EU-TYPE EXAMINATION
CERTIFICATE

Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

1. **EU-Type Examination Certificate Number:** **ITS14ATEX27981X** **Issue 04**

2. **Product:** MS2600E, MS2650E, MS2900E, MS2950E, MS2600L, MS2650L, MS2900L, MS2950L, MS2601E, MS2651E, MS2901E, MS2951E, MS2601L, MS2651L, MS2901L and MS2951L High Resolution ER/LPR Transmitters

3. **Manufacturer:** Metal Samples Company (a Division of Alabama Specialty Products, inc.)

4. **Address:** 152 Metal Samples Rd, Munford, AL 36268, USA

5. This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

6. Intertek Testing and Certification Limited, Notified Body number 0359 in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council dated 26 February 2014, certifies that the product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II of the Directive.

7. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0: 2018, EN 60079-1: 2014, EN 60079-11: 2012 & EN 60079-31: 2014 except in respect of those requirements referred to within item 14 of the Schedule.

8. If the sign "X" is placed after the certificate number, it indicates that the product is subject to the special conditions of use specified in the Schedule to this certificate.

9. This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

10. The marking of the product shall include the following:

Ex Coding relating to MS26X0E/L and MS29X0E/L models
II 1 G Ex ia IIC T4 Ga
-40°C ≤ Tamb ≤ +70°C

Ex Coding relating to MS26X1E/L and MS29X1E/L models
II 2 (1) G Ex db [ia Ga] IIC T6…T4 Gb
II 2 (1) D Ex tb [ia Da] IIIC T85°C… T135°C Db
-40°C ≤ Tamb ≤ +70°C

Certification Officer: P Moss **Date:** 20th May 2020

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

11. Description of Equipment or Protective System

This certificate covers the assessment of the MS26XXE/L and MS29XXE/L fixed installation microprocessor based corrosion monitors. The equipment has been assessed for two installation configurations, the first as a fully intrinsically safe device, denoted by a 0 in the second wildcard of the model string and the second as Um powered equipment providing an intrinsically safe output, denoted by 1 in the second wildcard of the model nomenclature.

Intrinsically safe models (MS26X0E/L and MS29X0E/L) of the equipment utilize a manufacturer made IP66 stainless steel enclosure which comprises a threaded lid and bae and is approximately cylindrical in shape. Two connectors, one male and one female, are welded to the equipment base for connection of the equipment supply and the probe output.

The flameproof / dust ignition proof variants of the equipment (MS26X1E/L and MS29X1E/L) utilize an IP66 component enclosure certified under DEMKO 07 ATEX 0622294U. The enclosure is formed from a two part assembly, a base and lid which thread together. The lid is approximately cylindrical in shape with an external diameter of between 9.1cm and 10.4cm and may include a window depending upon the model of equipment. Two entries are provided on the base of the enclosure for connection of the input and the probe output. Refer to the special conditions for safe use for guidance on the correct selection of entry devices for use with the equipment.

The equipment has additionally been assessed for use with a “Meter Prover” accessory which acts as a calibrated probe to verify the functionality of the equipment. This accessory shall only be used in a non-hazardous area.

Entity parameters relating to both configurations are summarized below.

Models MS26X1E/L & MS29X1E/L Explosionproof & Dust Ignition Protection Models:

Entity Parameters related to KB1 of EXCDB-000038 (Power input)

Um: 28V

Output Parameters of MS26X1E & MS29X1E:

Parameters available at Probe Output on EXCDB-000043 – Analog Board

Uo: 4.94V
Io: 0.486A
Po: 0.42W
Co: 0.4µF
Lo: 70µH

Output Parameters of MS26X1L & MS29X1L:

Parameters available at Probe Output on EXCDB-000047 – Analog Board

Uo: 8.61V
Io: 0.3A
Po: 0.371W
Co: 0.4µF
Lo: 70µH

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

Models MS26X0E/L & MS29X0E/L Intrinsically Safe Protection Models:

Entity Parameters related to KB1 of EXCDB-000048 (Power input)

Ui: 28V
Ii: 93mA
Pi: 650mW
Ci: 50.42nF
Li: 27.53nH

Output Parameters of MS26X0E & MS29X0E:

