OF MANUFACTURE:**

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

/. The cable...

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

**SPECIAL CONDITIONS OF USE (X):**

- 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 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 terminal 2m and 3m shall not exceed the  $U_o$  of the power supply that powers rModule.

**CONDITIONS OF CERTIFICATION:**

1. This IA Certificate covers all units sold from the date of this document to 31 October 2021.
2. As per ARP 0108 a three yearly review is required on this IA Certificate.
3. The apparatus must be additionally marked with the MASC marking details above.
4. 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.
5. The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by Sira and in this approval.
6. The Sira certification must remain valid.
7. The extent of the requirements in the ARP 0108 (or regulations) and SANS 10108 on the certification of the equipment must remain unchanged.
8. The Ex quality assurance notification/report for the equipment must remain valid.

***The use of apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:***

- i. SANS 10086 requirements;
- ii. Any conditions mentioned in the above document;
- iii. Codes of Practice enforced in terms of Regulations 21.17.2 of Minerals Act, by Chief Inspector of Mines;
- iv. Any restrictions and conditions enforced by Chief Inspectors of Mines, Principal Inspector (Group I equipment) of Chief Inspector of Factories (Group II equipment);
- v. Any relevant requirements of the MHS Act or the OHS Act.

**/I. CONCLUSION...**

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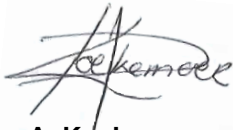
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**CONCLUSION:**

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 by Sira.

The routine tests for production units according to the Sira Certificate must be complied with (if applicable).

Yours faithfully



**A. Koekemoer**  
**TECHNICAL SPECIALIST**

### Mining And Surface Certification

*This document is issued based on Mining And Surface Certification's Standard Contract terms and conditions available on request.*

*While every endeavour is made to ensure that a test / assessment is representative and accurately performed, and that a report is accurate in the quoted results and conclusions drawn from the test / assessment, MASC or its members/employees shall in no way be liable for any error made in carrying out the test / assessment or for any erroneous statement, whether in fact or in opinion, contained in a report issued pursuant to a test / assessment.*

*MASC takes no responsibility for any non-conformances, exclusions or any results / assessments not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer attests on his own responsibility that the equipment has been constructed in accordance with the applicable requirements of the relevant standards and that the routine verifications and routine tests have been successfully completed and the product complies with the documentation and standard(s).*

*This document is only for use and application in South Africa. It is issued based on National interpretations and accepted practises.*

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