



Mining And Surface Certification (Pty) Ltd

2015/021934/07



Certificate Number:

MASC MS/11-292X

Issued:

10 August 2015

Expire:

10 August 2018

Page: 1 of 5

IA – CERTIFICATE (Revision 4 – Revised as per ARP 0108)

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

Ex – Type Examination

Certificate number:

MASC MS/11-292X

Equipment:

TX6273 and TX6274 Temperature Sensor / Transmitter

Serial No:

(see “Conditions of Certification”)

Applicant:

Trox Limited.

Address:

Hazel Grove
Stockport
Cheshire
SK7 5DY
United Kingdom

Manufacturer:

Trox Limited.

Address:

Hazel Grove
Stockport
Cheshire
SK7 5DY
United Kingdom

DESCRIPTION:

The TX627x Temperature Sensor/Transmitters take a signal from a temperature sensor, this signal is conditioned and an analogue signal is then transmitted to other monitoring equipment. There are two type designations covered: the TX6273 and the TX6274, differing in the location of the sensing element.

The equipment comprises one of two output boards connected to an optional display board. The following versions are covered.

- Group I, 0.4 to 2V
- Group I, 5 to 15Hz
- Group I, 4 to 20mA 3/4iwire
- Group I, 4 to 20mA 2-wire
- Group II, 4 to 20mA, 2-wire

The assembly is housed in a polycarbonate enclosure window glued into a recess. The enclosure may or may not be steel filled, if not, the marking bears a static warning label.

The TX627x has the following safety description:

/ . Group I...

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IA CERTIFICATE NUMBER: MASC MS/11-292X
TX6273 and TX6274 Temperature Sensor / Transmitter
(INTRINSIC SAFETY)
(Revision 4)

Group I, 0.4 to 2V

	Terminals 1 to 4 (supply/signal)
Ui	16.5V
Pi	Not Specified
Ci	122nF
Li	9µH

Group I, 5 to 15Hz

	Terminals 3 & 4 (supply)	Terminals 1 & 2 (Signals)
Ui	16.5V	16.5V
Pi	Not Specified	2.5W
Ci	0	0
Li	9µH	9µH

Group I, 4 to 20mA 3/ 4 wire

	Terminals 1 to 4 (supply/signal)
Ui	16.5V
Pi	Not Specified
Ci	122nF
Li	9µH

Group I, 4 to 20mA, 2 wire

	Terminals 1 & 4	Terminals 2 & 3
Ui	16.5V	1.5V
Ii	Not Specified	100mA
Pi	Not Specified	25mW
Ci	0	0
Li	9µH	9µH
Uo	N/A	16.5V
Io	N/A	17mA
Co	N/A	11µF
Lo	N/A	1614mH

Group II, 4 to 20mA, 2 wire

	Terminals 1 & 4	Terminals 2 & 3
Ui	28V	1.5V
Ii	120mA	100mA
Pi	0.84W	25mW
Ci	38nF	0
Li	9µH	9µH
Uo	N/A	28V
Io	N/A	28mA
Co	N/A	45nF
Lo	N/A	45mH

I. VARIATION 1...

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IA CERTIFICATE NUMBER: MASC MS/11-292X
TX6273 and TX6274 Temperature Sensor / Transmitter
(INTRINSIC SAFETY)
(Revision 4)

VARIATION 1

1. The use of diodes D2 to D5 on the display board that have a higher forward voltage of 0.7V

VARIATION 2

1. A modification to the output board circuit to change some of the components.
2. The use of pad-printing as an alternative method of marking of the certification details onto the label.
3. The terminal capacitance to be defined separately at the supply and signal terminals for all Group I builds based on output board P5486.06
4. The replacement of the quoted Li, with a value for Li/Ri for all Group I builds
5. A change in the safety description to the following:

	Group I 4-20mA		Group I 0.4-2V		Group I 5-15Hz	
	T1-T2 (Signal)	T3-T4 (supply)	T1-T2 (signal)	T3-T4 (supply)	T1-T2 (signal)	T3-T4 (supply)
Ui	16.5V	16.5V	16.5V	16.5V	16.5V	16.5V
Pi	-	-	-	-	2.5W	-
Ci	9.8µF	0	1.2nF	0	0	0
Li/Ri	<20µH/Ω	<20µH/Ω	<20µH/Ω	<20µH/Ω	0	<20µH/Ω

Note that the supplies to terminals 1 & 2 and terminals 3 & 4 must be separate intrinsically safe circuits. The safety description for Group II versions is unchanged.

Group I, 4 to 20mA, 2 wire		
	Terminals 1 & 4 (supply)	Terminals 2 & 3 (test)
Ui	16.5V	1.5V
Ii	-	100mA
Pi	-	25mW
Ci	0	0
Li/Ri	<20µH/Ω	<20µH/Ω
Uo	N/A	16.5V
Io	N/A	17mA
Co	N/A	11µF
Lo	N/A	1614mH

6. The introduction of an additional Condition for Safe Use.

VARIATION 3

1. The use of 'Faradex' stainless steel filled nylon 6 as an alternative anti-static enclosure material.

/I. SPECIAL...

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IA CERTIFICATE NUMBER: MASC MS/11-292X
TX6273 and TX6274 Temperature Sensor / Transmitter
(INTRINSIC SAFETY)
(Revision 4)

Page 4 of 5

SPECIAL CONDITIONS OF USE (X):

- The TX627x Temperature Sensor / Transmitter shall not be installed where the external conditions could cause a build up of electrostatic charges on their non-conducting surface. Additionally, the equipment shall only be cleaned with a damp cloth.
- The modification to this equipment that are included in variation 2 of this certification have affected the safety parameters of the Group I builds of the TX627X Temperature Sensor / Transmitter and therefore the user shall confirm the compatibility of this equipment before it is installed in a certified intrinsically safe system.

MARKING:

Sira marking remains applicable. The following MASC Certificate number (IA number) must be additionally applied to the equipment.

IA No: MASC MS/11-292X

COMPLIANCE:

The unit as described above and in MASC Letter **11-292 R4** is hereby certified "Explosion Protected" Ex ia I/IIC T4 ($T_a = -20^{\circ}\text{C} \leq T_{amb} \leq 60^{\circ}\text{C}$) 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 Standards:

The evaluation was conducted according to the requirements of:

- **SANS (IEC) 60079-0: 2000 "Explosive atmospheres – Part 0: Equipment — General requirements"**
- **SANS (IEC) 60079-11: 1999 "Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"**

Location	Zone 0, 1 & 2	Surface (Gas) / Mining (Coal dust)
Hazard Frequency		Continuous as could occur under normal operating
Environment	Group I/IIC	Methane and coal dust / Propane to Hydrogen
Limiting Temperature	T4	135°C
Ambient Temperature	-20°C to +60°C	

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 report;
- 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.

/ . CONDITIONS...

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IA CERTIFICATE NUMBER: MASC MS/11-292X
TX6273 and TX6274 Temperature Sensor / Transmitter
(INTRINSIC SAFETY)
(Revision 4)

Page 5 of 5

CONDITIONS OF CERTIFICATION:

1. This Certificate remains valid based on a three yearly review covered by an official MASC letter.
2. The apparatus must be additionally marked in a clear, legible, visible and indelible manner with the MASC marking details above.
3. This certificate of 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.
4. 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.
5. The Sira certification must remain valid.
6. The bearing of the requirements in the ARP 0108 (or regulations) and SANS 10108 on the certification of the equipment must remain unchanged.
7. All production units must be covered by a QAN, Mark Scheme or Batch Evaluation.

Approved on behalf of MASC



F du Toit
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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