



EXPLOSION-PROOF

Pressure / Temperature Transmitter AST46PT

Overview

Applying digital compensation, the AST46PT offers top performance over hot and extremely cold temperatures. Having pressure and temperature at the same device can add safety and greater accuracy to overall system design at the fraction of the cost of an additional transmitter.

- CSA approved for use in hazardous areas including:
 - Explosion-proof – Sealed & Vented Gauge Pressure Transducer (up to 20,000 psi)
 - ✓ Class I, Division 1, Groups A, B, C and D T5;
 - ✓ Enclosure Type 4
 - ✓ Ex db IIC T5 Gb
 - ✓ Class I, Zone 1, AEx db IIC T5 Gb
 - Dust Ignition-proof – Sealed Gauge Pressure Transducer (up to 20,000 psi)
 - ✓ Class II, Division 1, Groups E, F and G T100°C;
 - ✓ Enclosure Type 4
 - ✓ Ex tb IIIC T100 °C Db
 - ✓ Zone 21, AEx tb IIIC T100°C Db

Applications

- Well Optimization
- Oil and Gas Pipelines
- Drilling Platforms
- Marine & Offshore
- CNG / Hydrogen Fill Stations
- Paint Booths
- Remote Telemetry Unit
- Cold Climate Drilling & Mining
- Panel Instrumentation

Benefits

- ANSI/ISA-12.27.01.2003 Certified “Single Seal” (no secondary seal required)
- ABS (American Bureau of Shipping) Approved
- ASIC Compensation
- Superb Temperature Performance | Wide Operating Temperature
- Excellent Accuracy
- High Proof and Burst Pressure
- Exotic Alloys Available (Inconel 718 or Hastelloy C276)

Environmental Data

Ambient Temperature: 25°C (77°F) (Unless otherwise specified)

Operating Ambient	-40 to 85°C (-40 to 185°F)
Operating Media	-40 to 125°C (-40 to 257°F)
Storage	-40 to 100°C (-40 to 212°F)

Electromagnetic Compatibility (EMC)

Standard	Description	Test Value
EN55011	Radiated Emissions	Class A, 30-1000 MHz
EN61000-4-2	Electrostatic Discharge Immunity	±8 kV Air Discharge ±4 kV Contact Discharge, VCP, HCP
EN61000-4-3	Radiated Electromagnetic Field Immunity	10V/m, 80-2700 MHz 80% 1kHz AM Modulation
EN61000-4-4	Electrical Fast Transient/Burst Immunity	±0.5 kV, ±1 kV, ±2 kV on DC Mains ±0.5 kV, ±1 kV on I/O Ports
EN61000-4-5	Surge Immunity	±0.5 kV, ±1 kV, on I/O Ports & DC Lines
EN61000-4-6	Conducted immunity	10V rms, 0.15-80 MHz, DC Mains 10V rms, 0.15-80 MHz, I/O Ports 80% 1kHz AM Modulation
EN61000-4-8	Power Frequency Magnetic Field Immunity Test	30 A/m @ (50Hz, 60Hz) 3 orthogonal orientations

Shock, Vibration & Ingress Protection (IP)

Standard	Description	Test Value
EN 60067-2-27	Shock Test	500m/s ² , 6ms, half sine-wave, 6 shocks (3/direction), horizontal and vertical axis, 12 total shocks
EN 60068-2-6	Sinusoidal Vibration	5-25 Hz, 2mm, 25-150 Hz, 50m/s, Sweep rate: 1 octave/min, Duration: 24 hours/axis (48 hours total), horizontal and vertical axis
EN 60068-2-64	Random Vibration	10-2000 Hz, vibration level: 0.0314 (m/s ²) ² /Hz, 24 hrs/axis (48 hrs total), 2 directions: horizontal and vertical
IEC 60068-2-32	Drop Test	Drop of 1 meter to floor made of concrete. Dropped twice on the threaded end and two times perpendicular to the threaded end.
IP-65 (Vented)	Ingress Protection	Dust-tight, protected against water jets
IP-66 (Factory Sealed)	Ingress Protection	Dust-tight, protected against powerful water jets

Performance

Ambient Temperature: 25°C (77°F) (Unless otherwise specified)

