INTRINSICALLY SAFE
Pressure Transducer / Transmitter
AST4401

Overview
The AST4401 is a stainless steel pressure transducer with a wide
variety of options. With its rugged construction and best price-to-
performance ratio in the industry, the AST4401 is the solution for
pressure measurement in Intrinsically Safe areas.

Benefits
- Class I Division 1 Groups A, B, C, D Intrinsically Safe when installed
  with approved barrier (UL / CSA)
- ATEX / IECEx: Class I Zone 0 Exia IIC T4 Ga (Ta = -40°C to +80°C)
- Leading sensor technology available in 316L stainless steel,
  Hastelloy C276 or Inconel 718
- 4-20mA or voltage outputs

Applications
- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage
- Sub Sea Pressure
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers
Performance @ 25°C (77°F)

Accuracy: < ±0.25% BFSL (<±0.5% from 7,500 up to 20,000 PSI)

Stability (1 year): ±0.25% FS, typical

Over Range Protection: 2X Rated Pressure, Minimum

Burst Pressure: 5X or 40,000 PSI (whichever is less)

Pressure Cycles: >100 Million

Environmental Data

Temperature

Operating: -40 to 80°C (-40 to 176°F)
Storage: -40 to 100°C (-40 to 212°F)

0-100% relative humidity, non-condensing

Thermal Limits

Compensated Range: 0 to 55°C (32 to 132°F)

TC Zero: <±1.5% of FS

TC Span: <±1.5% of FS

Other

Shock: EN 60068-2-27
Vibration: EN 60068-2-6, 60068-2-64, and IEC 68-2-32

EMI/RFI Protection: Yes
Rating: IP-66, min

Electrical Data

Output: 4-20mA

1-5VDC, 1-6VDC

0.5-4.5V Ratiometric

Excitation: 10-14.5VDC

10-14.5VDC

5VDC, regulated

Output Impedance: >10k Ohms

<100 Ohms, Nominal

<100 Ohms, Nominal

Current Consumption:

20mA, typical

5mA, typical

<10mA

Bandwidth: (-3dB): DC to 250 Hz

(-3dB): DC to 1kHz

(-3dB): DC to 1kHz

Output Noise: -

<2mV RMS

<2mV RMS

Zero Offset: <±1% of FS

<±1% of FS

<±1% of FS

Span Tolerance: <±2% of FS

<±1.5% of FS

<±1.5% of FS

Output Load: 0-800 Ohms@10-28VDC

10k Ohms, Min.

10K Ohms, Min.

Reverse Polarity Protection: Yes

Yes

Yes
Dimensions
UL Approved Barrier Installation / A01657

The transmitters listed below are designed for installation in EITHER Class I, Division 1, Groups C,D, Class I, Zone 0 Group IIB 1100 BR Class I, Division 1, Groups A,B,C,D Class I, Zone 0 Group IIC hazardous locations when connected to Associated Apparatus as described in note 1.

**Entity Parameters**

- Models AST4400, AST4400P, AST4500, AST4500P, AST4500D
- Model AST4400
  - Class I, Division 1, Groups A,B,C,D; Class I, Zone 0 Ex ia IIB T4; Class I, Zone 0 AC Ex ia IIB T4
  - Vmax = 145V

4-20mA with integral connector

**Figure 1**: Wiring diagram for 4-wire, mV output

**Figure 2**: Wiring diagram for 2-wire, 4-20mA output

**Figure 3**: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

CSA Approved Barrier Installation / A08949

The transmitters listed below are designed for installation in EITHER Class I, Division 1, Groups C,D, Class I, Zone 0 Group IIB 1100 BR Class I, Division 1, Groups A,B,C,D Class I, Zone 0 Group IIC hazardous locations when connected to Associated Apparatus as described in note 1.

