



1 **EU-TYPE EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

3 Certificate Number: **Sira 14ATEX1214X** Issue: **7**

4 Equipment: **Models AST4600, AST46HA, AST46PT and 46SW Series Pressure Transducers**

5 Applicant: **TE Sensores S de RL de CV, a TE Connectivity Company**

6 Address: Av. Obrero Mundial #9
Parque Industrial Dynatech
Hermosillo Sonora 83174
Mexico

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

8 CSA Group Netherlands B.V., notified body number 2813 in accordance with Articles 17 and 21 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN IEC 60079-0:2018

EN 60079-1:2014

EN 60079-31:2014

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to Specific Conditions of Use identified in the schedule to this certificate.

11 This EU-Type Examination Certificate relates only to the design and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 2 GD*

Ex db IIC T5 Gb

*Ex tb IIIC T100°C Db

Ta = -40°C to +85°C

* Models with suffix G or V not suitable for Zone 21(Dust) atmosphere and not marked, see Product Description.

Signed: M Halliwell

Title: Director of Operations



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13 DESCRIPTION OF EQUIPMENT

The AST46XX Series' Pressure Transducers utilize a mechanical diaphragm to convert a mechanical pressure measurement into an electrical signal for use in the measurement of gases and liquids compatible with stainless steel. The transducers are manufactured as stainless steel sealed assemblies containing up to 2 PCBs.

The transducers consist of 3 parts:

- i. the sensing element;
- ii. the housing tube and;
- iii. a conduit entry connection(adapter) 1/2" MNPT made from stainless steel.

A green ground (earth) conductor in both construction types (3, 4 or 5 lead wires sensors) is connected to the metallic housing.

The transmitters range in Maximum Working Pressure (MWP) rating up to 20000 psi. The physical construction of the Sensing Element varies in accordance with the pressure range. A representative list of sensing element part numbers appears in the table below:

Transmitter Maximum Working Pressure (psi)	AST Sensing Element Part Number
50	A09745
100	A09746
200	A09747
300	A09748
500	A09749
1000	A09750
3000	A09752
5000	A09753
7500	A09754
10000	A09755
20000	A03972 (1" housings)
20000	A10834 & A01704 (7/8" housings)

The part numbers of the range of pressure transducers are as follows:

- AST4600***bcdefghijklmnopqr* (-Z = CRN, SS, or other non-performance related)
- AST46HA***bcdefghijklmnopqr* (-Z = CRN, SS, or other non-performance related)
- AST46PT***bcdefghijklmnopqr* (-Z = CRN, SS, or other non-performance related)

Where:

a (temperature output)

1: -40 to 85C

3: 0 to 70C

5: 0 to 200F

2: -40 to 125C

4: -55 to 125C



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b (port information)

- | | | |
|---------------------------|-----------------------------|-----------------------------|
| A: 1/4" NPT male | I: 1/4" NPT female | R: 7/16-20UNF female |
| B: 1/8" NPT male | J: 1/8FNP | S: 1/2" NPT female |
| C: 1/4" BSP male | K: 7/16-20UNF female | T: G1/2 MALE |
| D: G1/4 male | L: Frontend Cone | U: 1/8BSP male |
| E: 9/16-18UNF male | M: 3/8-24UNF male | V: 1/8BSP female |
| F: 7/16-20UNF male | N: VCR male | W: F250C female |
| G: M14x1.5 male | P: 1/2" NPT male | Z: 1/2-20UNF male |
| H: M20x1.5 male | | |

c (most significant pressure range in PSI and pressure reference)

- A:** Absolute
- V:** Compound
- C:** Compound, 0, 1, 2, G = Gauge

d (2nd significant pressure range in PSI (0 for Bar))

X

e (3rd significant pressure range in PSI (most significant for Bar))

X

f (4th significant pressure range in PSI (2nd significant for Bar))

X

j (lowest digit for pressure range in PSI (and Bar))

X

k (pressure units)

- | | | |
|---------------|------------------------------|----------------|
| P: PSI | K: kg/cm ² | M: mBar |
| B: Bar | H: inH ₂ O | |

l (electrical outputs)