Parameters	MIN	TYP	MAX	UNITS	NOTES
Accuracy (Pressure)	-0.1		+0.1	%Span	1
Accuracy (Temperature)	-2.0		+2.0	%TEB	8
Zero Error	-0.5		+0.5	%Span	2
Span Error	-0.5		+0.5	%Span	3
Thermal Error, Zero	-0.5		+0.5	%Span	4
Thermal Error, Span	-0.5		+0.5	%Span	5
Stability (1 year)		±0.1		%Span	
Proof Pressure		2X Rated Pressure		psi	6
Burst Pressure		5X Rated Pressure or 20,000 (whichever is less)		psi	7
Compensated Temp. Range		-20 to 70° (-4 to 158°)		°C (°F)	

Electrical Data

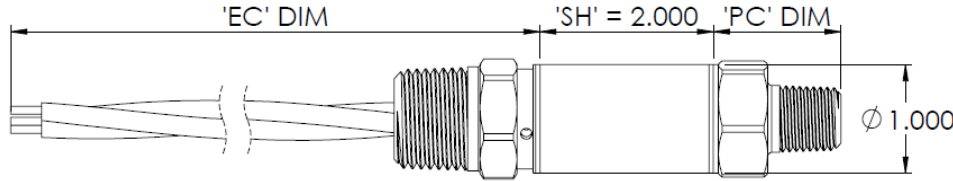
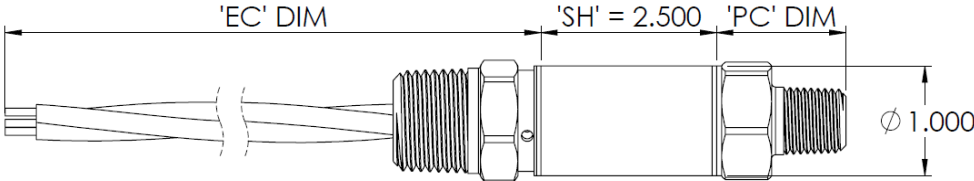
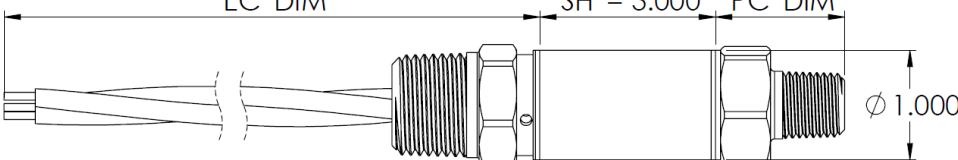
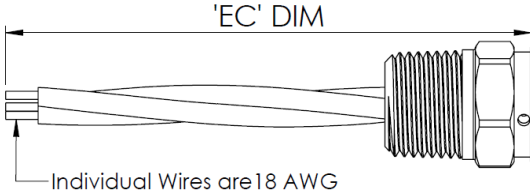
Model	AST46PT			
Output	4-20mA	0-5V, 1-5V, 1-6V	0-10V, 1-10V	0.5-4.5V Ratiometric
Excitation	10-28VDC	10-28VDC	15-28VDC	5.0 ± 0.5VDC
Output Impedance	> 10k Ω	< 100 Ω	< 100 Ω	< 100 Ω
Current Consumption	-	<10mA	<10mA	<10mA
Output Noise	-	<1mV, RMS	<1mV, RMS	<1mV, RMS
Output Load	0-800Ω	5k Ω, Min.	5k Ω, Min.	5k Ω, Min.
Reverse Polarity Protection	Yes	Yes	Yes	Yes
Sampling Rate	400Hz	400Hz	400Hz	400Hz

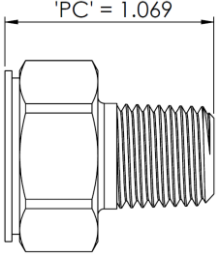
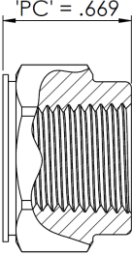
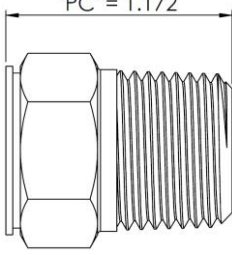
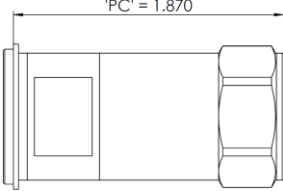
Notes

