



## 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

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### Performance @ 25°C (77°F)

<b>Accuracy</b>	< ±0.25% BFSL (<±0.5% from 7,500 up to 20,000 PSI)
<b>Stability (1 year)</b>	±0.25% FS, typical
<b>Over Range Protection</b>	2X Rated Pressure, Minimum
<b>Burst Pressure</b>	5X or 40,000 PSI (whichever is less)
<b>Pressure Cycles</b>	>100 Million

### Environmental Data

#### Temperature

<b>Operating</b>	-40 to 80°C (-40 to 176°F)
<b>Storage</b>	-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)

<b>TC Zero</b>	<±1.5% of FS
<b>TC Span</b>	<±1.5% of FS

#### Other

<b>Shock</b>	EN 60068-2-27
<b>Vibration</b>	EN 60068-2-6, 60068-2-64, and IEC 68-2-32
<b>EMI/RFI Protection:</b>	Yes
<b>Rating:</b>	IP-66, min

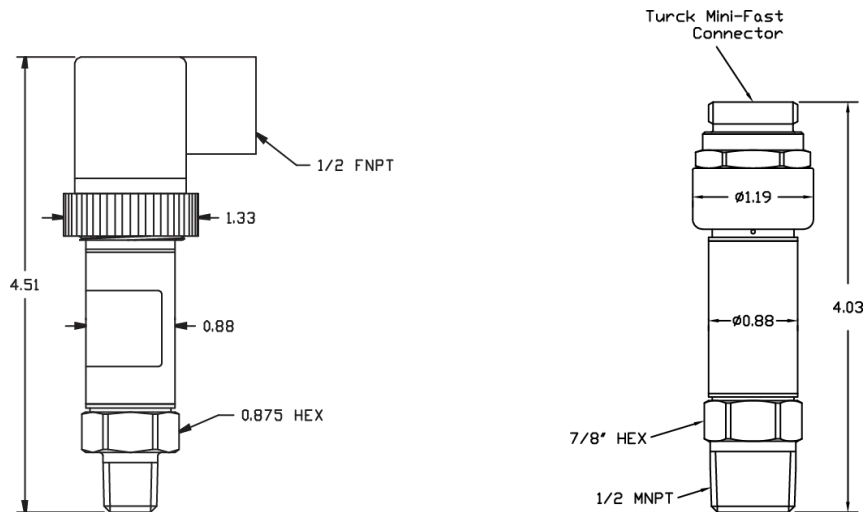
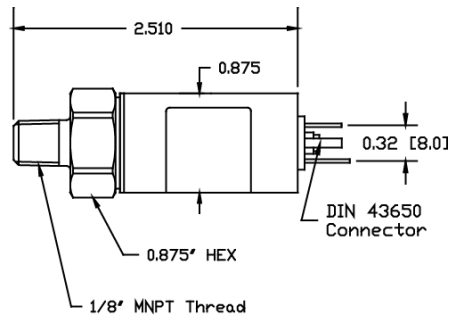
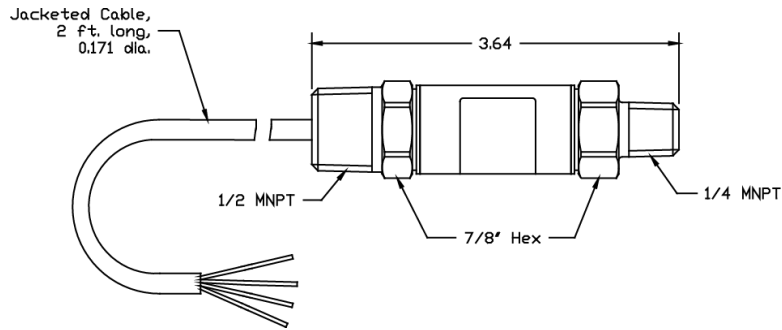
### Electrical Data

<b>Output</b>	4-20mA	1-5VDC, 1-6VDC	0.5-4.5V Ratiometric
<b>Excitation</b>	10-14.5VDC	10-14.5VDC	5VDC, regulated
<b>Output Impedance</b>	>10k Ohms	<100 Ohms, Nominal	<100 Ohms, Nominal
<b>Current Consumption:</b>	20mA, typical	5mA, typical	<10mA
<b>Bandwidth</b>	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz	(-3dB): DC to 1kHz
<b>Output Noise</b>	-	<2mV RMS	<2mV RMS
<b>Zero Offset:</b>	<±1% of FS	<±1% of FS	<±1% of FS
<b>Span Tolerance:</b>	<±2% of FS	<±1.5% of FS	<±1.5% of FS
<b>Output Load:</b>	0-800 Ohms@10-28VDC	10k Ohms, Min.	10K Ohms, Min.
<b>Reverse Polarity Protection</b>	Yes	Yes	Yes

