

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

- ATEX / IECEx 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, min

**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



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/cm² 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= CSA157 Class I Div 1 Grps C, D Intrinsically Safe, 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

Pressure Ranges*

PSIG Measurement	-14.7 to 25**	Pressure Code	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

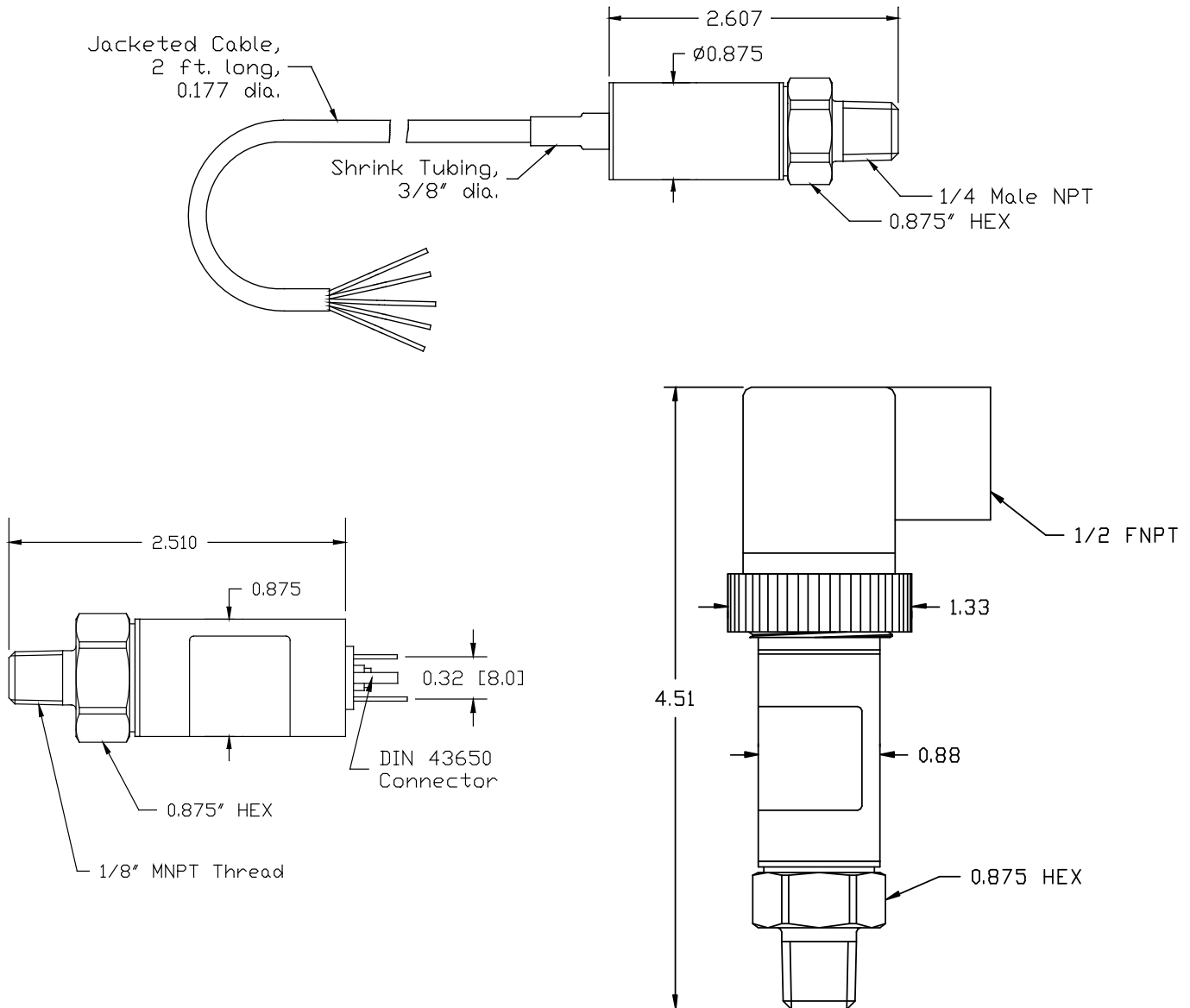
BARG Measurement	-1 to 2**	Pressure Code	V0002**
	0-2		00002
	0-5		00005
	0-7		00007
	0-10		00010
	0-20		00020
	0-35		00035
	0-50		00050
	0-100		00100
	0-250		00250
	0-350		00350
	0-500		00500
	0-700		00700