**Entity Parameters**

- Models AST4400, AST4400P, AST4500, AST4500P, AST4500D
- Model AST4400
  - Class I, Division 1, Groups A,B,C,D; Class I, Zone 0 Ex ia IIB T4; Class I, Zone 0 AC Ex ia IIB T4
  - Vmax = 145V

4-20mA with integral connector

**Figure 1**: Wiring diagram for 4-wire, mV output

**Figure 2**: Wiring diagram for 2-wire, 4-20mA output

**Figure 3**: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Short Isolation Barrier or a Single Channel Isolation Barrier.
2. For installations in accordance with Figs 1 and 3, one dual-channel or two single-channel barriers may be used, where in either case, both channels have been certified for use together with combined entity parameters.
3. The following conditions must be satisfied:
   - Vmax or Va = 145V (Nmax)
   - Cs or C0 = 0.35uf
   - Rs or R0 = 0.25ohm
   - Ps or Ps = 0.25ohm

4. Maximum non-hazardous area voltage must not exceed 25V.

5. Canadian Installations should be in accordance with Canadian Electrical Code, Part I. U.S. Installations should be in accordance with Article 504 in the National Electrical Code, ANSI/NFPA 70.

6. A grounding method is not provided by the manufacturer as part of the integral design of the Transducer. For units which are connected through a grounded short shunt safety barrier, ensure that the Transducer is mounted to a surface which is at the same potential as the barrier ground.

7. See user manual for installation conditions.

**Notes**

- For installation of barrier, refer to installation manual.
- All barriers shall be certified by CSA or UL.
- Maximum cable length for 4-20mA transmitters not to exceed 1500 ft.

**Legend**

- Ground Bus
- Common
- Signal
- Supply
- Excitation
- Analog Input
### Ordering Information

**AST4401**

<table>
<thead>
<tr>
<th>Series Type</th>
<th>A</th>
<th>00500</th>
<th>P</th>
<th>4</th>
<th>L</th>
<th>1</th>
<th>000</th>
<th>-SS</th>
</tr>
</thead>
</table>

**Process Connection**
- A= 1/4" NPT Male
- B= 1/8" NPT Male*
- C= 1/4" BSPP Male
- F= 7/16"-20 UNF Male*  

*Not available under 50 PSI (not available in 316L)  
**Pressures up to 15,000 PSI  
***Pressures from 10,000 to 20,000 PSI, not available in 316L

**Pressure Range**
- Insert 5-digit pressure range code (example: 0-100 PSI = 00100)  
- Ranges between 0-25 PSI and 0-20,000 PSI available. Compound pressure up to -14.7 to 500 PSI.

**Pressure Unit**
- B= Bar  
- K= kg/cm²  
- P= PSI

**Outputs**
- 1= 0.5-4.5V ratiometric  
- 3= 1-5V  
- 4= 4-20mA (2 wire loop powered)  
- 6= 1-6V

**Electrical**
- A= 2 ft. (0.6m)  
- B= 4 ft. (1.2m)  
- C= 6 ft. (1.8m)  
- D= 10 ft. (3.0m)  
- E= Mini DIN 43650C  
- F= Packard Metripack 150 3-Pin  
- I= DIN 43650A

**Wetted Material**
- 0= 17-4PH  
- 1= 316L  
- 2= Inconel 718  
- 4= Hastelloy C276

**Options**
- 000= No Options

**Approval**
- Insert code from approvals chart below [Leave blank for UL ANSI/ISA 12.12.01 Class I Div I Intrinsically Safe Groups A, B, C, D (formerly UL913)]

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>-SS</td>
<td>CSA157 Class I Div 1 Intrinsically Safe when installed with approved barrier, ANSI/ISA 12.27.01 Single Seal and ATEX/IECEx Exia IIC Class I, Zone 0, T4</td>
</tr>
<tr>
<td>-Z</td>
<td>DIN Registered to ANSI/ASME B31.3. Contact factory for material, pressure, and process connection options (includes -SS approvals)</td>
</tr>
</tbody>
</table>

Note: CSA approved products require case/earth ground electrical connection. See wiring installation sheet for further details.

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**NORTH AMERICA**

American Sensor Technologies, Inc. (AST), a TE Connectivity Company  
Tel: 1 800-522-6752  
Email: customercare.motive@te.com

**ASIA**

Hong Kong Sensor Technologies (HKST), a TE Connectivity Company  
Tel: 86 0400-820-6015  
Email: customercare.shzn@te.com

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**TE.com/sensorsolutions**

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