Parameters available at Probe Output on EXCDB-000043 – Analog Board

Uo: 4.94V
Io: 66.2mA
Po: 0.328W
Co: 0.4µF
Lo: 70µH

Output Parameters of MS26X0L & MS29X0L:

Parameters available at Probe Output on EXCDB-000047 – Analog Board

Uo: 8.61V
Io: 66.2mA
Po: 0.328W
Co: 0.4µF
Lo: 70µH

12. Report Number

Intertek Report: 104133112DAL-009-CR Dated 12th May 2020

13. Special Conditions of Certification

(a). Special Conditions of Use

Special Conditions Relating to models MS26X0E /MS29X0E/MS26X0L/MS29X0L

1) When installed in a Zone 0 potentially explosive atmosphere requiring EPL Ga apparatus, the equipment shall be installed such that even in the event of rare incidents, an ignition source due to impact or friction between the aluminum alloys parts of the enclosure are excluded.

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

2) The resistive probe has been considered as simple apparatus. The probe shall maintain the following minimum parameters in accordance with Clause 5.7 of IEC 60079-11:
    a) The probe circuitry shall maintain a dielectric strength of 500V between its terminals and the equipment frame or the end user shall ensure there is no possibility for different earth potentials arising within the equipment installation.
    b) Where non-metallic materials are used in the construction of the external enclosure the probe shall be installed in accordance with the guidance for mitigation of electrostatic charging contained within the manufacturer's instruction manual
    c) Where metallic materials are used in the construction of the external enclosure it shall be ensured that the materials do not contain more than 7,5 % in total of magnesium, titanium and zirconium.
3) All sealing devices including cable glands, blanking elements, thread adapters and stopping plugs shall maintain a minimum degree of protection of IP54 in accordance with IEC 60529.

Special Conditions Relating to models MS26X1E /MS29X1E/MS26X1L/MS29X1L

1) All sealing devices including cable glands, blanking elements, thread adapters and stopping plugs are required to be certified to type of protection Ex db or tb as applicable, be suitable for use in an ambient temperature range of -40°C to 70°C, be suitable for use in Group IIC or Group IIIC as applicable and be suitably sized for the cabling which is carried. Installation shall take into account any applicable special conditions for safe use and all relevant installation requirements of IEC 60079-14. No more than one thread adapter may be used on any entry.
2) Equipment has been assessed for connection to Um: 28VDC. This voltage shall be maintained in accordance with the guidance given with IEC 60079-14.
3) Equipment has been assessed for connection to a simple resistive probe produced from either wiring or a metallic sheet metal mounted onto a substrate. The Temperature Classification in which the equipment may be used is dependent upon the probe connected. The equipment may be used in Temperature Classification T6 providing the following conditions are met as applicable:
    a) The equipment probe is a simple device produced from wire with a diameter of 0.1mm or higher
    b) The equipment probe is a simple device produced from tracking with a width of 0.3mm or higher

    If these parameters cannot be verified, a generic probe may be used with the equipment in Temperature Classification T4 providing it is a simple device produced from wiring or tracking and does not contain any discrete components or resistances.

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

4) Equipment has been assessed for connection to a simple resistive probe produced from either wiring or a metallic sheet metal mounted onto an epoxy substrate (which has been approximated to tracking). The equipment may be used in Group III environments with a maximum surface temperature of T85°C providing the following conditions are met as applicable:
    a) The equipment probe is a simple device produced from wire with a diameter of 0.1mm or higher
    b) The equipment probe is a simple device produced from tracking with a width of 0.3mm or higher

    If these parameters cannot be verified, a generic probe may be used with the equipment a maximum marked temperature of T135°C providing it is a simple device produced from wiring or tracking and does not contain any discrete components or resistances.

5) The resistive probe has been considered as simple apparatus. The probe shall maintain the following minimum parameters in accordance with Clause 5.7 of IEC 60079-11:
    a) The probe circuitry shall maintain a dielectric strength of 500V between its terminals and the equipment frame or the end user shall ensure there is no possibility for different earth potentials arising within the equipment installation.
    b) Where non-metallic materials are used in the construction of the external enclosure the probe shall be installed in accordance with the guidance for mitigation of electrostatic charging contained within the manufacturer's instruction manual

(b). Conditions of Manufacture

- N/A, no routine tests applicable to equipment.

14. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) have been identified and assessed in Intertek Report: 104133112DAL-009-CR Dated 12th May 2020.

