Intrinsically Safe

AST4401 > Pressure Transducer / Transmitter

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 Zone 0 Exia IIC T4 Ga (Ta = -40°C to +80°C)
- High Strength Stainless Steel Construction
- No Oil, Welds or Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 20,000 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Compatible with Wide Range of Liquids and Gases
- EMI/RFI Protection

Applications

- Industrial OEM Equipment
- Water Management
- Pneumatics
- Hydrogen Storage
- Sub Sea Pressure
- HVAC/R Equipment
- Control Panels
- Hydraulic Systems
- Data Loggers

Environmental Data

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

For UL certified barrier drawing, see A04153.
For CSA certified barrier drawing, see A08949.

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
Burst Pressure	5X or 40,000 PSI (whichever is less)
Pressure Cycles	> 100 Million

** Accuracy includes non-linearity, hysteresis & non-repeatability*

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

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Ordering Information

AST4401	A	00500	P	4	L	1	000	-SS

Series Type

Process Connection

A= 1/4" NPT Male	I= 1/4" NPT Female**
B= 1/8" NPT Male*	P= 1/2" MNPT**
C= 1/4" BSPP Male	W= F250C Female
F= 7/16"-20 UNF Male*	Autoclave***

**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*

Pressure Measurement
Insert 5-digit pressure code

Pressure Unit

B= Bar	K= kg/cm^2	P= PSI

Outputs

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

Electrical

A= 2 ft. (0.6m)	E= Mini DIN 43650C	M= Conduit, Cable 4 ft. (1.2 m)+
B= 4 ft. (1.2m)	F= Packard Metripack 150 3-Pin	N= Conduit, Cable 6 ft. (1.8 m)+
C= 6 ft. (1.8m)	I= DIN 43650A	P= Conduit, Cable 10 ft. (3 m)+
D= 10 ft. (3.0m)	L= Conduit, Cable 2 ft. (0.6 m)+	Y= M12x1 Eurofast
		4 = Mini-Fast (CSA Only)

+Also approved to UL/cUL 1604 Class 1 Div 1, Group A, B, C, D without requiring a barrier

Wetted Material

0= 17-4PH	2= Inconel 718 (consult factory on availability)
1= 316L	4= Hastelloy C276 (consult factory on availability)

Options
000= No Options

Approval
(Left Blank)= UL ANSI/ISA 12.12.01 Class I Div 1 Intrinsically Safe Groups A, B, C, D (formerly UL913)
-SS= Add "-SS" for CSA157 Class I Div 1 Grps C, D Intrinsically Safe and ANSI/ISA 12.27.01 Single Seal and SIRA ATEX Exia IIC Class I, Zone 0, T4
-Z= Add "-Z" for 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

Pressure Ranges+

PSIG Measurement	Pressure Code
-14.7 to 25**	V0025**
0-25	00025
0-50	00050
0-100	00100
0-150	00150
0-200	00200
0-250	00250
0-500	00500
0-1,000	01000
0-2,500	02500
0-5,000	05000
0-7,500	07500
0-10,000	10000
CSA ONLY 0-15,000	CSA ONLY 15000
0-20,000	20000

BARG Measurement	Pressure Code
-1 to 2**	V0002**
0-2	00002
0-5	00005
0-7	00007
0-10	00010
0-20	00020
0-35	00035
0-50	00050
0-100	00100
0-250	00250
0-350	00350
0-500	00500
0-700	00700

+Typical ranges. All ranges between 0-25 PSI and 0-20,000 PSI available.
**Compound ranges up to -14.7 to 500 PSI available. Please consult factory.

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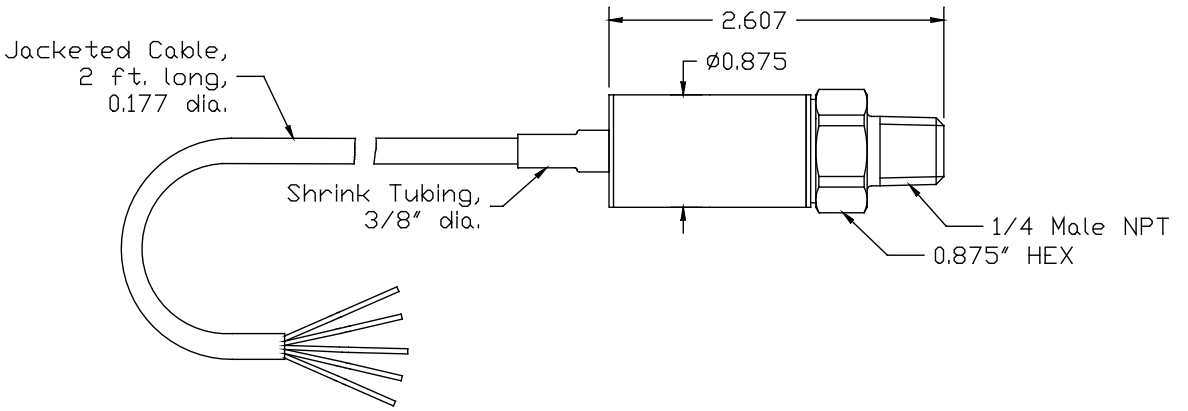