1. The maximum deviation from a best fit straight line (BFSL) fitted to the output measured over the pressure range at 25°C. Includes all errors due to pressure non-linearity, hysteresis, and non-repeatability. Span is the algebraic difference between full scale output and zero pressure offset.
2. The maximum variation from the ideal offset measured at 25°C.
3. The maximum variation from the ideal full-scale span measured at 25°C.
4. The maximum variation of offset within the compensated temperature range relative to 25°C.
5. The maximum variation of full-scale span within the compensated temperature range relative to 25°C.
6. The maximum pressure that can be safely applied to the product for it to remain in specification once pressure is returned to the operating pressure range.
7. The maximum pressure that can be applied without causing escape of the pressure media.
8. The deviation from a straight line fitted through the compensated temperature end points expressed a percentage of the temperature output range.

Dimensions & Electrical Connection

Unless otherwise specified, all dimensions are in inches

<i>EC + SH + PC = Total Nominal Product Length</i> 		Ranges 25 psi and Above EC = Electrical Connector SH = Sensor Housing PC = Process Connection V = Voltage Supply N/C = Not Connected WP = Wide Pin S = Signal																		
<i>EC + SH + PC = Total Nominal Product Length</i> 		Ranges Below 25 psi EC = Electrical Connector SH = Sensor Housing PC = Process Connection V = Voltage Supply N/C = Not Connected WP = Wide Pin S = Signal																		
<i>EC + SH + PC = Total Nominal Product Length</i> 		Ranges Below 25 psi Only Output 4 EC = Electrical Connector SH = Sensor Housing PC = Process Connection V = Voltage Supply N/C = Not Connected WP = Wide Pin S = Signal																		
Electrical Connectors Option Codes																				
Cable																				
T 2ft (0.6m)	U 4ft (1.2m)	W 6.6ft (2.0m)																		
<table><tr><th>Color</th><th>3 Wire Voltage</th><th>4-20mA*</th></tr><tr><td>Blue</td><td>Signal (Temperature)</td><td>+Temperature</td></tr><tr><td>Black</td><td>-Vsupply</td><td>-Pressure</td></tr><tr><td>Red</td><td>+Vsupply</td><td>+Pressure</td></tr><tr><td>White</td><td>Signal (Pressure)</td><td>-Temperature</td></tr><tr><td>Green</td><td>Case</td><td>Case</td></tr></table>		Color	3 Wire Voltage	4-20mA*	Blue	Signal (Temperature)	+Temperature	Black	-Vsupply	-Pressure	Red	+Vsupply	+Pressure	White	Signal (Pressure)	-Temperature	Green	Case	Case	
Color	3 Wire Voltage	4-20mA*																		
Blue	Signal (Temperature)	+Temperature																		
Black	-Vsupply	-Pressure																		
Red	+Vsupply	+Pressure																		
White	Signal (Pressure)	-Temperature																		
Green	Case	Case																		
*For units with loop-powered 4-20mA output, the pressure loop must be powered, or the temperature output will not operate.																				

Pressure Port Option Codes			
A 1/4 NPT Male	I 1/4 NPT Female	P 1/2 NPT Male	W F250C Female Autoclave
			