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

15. Drawings and Documents

The following drawing table fully replaces that listed within previous iterations of the certificate.

Title:	Drawing No.:	Rev. Level:	Date:
Circuit Diagram - Power Board (Ex d)	EXCDB-000038	0	4/15/2020
Circuit Diagram - Power Board (IS)	EXCDB-000048	0	4/15/2020
Circuit Diagram - ER Transmitter Digital Board (HART)	EXCDB-000040	0	4/15/2020
Circuit Diagram - ER Transmitter Analog Board	EXCDB-000043	0	4/15/2020
Circuit Diagram - LPR Transmitter Digital Board	EXCDB-000046	0	4/15/2020
Circuit Diagram - LPR transmitter Measurement Board	EXCDB-000047	0	4/15/2020
Circuit Diagram - Transmitter Display Board	EXCDB-000007	0	4/15/2020
PCB Fabrication Drawing - Power Board (Ex d)	EXPCB-000038	0	4/15/2020
PCB Fabrication Drawing - Power Board (IS)	EXPCB-000048	0	4/15/2020
PCB Fabrication Drawing ER Transmitter Digital Board (HART)	EXPCB-000040	0	4/15/2020
PCB Fabrication Drawing - ER Transmitter Analog Board	EXPCB-000043	0	4/15/2020
PCB Fabrication Drawing - LPR Transmitter Digital Board	EXPCB-000046	0	4/15/2020
PCB Fabrication Drawing LPR transmitter Measurement Board	EXPCB-000047	0	4/15/2020
PCB Fabrication Drawing - Transmitter Display Board	EXPCB-000007	0	4/15/2020
Bill of Materials - Power Board (Ex d)	EXBOM-000038	0	4/15/2020
Bill of Materials - Power Board (IS)	EXBOM-000048	0	4/15/2020
Bill of Materials - ER Transmitter Digital Board (HART)	EXBOM-000040	0	4/15/2020
Bill of Materials - ER Transmitter Analog Board	EXBOM-000043	0	4/15/2020
Bill of Materials - LPR Transmitter Digital Board	EXBOM-000046	0	4/15/2020
Bill of Materials - LPR transmitter Measurement Board	EXBOM-000047	0	4/15/2020
Bill of Materials - Transmitter Display Board	EXBOM-000007	0	4/15/2020
Assembly Drawing - Power Board (Ex d)	EXET-2120	0	4/15/2020
Assembly Drawing - Power Board (IS)	EXET-2369	0	4/15/2020
Assembly Drawing - ER Transmitter Digital Board (HART)	EXET-2129	0	4/15/2020
Assembly Drawing - ER Transmitter Analog Board	EXET-2199	0	4/15/2020
Assembly Drawing - LPR Transmitter Digital Board	EXET-2367	0	4/15/2020

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

Title:	Drawing No.:	Rev. Level:	Date:
Assembly Drawing - LPR transmitter Measurement Board	EXET-2368	0	4/15/2020
Assembly Drawing - Transmitter Display Board	EXET-1446	0	4/15/2020
Hazardous Certification Label MS26X0 E/L & MS29X0 E/L	EXMDB-011142	0	4/15/2020
Manufacturer's Label MS26X0 E/L & MS29X0 E/L	EXMDB-011143	0	4/15/2020
Hazardous Certification Label MS26X1 E/L & MS29X1 E/L	EXMDB-011127	0	4/15/2020
Manufacturer's Label MS26X1 E/L & MS29X1 E/L	EXMDB-011141	0	4/15/2020
Control Drawing - MS26X0E/MS29X0E ER Transmitter	EXWDB-000078	B	4/15/2020
Control Drawing - MS26X1E/MS29X1E ER Transmitter	EXWDB-000096	F	4/15/2020
Control Drawing - MS26X0L/MS29X0L LPR Transmitter	EXWDB-000145	0	4/15/2020
Control Drawing - MS26X1L/MS29X1L LPR Transmitter	EXWDB-000146	0	4/15/2020
MS26X0E & MS29X0E Hazardous Area Certification Details	EXDOC - 000019	0	4/15/2020
MS26X1E & MS29X1E Hazardous Area Certification Details	EXDOC - 000020	0	4/15/2020
MS26X0L & MS29X0L Hazardous Area Certification Details	EXDOC - 000021	0	4/15/2020
MS26X1L & MS29X1L Hazardous Area Certification Details	EXDOC - 000022	0	4/15/2020
SMART TRANSMITTER INTRINSIC SAFETY ASSEMBLY MODEl NO.: MS26X0E,MS26X0L, MS2900E/L	EXMDB-011126	0	2020-03-16
SMART TRANSMITTER EXPLOSION PROOF ASSEMBLY MODEl NO.: MS26X1E,MS26X1L, MS2901E/L	EXMDB-011125	0	2020-02-19
CROSS-SECTIONAL AREA CALCULATIONS AL 3.6" DIA COVER WITH GLASS MODEL NOS.: MS2651E,MS2651L	EXMDB-011128	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS AL 4.0" DIA COVER WITH GLASS MODEL NOS.: MS2651E,MS2651L	EXMDB-011129	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS SS 4.1" DIA COVER WITH GLASS MODEL NOS.: MS2651E,MS2651L	EXMDB-011130	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS AL 3.6" DIA COVER, MEDIUM HEIGHT MODEL NOS.: MS2601E/L, MS2901 E/L	EXMDB-011131	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS AL 4" DIA COVER, MEDIUM HEIGHT MODEL NOS.: MS2601E/L, MS2901 E/L	EXMDB-011132	0	2020-02-27