- | | |
|---------------------------------|-----------------------------------|
| 1: 0.5-4.5 V Ratiometric | A: 10 mV/V |
| 2: 0-5 V | B: 20 mV/V |
| 3: 1-5 V | F: 5 mV/V |
| 4: 4-20 mA | G: 1-10 V |
| 5: 0-10 V | J: 0.1-5.1 V |
| 6: 1-6 V | K: 0-5 V 4wire |
| 8: 0.5-5.5 V | L: 0-10 V 4wire |
| 9: 0.25-5 V | M: 0.25-4.75 V Ratiometric |
| | P: 0.5-4.5 V |

m (electrical interface)

- | | |
|----------------------------------|---|
| T: 2 feet of 18 AWG wires | W: 2 metres |
| U: 4 feet | X: Special lengths 18 inches minimum |

n (wetted material)

- | | |
|----------------------------------|---------------------|
| 0: 17-4PH stainless steel | 3: Titanium |
| 1: 316L | 4: Hastelloy |
| 2: inconel 718 | 6: Waspaloy |

o (diagnostic output AST46HA & AST46PT Only)

- | | | |
|---------------------|--------------------|-------------------------|
| H: Fail High | L: Fail Low | N: Not Specified |
|---------------------|--------------------|-------------------------|

pqr (special calibration)

eg: tolerances

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46SW*abcdefghijklm* (-Z = CRN, SS, or other non-performance related)

Where:

a (port information)

- | | | |
|---------------------------|-----------------------------|-----------------------------|
| A: 1/4" NPT male | I: 1/4" NPT female | R: 7/16-20UNF female |
| B: 1/8" NPT male | J: 1/8FNP | S: 1/2" NPT female |
| C: 1/4" BSP male | K: 7/16-20UNF female | T: G1/2 MALE |
| D: G1/4 male | L: Frontend Cone | U: 1/8BSP male |
| E: 9/16-18UNF male | M: 3/8-24UNF male | V: 1/8BSP female |
| F: 7/16-20UNF male | N: VCR male | W: F250C female |
| G: M14x1.5 male | P: 1/2" NPT male | Z: 1/2-20UNF male |
| H: M20x1.5 male | | |

b (max working pressure in PSI)

- | | | |
|-------------------|--------------------|---------------------|
| 01: 50PSI | 05: 1000PSI | 09: 10000PSI |
| 02: 100PSI | 06: 3000PSI | 10: 15000PSI |
| 03: 250PSI | 07: 5000PSI | 11: 20000PSI |
| 04: 500PSI | 08: 7500PSI | |

c (pressure unit)

P: PSI

d (switch)

E: SPDT (FORM C)

e (electrical connection)

T: 2 feet of 18 AWG wires

W: 2 metres

U: 4 feet

X: Special lengths 18 inches minimum

f (header material)

0: 17-4PH stainless steel

3: Titanium

1: 316L

4: Hastelloy

2: inconel 718

6: Waspaloy

g (pressure reference)

0, 1, 2, A, C, G, V (Models with suffix G or V not suitable for Zone 21(Dust) atmosphere)

h (switching pressure)

5 digits: 0 to 20000

i (switching direction)

F: Falling switchpoint specified

R: Rising switchpoint specified

j (hysteresis)

XX; hysteresis as a % of max working pressure between falling and rising switchpoints

k, l, m (special options)

eg: tolerances



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Model Similarities and Differences:

AST4600 & AST46HA: Provide pressure measurement only.
 AST46PT: Provide pressure and temperature measurement.
 46SW: Provide pressure set point switched output.

Variation 1 - This variation introduced the following change:

- i. The Special Condition for Safe Use that restricts the external pressure on potted flying leads was amended.

Variation 2 - This variation introduced the following change:

- i. A change of ownership was recognised:
 From - American Sensor Technology, 450 Clark Drive' Mount Olive, New Jersey, 07828, USA
 To - Measurement Specialities Inc., 6801 Kaiser Drive, Fremont, CA 94555, USA

Variation 3 - This variation introduced the following changes:

- i. Following appropriate re-assessment, EN 60079-0:2012, EN 60079-1:2007, and EN 60079-31:2009 were replaced by EN IEC 60079-0:2018, EN 60079-1:2014, and EN 60079-31:2014 the marking was amended accordingly.
- ii. Recognition of minor drawings amendments, none of which affect compliance with the standards.
- iii. Recognition of drawings that have become obsolete.
- iv. Change to the Manufacturer's name and address.
 From - American Sensor Technology, 450 Clark Drive' Mount Olive, New Jersey, 07828, USA.
 To - Measurement Specialities Inc., A TE Connectivity Company, Avenida Senora Mundial #9, Hermosillo, Senora, CP83174, Mexico.