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## Dimensions



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## UL Approved Barrier Installation / A01657

## CSA Approved Barrier Installation / A08949

Class I, Div. 1, Groups C,D  
 Class I, Zone 0 Ex ia IIB T4  
 Class I, Zone 0 AEx ia IIB T4  
 OR  
 Class I, Div. 1, Groups A,B,C,D  
 Class I, Zone 0 Ex ia IIC T4  
 Class I, Zone 0 AEx ia IIC T4  
 Hazardous Location

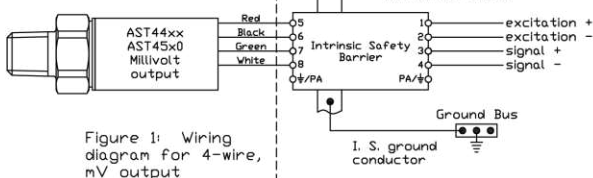


Figure 1: Wiring diagram for 4-wire, mV output

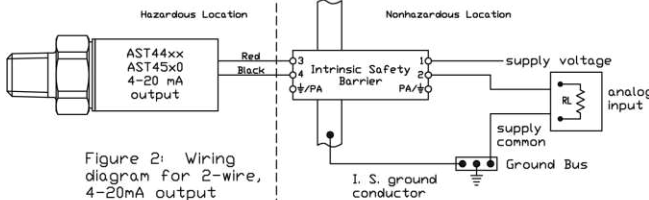


Figure 2: Wiring diagram for 2-wire, 4-20mA output

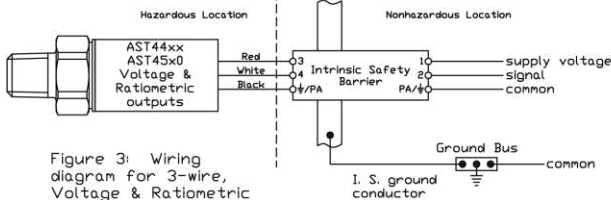


Figure 3: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

Class I, Div. 1, Groups C,D  
 EXia IIB, T4  
 Class I, Zone 0, AEXia IIB, T4  
 OR  
 Class I, Div. 1, Groups A,B,C,D  
 EXia IIC, T4  
 Class I, Zone 0, AEXia IIC, T4  
 Hazardous Location

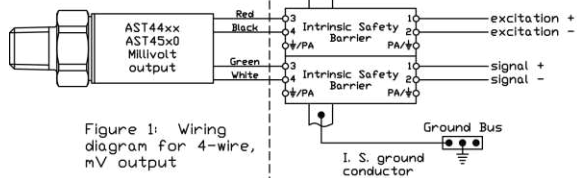


Figure 1: Wiring diagram for 4-wire, mV output

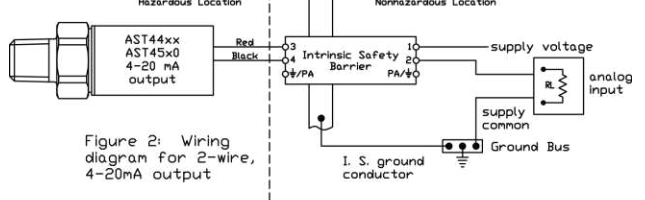


Figure 2: Wiring diagram for 2-wire, 4-20mA output

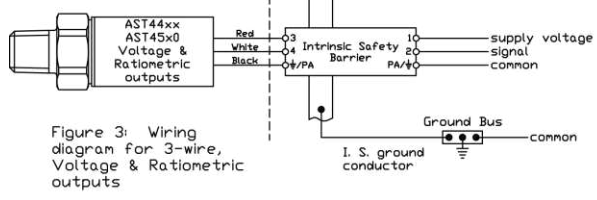


Figure 3: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

The transducers listed below are designed for installation in EITHER Class I, Division 1, Groups C,D; Class I, Zone 0 Group IIB OR 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, AST44LP, AST4500, AST4510, AST4520  
 Class I, Div. 1, Groups C,D; Class I, Zone 0 Ex ia IIB T4; Class I, Zone 0 AEx ia IIB T4  
 $V_{max} = 28V$

Model AST4401  
 Class I, Div. 1, Groups A,B,C,D; Class I, Zone 0 Ex ia IIC T4; Class I, Zone 0 AEx ia IIC T4  
 $V_{max} = 14.5V$

4-20mA with integral connector	4-20mA with upto 1000ft of integral cable	All EXCEPT 4-20mA with integral connector	All EXCEPT 4-20mA with upto 150ft of integral cable
$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.391 \mu F$ $L_i = 0 \mu H$	$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.434 \mu F$ $L_i = 0 \mu H$	$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.643 \mu F$ $L_i = 0 \mu H$	$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.649 \mu F$ $L_i = 0 \mu H$

$I_{sc}$  or  $I_o$  is the total current available from the Associated Apparatus under any condition.