Legend	
✓	Standard Available
X	Not Available

Available Process Connection, Material Configurations & Pressure Codes

17-4PH psi

Pressure Range	Pressure Reference	Pressure Range Code	psi Unit	Process Connection Code			
				A	I	P	W
-14.7 - 25	V	0025	P	✓	✓	✓	X
-14.7 - 50	V	0050	P	✓	✓	✓	X
-14.7 - 100	V	0100	P	✓	✓	✓	X
-14.7 - 150	V	0150	P	✓	✓	✓	X
-14.7 - 200	V	0200	P	✓	✓	✓	X
-14.7 - 250	V	0250	P	✓	✓	✓	X
-14.7 - 500	V	0500	P	✓	✓	✓	X
0 - 25	G	0025	P	✓	✓	✓	X
0 - 50	G	0050	P	✓	✓	✓	X
0 - 100	G	0100	P	✓	✓	✓	X
0 - 150	G	0150	P	✓	✓	✓	X
0 - 200	G	0200	P	✓	✓	✓	X
0 - 250	G	0250	P	✓	✓	✓	X
0 - 500	G	0500	P	✓	✓	✓	X
0 - 1,000	0	1000	P	✓	✓	✓	X
0 - 2,500	0	2500	P	✓	✓	✓	X
0 - 5,000	0	5000	P	✓	✓	✓	X
0 - 7,500	0	7500	P	✓	✓	✓	X
0 - 10,000	1	0000	P	✓	✓	✓	X
0 - 15,000	1	5000	P	X	✓	✓	X
0 - 20,000	2	0000	P	X	X	X	✓

17-4PH Bar

Pressure Range	Pressure Reference	Pressure Range Code	BAR Unit	Process Connection Code			
				A	I	P	W
-1 to 2	V	0002	B	✓	✓	✓	X
-1 to 5	V	0005	B	✓	✓	✓	X
-1 to 7	V	0007	B	✓	✓	✓	X
-1 to 10	V	0010	B	✓	✓	✓	X
-1 to 20	V	0020	B	✓	✓	✓	X
0-2	G	0002	B	✓	✓	✓	X
0-5	G	0005	B	✓	✓	✓	X
0-7	G	0007	B	✓	✓	✓	X
0-10	G	0010	B	✓	✓	✓	X
0-20	G	0020	B	✓	✓	✓	X
0-35	0	0035	B	✓	✓	✓	X
0-50	0	0050	B	✓	✓	✓	X
0-100	0	0100	B	✓	✓	✓	X
0-250	0	0250	B	✓	✓	✓	X
0-350	0	0350	B	✓	✓	✓	X
0-500	0	0500	B	✓	✓	✓	X
0-700	0	0700	B	✓	✓	✓	X
0 - 1,000	0	0000	B	X	✓	✓	X

316L psi

Pressure Range	Pressure Reference	Pressure Range Code	psi Unit	Process Connection Code			
				A	I	P	W
0 - 1	G	0001	P	✓	X	✓	X
0 - 2.5**	G	0069	H	✓	X	✓	X
0 - 5	G	0005	P	✓	X	✓	X
0 - 7.5**	G	0208	H	✓	X	✓	X
0 - 10	G	0010	P	✓	X	✓	X
0 - 15	G	0015	P	✓	X	✓	X
-14.7 - 25	V	0025	P	✓	✓	✓	X
-14.7 - 50	V	0050	P	✓	✓	✓	X
-14.7 - 100	V	0100	P	✓	✓	✓	X
-14.7 - 150	V	0150	P	✓	✓	✓	X
-14.7 - 200	V	0200	P	✓	✓	✓	X
-14.7 - 250	V	0250	P	✓	✓	✓	X
-14.7 - 500	V	0500	P	✓	✓	✓	X
0 - 25	G	0025	P	✓	✓	✓	X
0 - 50	G	0050	P	✓	✓	✓	X
0 - 100	G	0100	P	✓	✓	✓	X
0 - 150	G	0150	P	✓	✓	✓	X
0 - 200	G	0200	P	✓	✓	✓	X
0 - 250	G	0250	P	✓	✓	✓	X
0 - 500	G	0500	P	✓	✓	✓	X
0 - 1,000	0	1000	P	✓	✓	✓	X
0 - 2,500	0	2500	P	✓	✓	✓	X
0 - 5,000	0	5000	P	✓	✓	✓	X
0 - 7,500	0	7500	P	✓	✓	✓	X
0 - 10,000	1	0000	P	✓	✓	✓	X
0 - 15,000	1	5000	P	X	✓	X	X
0 - 20,000	2	0000	P	X	X	X	✓