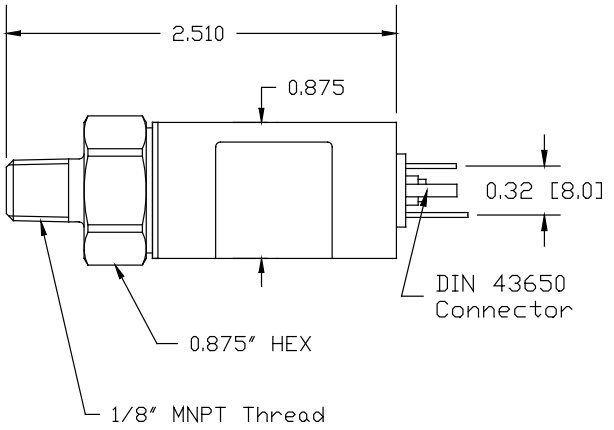

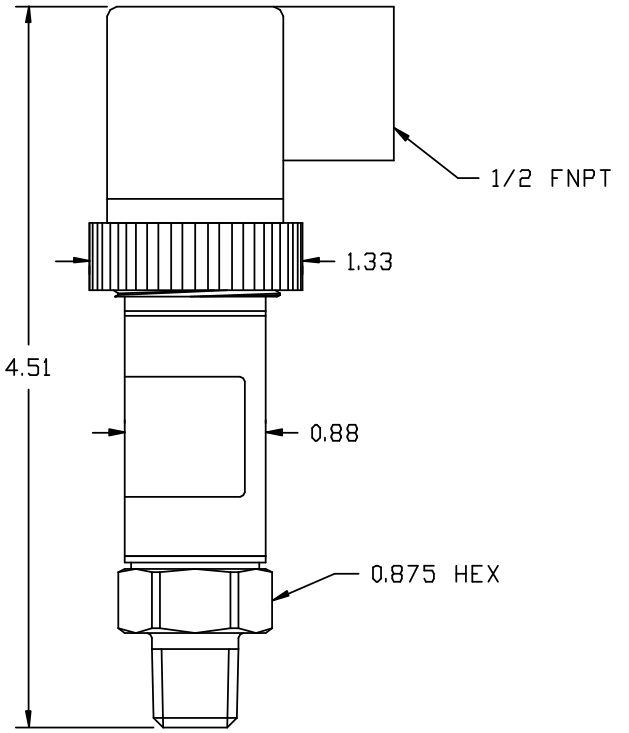

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UL Approved Barrier Installation / A04153