### 1. The following conditions must be satisfied:

$$V_{oc} \text{ or } U_o \leq V_{max} \quad C_a \text{ or } C_o \geq C_i + C_{cable}$$

$$I_{sc} \text{ or } I_o \leq I_{max} \quad L_a \text{ or } L_o \geq L_i + L_{cable}$$

$$P_o \leq P_i \text{ (if applicable)}$$

Total customer cable length for 4-20mA transmitters not to exceed 4000ft.  
 Total customer cable length for all other transmitters not to exceed 150ft.  
 Where the cable capacitance and inductance per foot are not known, the following values shall be used:  $C_{cable} = 60pF/ft$ ,  $L_{cable} = 0.2\mu H/ft$

### 2. Control Room apparatus shall not generate in excess of 250V ( $U_{max}$ ).

### 3. 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.

### Entity Parameters

Models AST4400, AST44LP, AST4500, AST4510, AST4520, AST4530  
 Class I, Div. 1, Groups C,D; EXia IIB, T4; Class I, Zone 0, AEXia IIB, T4  
 $V_{max} = 28Vdc$

Model AST4401  
 Class I, Div. 1, Groups A,B,C,D; EXia IIC, T4; Class I, Zone 0, AEXia IIC, T4  
 $V_{max} = 14.5Vdc$

4-20mA with integral connector	4-20mA with upto 1000ft of integral cable	All EXCEPT 4-20mA with integral connector	All EXCEPT 4-20mA with upto 150ft of integral cable
$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.391 \mu F$ $L_i = 0$	$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.434 \mu F$ $L_i = 155 \mu H$	$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.643 \mu F$ $L_i = 0$	$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.649 \mu F$ $L_i = 233 \mu H$

### 1. For installation in accordance with Fig 2, barrier must be a CSA Certified, Single Channel grounded Shunt-Diode Zener Barrier or a Single Channel Isolating 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:

$$V_{oc} \text{ or } U_o \leq V_{max} \quad C_a \text{ or } C_o \geq C_i + C_{cable}$$

$$I_{sc} \text{ or } I_o \leq I_{max} \quad L_a \text{ or } L_o \geq L_i + L_{cable}$$

$$P_o \leq P_i \text{ (if applicable)}$$

### 4. Maximum non-hazardous area voltage must not exceed 250 V.

### 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 shunt diode 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.

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## Ordering Information

<b>AST4401</b>	<b>A</b>	<b>00500</b>	<b>P</b>	<b>4</b>	<b>L</b>	<b>1</b>	<b>000</b>	<b>-SS</b>
<b>Series Type</b>								
<b>Process Connection</b>								
A= 1/4" NPT Male		I= 1/4" NPT Female**						
B= 1/8" NPT Male*		P= 1/2" NPT Male						
C= 1/4" BSPP Male		W= F250C Female Autoclave***						
F= 7/16"-20 UNF Male*								
*Not available under 50PSI (not available in 316L) **Pressures up to 15,000 PSI								
***Pressures from 10,000 to 20,000 PSI, not available in 316L								
<b>Pressure Range</b>								
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.								
<b>Pressure Unit</b>								
B= Bar			K= kg/cm2			P= PSI		
<b>Outputs</b>								
1= 0.5-4.5V ratiometric		4= 4-20mA (2 wire loop powered)						
3= 1-5V		6= 1-6V						
<b>Electrical</b>								
A= 2 ft. (0.6m)		L= Conduit, Cable 2 ft. (0.6 m)						
B= 4 ft. (1.2m)		M= Conduit, Cable 4 ft. (1.2 m)						
C= 6 ft. (1.8m)		N= Conduit, Cable 6 ft. (1.8 m)						
D= 10 ft. (3.0m)		P= Conduit, Cable 10 ft. (3 m)						
E= Mini DIN 43650C		Y= M12x1						
F= Packard Metripack 150 3-Pin		4 = Mini-Fast (CSA Only)						
I= DIN 43650A								
<b>Wetted Material</b>								
0= 17-4PH		1= 316L		2= Inconel 718		4= Hastelloy C276		
<b>Options</b>								
000= No Options								
<b>Approval</b>								
Insert code from approvals chart below [Leave blank for UL ANSI/ISA 12.12.01 Class I Div 1 Intrinsically Safe Groups A, B, C, D (formerly UL913)]								
-SS	CSA157 Class I Div 1 Grps A, B, C, D Intrinsically Safe when installed with approved barrier, ANSI/ISA 12.27.01 Single Seal and ATEX/IECEX Exia IIC Class I, Zone 0, T4							
-Z	CRN Registered to ANSI/ASME B31.3. Contact factory for material, pressure, and process connection options (includes -SS approvals)							

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

### NORTH AMERICA

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### TE.com/sensorsolutions

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