IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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

Certificate No.: **IECEx SIR 09.0120X**

Status: **Current**

Issue No: 4

Certificate history:
Issue 3 (2020-03-16)
Issue 2 (2013-07-03)
Issue 1 (2010-07-30)
Issue 0 (2010-03-31)

Date of Issue: 2023-07-11

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

Equipment: **TX9165.01.i Sentro 8 Sensor Station**

Optional accessory:

Type of Protection: **Intrinsic Safety "ia"**

Marking: Ex ia I Ma

Approved for issue on behalf of the IECEx Certification Body: **Michelle Halliwell**

Position: **Director Operations, UK & Industrial Europe**

Signature:
(for printed version)

Date:
(for printed version)

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 www.iecex.com or use of this QR Code.

Certificate issued by:

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside CH5 3US
United Kingdom

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

Manufacturing locations: **Trolex Limited**
Hazel Grove
Stockport
Cheshire SK7 5DY
United Kingdom

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 equipment 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 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 Reports:

GB/SIR/ExTR10.0062/01 GB/SIR/ExTR12.0094/00 GB/SIR/ExTR20.0045/00
GB/SIR/ExTR23.0120/00

Quality Assessment Report:

GB/SIR/QAR07.0017/12

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Sentro 8 Sensor Station TX9165.01.i is designed to monitor up to eight sensors (rModules and eModules), 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.

SPECIFIC CONDITIONS OF USE: 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 Ui presented by an externally powered sensor to any rModule, terminals 2m or 3m, shall not exceed the 14.4V.
2. TX9160 Series rModule:
   For the purpose of this certificate, a P+F inductive sensor to PTB00 ATEX 2048X to Category II 1G Ex ia IIC T6 connected to terminals 1m and 2m of a TX9160.01i.501 Namur input module may be considered equivalent to Category I M1. The sensor shall be installed in such a manner as to meets the requirements of Group I e.g. the external; enclosure to meet IP54, impact protection etc.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Issue 1 – this Issue introduced the following changes:

1. ExTR No. GB/SIR/ExTR10.0062/01 replaced GB/SIR/ExTR10.0062/00.

Issue 2 – 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.

Issue 3 – this Issue introduced the following changes:

1. Power Supply PCB have been redesigned to replace switching converter circuits with linear regulator circuits.
2. Control PCB has been modified to remove power supply circuit from the Control PCB and moved to the Power Supply PCB and replaced with linear regulator circuit.

Issue 4 – this Issue introduced the following changes:

1. To permit the change of the fuses, and addition of diodes to the Power Supply PCB fitted in the equipment. As a result of these changes, minor changes were made to the Power Supply PCB layout.

Annex:

IECEx SIR 09.0120X Iss 4 Annexe.pdf

EQUIPMENT AND SYSTEMS COVERED BY THIS CERTIFICATE (continued)

The eModules and rModules are already component approved under the following certification:

Sensor Module	Certificate Numbers
TX6350 eModule – Flammable Gas Sensor (Group I)	Sira 10ATEX2046U, IECEx SIR 10.0018U
TX6350 eModule – Toxic Gas Sensor (Group I)	Sira 08ATEX2097U, IECEx SIR 08.0036U
TX6350 eModule – Flammable Gas Sensor	Sira 08ATEX2225U, IECEx SIR08.0046U
TX6350 eModule – Infrared Gas Sensing eModule (Group I)	Sira 10ATEX2356U, IECEx SIR 10.0185U
TX9160 Series rModule	Sira 10ATEX2032U, IECEx SIR 10.0013U
TX9160 Climate Sensing eModule	Sira 11ATEX2271U, IECEx SIR 11.0139U

The eModule sensor modules are not connected to any other external IS modules. The rModule sensor modules are designed to interface to remotely connected sensors, provide power and signal where necessary. The following versions of the rModule were assessed under Sira 10ATEX2032U, IECEx SIR 10.0013U:

- TX9160.01i.301 4-20mA
- TX9160.01i.303 0.4-2V
- TX9160.01i.321 4-20mA Differential
- TX9160.01i.323 0.4-2V Differential
- TX9160.01i.306 PT100
- TX9160.01i.501 Namur
- TX9160.01i.502 Switch

The Sentro 8 Sensor Station TX9165.01.i 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:
Ui = 14.4 V
Ci = 0
Li = 0

When a number of TX9160 rModule are fitted:
Ui = 14.4 V
Ci = 0.38 µF multiplied by the number of TX9160 rModules, plus total Ci of all external sensors connected to TX9160 rModules.
Li = Total Li of all external sensors connected to rModules.

RS485 Terminal 17 & 18

Ui = 6.88 V
Ci = 0
Li = 0

Relay Terminals 1, 2 & 3; 4, 5 & 6; 7, 8 & 9; 10, 11 & 12

Ui = 30 V

Output Parameters:

Relay Terminals 1, 2 & 3; 4, 5 & 6; 7, 8 & 9; 10, 11 & 12

Uo = 0

RS485 Terminal 17 & 18

Uo = 5.88 V
Io = 66 mA
Po = 97 mW
Co= 1000 µF
Lo = 26 mH

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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 = 14.4.V 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 Manufacturer shall comply with the following:

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 ($-20^{o}C \leq T_a \leq +40^{o}C$)
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	

ii. For TX6350 eModule – Flammable Gas Sensor (Group I):

The Flammable Sensor covered by this certificate incorporate a previously certified component, 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.

Certificate no.	Manufacturer	Marking	Ambient temperature
Sira 02ATEX2059U	Trolex Ltd	EEx ia I	(Ta = -20°C to 40°C)

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iii. For TX6350 eModule – Infrared Gas Sensing eModule (Group I):

The TX6350 Infrared Gas Sensing eModule incorporates a previously certified component under Sira 04ATEX1357U and IECEx SIR 05.0053U, 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.

Certificate no.	Component	Manufacturer	Marking	Ambient temperature
Sira 04ATEX1357U and IECEx SIR 05.0053U	Type MSHia*** and Type MSHia-P*** Gas Sensor	Dynament Ltd	Ex d+ia I Ma	-20°C to +40°C

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