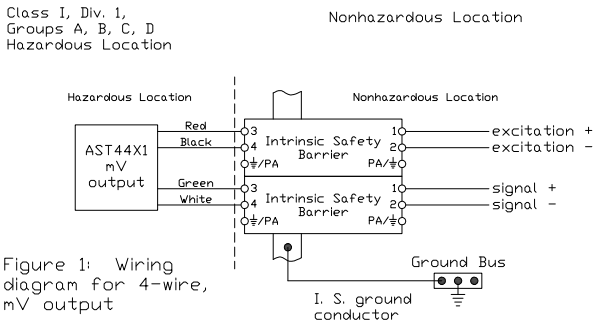

Figure 1: Wiring diagram for 4-wire, mV output

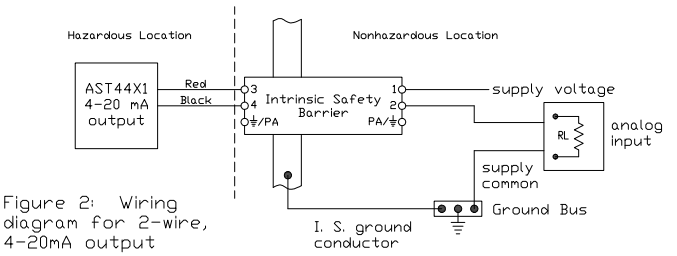

Figure 2: Wiring diagram for 2-wire, 4-20mA output

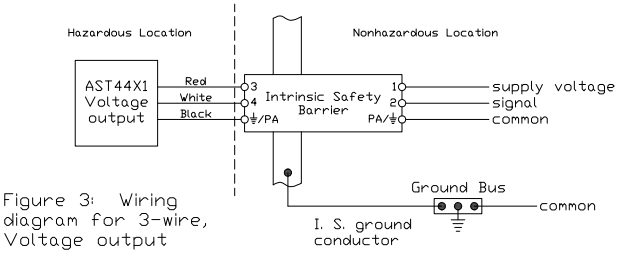

Figure 3: Wiring diagram for 3-wire, Voltage output

The transducers listed below are designed for installation in a Class I, Division 1, Groups A, B, C and D, Division 1 hazardous location when connected to Associated Apparatus as described in note 1.

Entity Parameters
Vmax = 15.5Vdc
Imax = 175mA Imax is the total current available from the Associated
C1 = 0.44uf Apparatus under any condition.
L1 = 0

Notes:
1. Associated Apparatus shall provide intrinsically safe connections which meet the following parameters.
Voc or Vt ≤ Vmax Ca ≥ C1 + Cleads
Isc or It ≤ Imax La ≥ L1 + Lleads

2. Control Room apparatus shall not generate in excess of 250V (Umax).

3. Installation should be in accordance with Article 504 in the National Electrical Code, ANSI/NFPA 70.

CSA Approved Barrier Installation / A08949

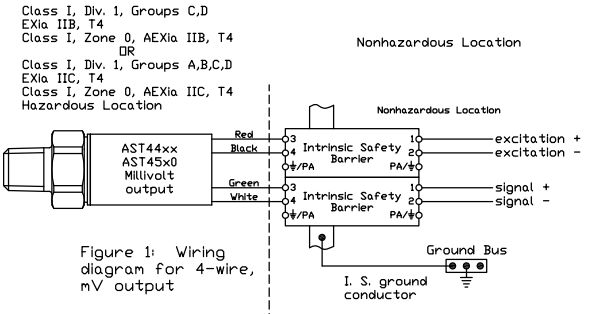

Figure 1: Wiring diagram for 4-wire, mV output

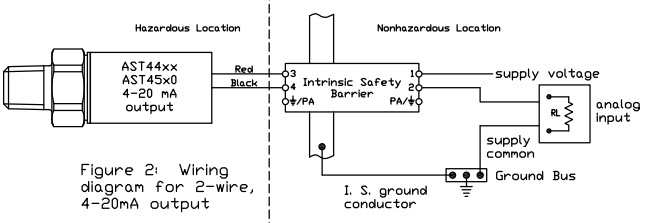

Figure 2: Wiring diagram for 2-wire, 4-20mA output

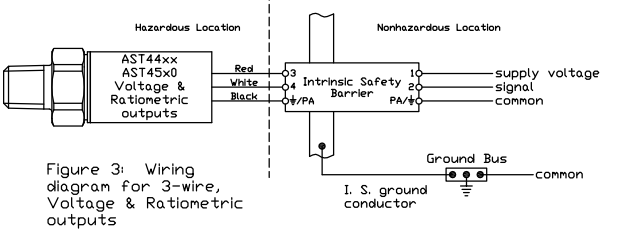

Figure 3: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

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
Vmax = 28Vdc

Model AST4401
Class I, Div. 1, Groups A,B,C,D; EXia IIC, T4; Class I, Zone 0, AEXia IIC, T4
Vmax = 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
Pmax = 625 mW	Pmax = 625 mW	Pmax = 625 mW	Pmax = 625 mW
Imax = 93 mA	Imax = 93 mA	Imax = 93 mA	Imax = 93 mA
Ci = 0.391 uF	Ci = 0.434 uF	Ci = 0.643 uF	Ci = 0.649 uF
Li = 0	Li = 155 uH	Li = 0	Li = 23.3 uH

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:

Voc or Uo <= Vmax Ca or Co >= Ci + Ccable
Isc or Io <= Imax La or Lo >= Li + Lcable
Po <= Pi (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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