316L Bar

Pressure Range	Pressure Reference	Pressure Range Code	BAR Unit	Process Connection Code			
				A	I	P	W
-1 to 2	V	0002	B	✓	✓	✓	X
-1 to 5	V	0005	B	✓	✓	✓	X
-1 to 7	V	0007	B	✓	✓	✓	X
-1 to 10	V	0010	B	✓	✓	✓	X
-1 to 20	V	0020	B	✓	✓	✓	X
0-2	G	0002	B	✓	✓	✓	X
0-5	G	0005	B	✓	✓	✓	X
0-7	G	0007	B	✓	✓	✓	X
0-10	G	0010	B	✓	✓	✓	X
0-20	G	0020	B	✓	✓	✓	X
0-35	0	0035	B	✓	✓	✓	X
0-50	0	0050	B	✓	✓	✓	X
0-100	0	0100	B	✓	✓	✓	X
0-250	0	0250	B	✓	✓	✓	X
0-350	0	0350	B	✓	✓	✓	X
0-500	0	0500	B	✓	✓	✓	X
0-700	0	0700	B	✓	✓	✓	X
0-1000	0	0000	B	X	✓	X	X

Inconel psi

Pressure Range	Pressure Reference	Pressure Range Code	psi Unit	Process Connection Code			
				A	I	P	W
-14.7 - 25	V	0025	P	✓	X	✓	X
-14.7 - 50	V	0050	P	✓	X	✓	X
-14.7 - 100	V	0100	P	✓	X	✓	X
-14.7 - 150	V	0150	P	✓	X	✓	X
-14.7 - 200	V	0200	P	✓	X	✓	X
-14.7 - 250	V	0250	P	✓	X	✓	X
-14.7 - 500	V	0500	P	✓	X	✓	X
0 - 25	G	0025	P	✓	X	✓	X
0 - 50	G	0050	P	✓	X	✓	X
0 - 100	G	0100	P	✓	X	✓	X
0 - 150	G	0150	P	✓	X	✓	X
0 - 200	G	0200	P	✓	X	✓	X
0 - 250	G	0250	P	✓	X	✓	X
0 - 500	G	0500	P	✓	X	✓	X
0 - 1,000	0	1000	P	✓	X	✓	X
0 - 2,500	0	2500	P	✓	X	✓	X
0 - 5,000	0	5000	P	✓	X	✓	X
0 - 7,500	0	7500	P	✓	X	✓	X
0 - 10,000	1	0000	P	✓	X	✓	X
0 - 15,000	1	5000	P	X	✓	✓	X
0 - 20,000	2	0000	P	X	X	X	✓

Inconel Bar

Pressure Range	Pressure Reference	Pressure Range Code	BAR Unit	Process Connection Code			
				A	I	P	W
-1 to 2	V	0002	B	✓	X	✓	X
-1 to 5	V	0005	B	✓	X	✓	X
-1 to 7	V	0007	B	✓	X	✓	X
-1 to 10	V	0010	B	✓	X	✓	X
-1 to 20	V	0020	B	✓	X	✓	X
0-2	G	0002	B	✓	X	✓	X
0-5	G	0005	B	✓	X	✓	X
0-7	G	0007	B	✓	X	✓	X
0-10	G	0010	B	✓	X	✓	X
0-20	G	0020	B	✓	X	✓	X
0-35	0	0035	B	✓	X	✓	X
0-50	0	0050	B	✓	X	✓	X
0-100	0	0100	B	✓	X	✓	X
0-250	0	0250	B	✓	X	✓	X
0-350	0	0350	B	✓	X	✓	X
0-500	0	0500	B	✓	X	✓	X
0-700	0	0700	B	✓	X	✓	X
0 - 1,000	0	1000	B	X	X	✓	X

Hastelloy psi

Pressure Range	Pressure Reference	Pressure Range Code	psi Unit	Process Connection Code			
				A	I	P	W
0 - 1	G	0001	P	X	X	✓	X
0 - 10	G	0010	P	X	X	✓	X
0 - 15	G	0015	P	X	X	✓	X
-14.7 - 25	V	0025	P	✓	X	✓	X
-14.7 - 50	V	0050	P	✓	X	✓	X
-14.7 - 100	V	0100	P	✓	X	✓	X
-14.7 - 150	V	0150	P	✓	X	✓	X
-14.7 - 200	V	0200	P	✓	X	✓	X
-14.7 - 250	V	0250	P	✓	X	✓	X
-14.7 - 500	V	0500	P	✓	X	✓	X
0 - 25	G	0025	P	✓	X	✓	X
0 - 50	G	0050	P	✓	X	✓	X
0 - 100	G	0100	P	✓	X	✓	X
0 - 150	G	0150	P	✓	X	✓	X
0 - 200	G	0200	P	✓	X	✓	X
0 - 250	G	0250	P	✓	X	✓	X
0 - 500	G	0500	P	✓	X	✓	X
0 - 1,000	0	1000	P	✓	X	✓	X
0 - 2,500	0	2500	P	✓	X	✓	X
0 - 5,000	0	5000	P	✓	X	✓	X
0 - 7,500	0	7500	P	✓	X	✓	X
0 - 10,000	1	0000	P	✓	X	✓	X
0 - 15,000	1	5000	P	X	X	✓	X