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

Title:	Drawing No.:	Rev. Level:	Date:
CROSS-SECTIONAL AREA CALCULATIONS AL 3.6" DIA COVER, TALL HEIGHT MODEL NOS.: MS2601E/L, MS2901 E/L	EXMDB-011133	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS AL 4" DIA COVER, TALL HEIGHT MODEL NOS.: MS2601E/L, MS2901 E/L	EXMDB-011134	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS SS 4.1" DIA COVER, SHORT HEIGHT MODEL NOS.: MS2601E/L, MS2901 E/L	EXMDB-011135	0	2020-02-27
CROSS-SECTIONAL AREA CALCULATIONS SS 4.1" DIA COVER, TALL HEIGHT MODEL NOS.: MS2601E/L, MS2901 E/L	EXMDB-011136	0	2020-02-27

16. Prime Certification Details

Date Completed: 28 July 2014
Project Number: 11055523

Summary of Changes for Certificate Issue 2

1. Ingress protection rating of enclosure increased from IP54 to IP66.
2. Changes to appropriate documents to reflect the above changes.
3. Minor update to other drawings

Date Completed: 21 October 2014
Project Number: G101841320

Summary of Changes for Certificate Issue 3

1. Ms2601E Model added as part of this certification.
2. Changes to appropriate documents to reflect the above change.

Date Completed: 18 March 2016
Project Number: G101139097

SCHEDULE:

EU-Type Examination Certificate Number: ITS14ATEX27981X Issue 04

Summary of Changes for Certificate Issue 4

The following changes have been considered under Issue 4 of this Certificate:

- Consideration of equipment constructed from the following PCBs
  - EXCDB-000038 – Alternate Current Loop Board
  - EXCDB-000040 – Alternate Digital Board
  - EXCDB-000043 – Alternate Analog Board
  - EXCDB-000048 – Alternate Current Loop Board
  - EXCDB-000046 – Alternate digital board to interface with Type L probes
  - EXCDB-000047 – Alternate analogue board to interface with Type L probes
  - EXCDB-000007 – Display Board
- Full reassessment of equipment circuitry to account for the installation of additional PCBs
- Minor modifications to existing PCBs to ensure maintenance of intrinsically safe entity parameters
- Assessment of the equipment for use in a flameproof and dustproof installation configuration.
- Expansion of Certificate scope to cover the following models. MS2600E, MS2650E, MS2900E, MS2950E, MS2600L, MS2650L, MS2900L, MS2950L, MS2601E, MS2651E, MS2901E, MS2951E, MS2601L, MS2651L, MS2901L and MS2951L. All models utilize a combination of the PCBs listed above and either the manufacturer made stainless steel enclosure (for fully intrinsically safe applications) or a pre-certified enclosure.
- Revision of entity parameters to account for alternative PCBs and installation configurations.
- Reduction of permitted lower ambient from -20°C to -40°C.
- Amendment of equipment Ex coding string.
- General amendments to controlled drawings to cover the above listed changes.

Date Completed: 12th May 2020
Project Number: G104133112