*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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AST4401

Pressure Transducer / Transmitter

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

Nonhazardous Location

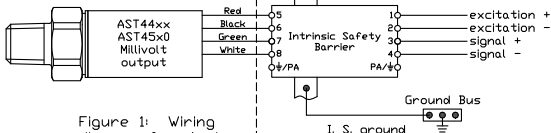


Figure 1: Wiring diagram for 4-wire, mV output

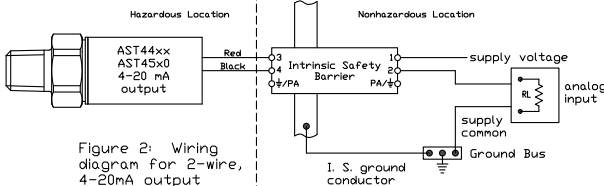


Figure 2: Wiring diagram for 2-wire, 4-20mA output

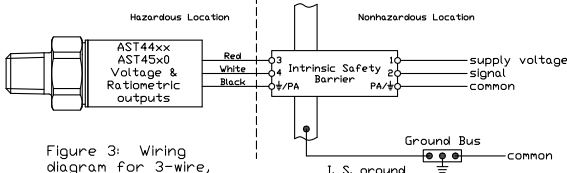


Figure 3: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

The transducers listed below are designed for installation in EITHER Class I, Division 1, Groups C,D; Class I, Zone 0 Group IIB DR 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
$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.391 \mu F$ $L_i = 0 \mu H$	$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.434 \mu F$ $L_i = 0 \mu H$	$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.643 \mu F$ $L_i = 0 \mu H$	$P_{max} = 651 mW$ $I_{max} = 93 mA$ $C_i = 0.649 \mu F$ $L_i = 0 \mu H$

IsC or Io is the total current available from the Associated Apparatus under any condition.

1. The following conditions must be satisfied:

- V_{oc} or $U_o \leq V_{max}$
- I_{sc} or $I_o \leq I_{max}$
- $P_o \leq P_i$ (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.

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

Nonhazardous Location

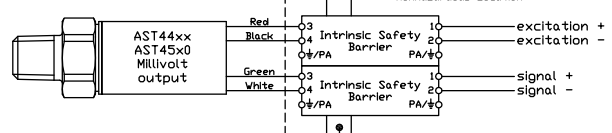


Figure 1: Wiring diagram for 4-wire, mV output

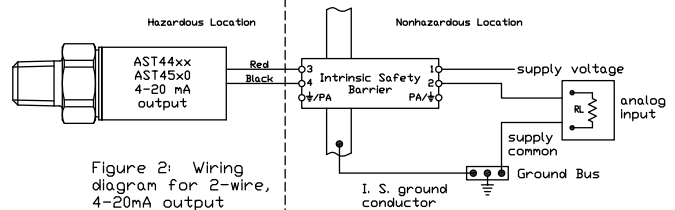


Figure 2: Wiring diagram for 2-wire, 4-20mA output

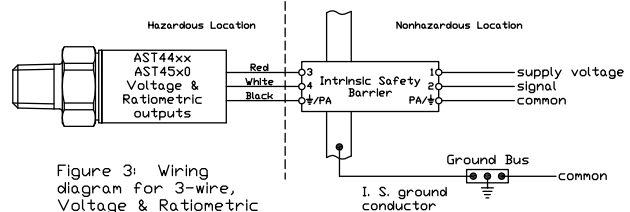


Figure 3: Wiring diagram for 3-wire, Voltage & Ratiometric outputs

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
$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.391 \mu F$ $L_i = 0$	$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.434 \mu F$ $L_i = 155 \mu H$	$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.643 \mu F$ $L_i = 0$	$P_{max} = 625 mW$ $I_{max} = 93 mA$ $C_i = 0.649 \mu F$ $L_i = 23.3 \mu H$

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} or $U_o \leq V_{max}$
- I_{sc} or $I_o \leq I_{max}$
- $P_o \leq P_i$ (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.