Hastelloy Bar

Pressure Range	Pressure Reference	Pressure Range Code	BAR Unit	Process Connection Code			
				A	I	P	W
-1 to 2	V	0002	B	✓	X	✓	X
-1 to 5	V	0005	B	✓	X	✓	X
-1 to 7	V	0007	B	✓	X	✓	X
-1 to 10	V	0010	B	✓	X	✓	X
-1 to 20	V	0020	B	✓	X	✓	X
0-2	G	0002	B	✓	X	✓	X
0-5	G	0005	B	✓	X	✓	X
0-7	G	0007	B	✓	X	✓	X
0-10	G	0010	B	✓	X	✓	X
0-20	G	0020	B	✓	X	✓	X
0-35	0	0035	B	✓	X	✓	X
0-50	0	0050	B	✓	X	✓	X
0-100	0	0100	B	✓	X	✓	X
0-250	0	0250	B	✓	X	✓	X
0-350	0	0350	B	✓	X	✓	X
0-500	0	0500	B	✓	X	✓	X
0-700	0	0700	B	✓	X	✓	X
0 - 1,000	0	1000	B	X	X	✓	X

*See Ordering Information for list of options

 **Must be ordered in Inches of H₂O

Ordering Information

AST46PT	1	A	G	0500	P	3	T	1	H	000	-Z
Temperature Output 1= -40 to 85°C (-40 to 185°F) 4= -55 to 125°C (-67 to 250°F) 2= -40 to 125°C (-40 to 257°F) 5= -18 to 93°C (0-200°F) 3= 0 to 70°C (32 to 158°F)											
Process Connection A= 1/4" NPT Male I= 1/4" NPT Female P= 1/2" NPT Male W= F250C Female Autoclave											
Pressure Reference G= Gauge Pressure V= Gauge Pressure (Vacuum Calibrated) 0= Sealed Gauge (up to 9,999 psi) 1= Sealed Gauge (10,000 to 19,999 psi) 2= Sealed Gauge (20,000 psi)											
Pressure Range Insert Pressure Range Code (see table for availability)											
Pressure Unit B= Bar P= psi											
Output 1= 0.5-4.5V ratiometric 2= 0-5V 3= 1-5V 4= 4-20mA 5= 0-10V 6= 1-6V G= 1-10V											
Electrical Connection T= 2ft. 18 AWG wires U= 4ft. 18 AWG wires W= 2 Meter 18 AWG wires											
Wetted Material 0= 17-4PH 1= 316L 2= Inconel 718 4= Hastelloy C276											
Failure State H= High L= Low N= None											
Option Codes 000= No Options											
Approval Type											
Leave Blank	Class I, Division 1, Groups A, B, C and D T5; Class II, Division 1, Groups E, F and G T100°C; Enclosure Type 4 Ex db IIC T5 Gb Ex tb IIIC T100 °C Db Class I, Zone 1, AEx db IIC T5 Gb Zone 21, AEx tb IIIC T100°C Db (For Pressure Reference Code 0, 1 and 2)										
	Class I, Division 1, Groups A, B, C and D T5; Enclosure Type 4 Ex db IIC T5 Gb Class I, Zone 1, AEx db IIC T5 Gb (For Pressure Reference Code G and V) All configurations are ANSI/ISA 12.27.01 Single Seal Approved										
-Z	CRN Registered to ANSI/ASME B31.3. in addition to standard configuration approvals										

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

NORTH AMERICA

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

ASIA

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

TE.com/sensors

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