Variation 4 - This variation introduced the following change:

- i. Addition of PCB quality notes and update of 41 drawings.
- ii. Addition of 1 new drawing
- iii. Change to the Manufacturer's name and address.
 From - Measurement Specialities Inc., A TE Connectivity Company, Avenida Senora Mundial #9, Hermosillo, Senora, CP83174, Mexico
 To - Measurement Specialities Inc. A TE Connectivity Company Avenida Obrero Mundial #9 Parque Industrial Dynatech, El Sahuaro, Hermosillo, Sonora, Mexico CP 83174

Variation 5 - This variation introduced the following change:

- i. The revision of Markings and administrative changes to update drawings.

Variation 6 - This variation introduced the following change:

- i. To recognise the change of Company Name and Address:

From	To
Measurement Specialities Inc. A TE Connectivity Company 6801 Kaiser Dr. Fremont California 94555 United States of America	TE Sensores S de RL de CV A TE Connectivity Company Av. Obrero Mundial #9 Parque Industrial Dynatech Hermosillo Sonora 83174 Mexico

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14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Reports and Certificate History

Issue	Date	Report number	Comment
0	10 November 2014	R70004581A	The release of the prime certificate.
1	27 November 2015	R70052468A	The introduction of Variation 1.
2	09 October 2018	R70179065A	This Issue covers the following changes: <ul style="list-style-type: none">• EC Type-Examination Certificate in accordance with 94/9/EC updated to EU Type-Examination Certificate in accordance with Directive 2014/34/EU. (In accordance with Article 41 of Directive 2014/34/EU, EC Type-Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Variations to such EC Type-Examination Certificates may continue to bear the original certificate number issued prior to 20 April 2016.)• The introduction of Variation 2.
3	13 November 2018	R70192965A	The introduction of Variation 3.
4	15 October 2019	1479	Transfer of certificate Sira 14ATEX1214X from Sira Certification Service to CSA Group Netherlands B.V.
5	12 January 2022	R80073007A	The introduction of Variation 4.
6	10 October 2022	R80132244A	This Issue covers the following changes: <ul style="list-style-type: none">• The Applicant's address was amended to correct a typographical error.• The introduction of Variation 5.
7	10 May 2023	R80162238A	The introduction of Variation 6.

15 SPECIFIC CONDITIONS OF USE (denoted by X after the certificate number)

- 15.1 The product label indicates that the process temperature range is -40°C to $+125^{\circ}\text{C}$, taking this into account, the user/installer shall take precautions that ensure that the operating service temperature of the overall pressure transducer assembly is between -40°C to 92°C .
- 15.2 Under certain extreme circumstances, exposed plastic and unearthed metal parts of the enclosure may store an ignition-capable level of electrostatic charge. Therefore, the user/installer shall implement precautions to prevent the build-up of electrostatic charge, e.g. locate the equipment where a charge-generating mechanism (such as wind-blown dust) is unlikely to be present and clean with a damp cloth.
- 15.3 The integral conductors shall be suitably mechanically protected and terminated in a suitable terminal or junction facility.
- 15.4 It is the user's responsibility to ensure that the earth continuity of the equipment is maintained via the mounting arrangement.
- 15.5 The enclosure is manufactured from light metal. In rare cases, ignition sources due to impact and friction sparks could occur and that shall be considered during installation.

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- 15.6 The external pressure on potted flying leads shall not exceed 30 bar maximum.
- 16 **ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)**
The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.
- 17 **CONDITIONS OF MANUFACTURE**
- 17.1 The use of this certificate is subject to the Regulations Applicable to Holders of CSA Group Netherlands B.V. certificates.
- 17.2 Holders of EU-Type Examination Certificates are required to comply with the conformity to type requirements defined in Article 13 of Directive 2014/34/EU.
- 17.3 At the conclusion of manufacture, and before shipment, the equipment shall be checked for continuity between the enclosure and green ground conductor.
- 17.4 The weld quality of each sensor shall be tested using helium mass spectrometry method to assure that leaks through the welded joints do not exceed the rate of 5e-8 cc/sec.

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