

AST5100 Wet / Wet

Low Differential Pressure Transmitter



Overview

The AST5100 Wet - Wet Differential Pressure Transmitter is your accurate pressure sensing device for low differential pressure. With a differential pressure range as low as 0 to 5" water column (12.5mbar), this product can be used to measure flow across an orifice, differential across a filter, tank level, or gauge pressure. Using LVDT technology and AST's advanced electronics, the AST5100 delivers accurate, repeatable measurements.

Benefits

- Accurate Low Pressure Measurement
- Excellent Repeatability
- Various Liquids and Gases including:
Water, Natural Gas, Hydrocarbon Fuels, Air and Non-Corrosive Gases

Applications

- Liquid Level Control including Bubbler systems
- Climate Control
- Energy Management
- Air-fuel Ratio including Measurement for Furnaces
- Vapor Recovery
- Leak Detection
- Air or liquid Filtration
- Flow Measurement

Wetted Materials

Nickel Alloy 52, Ni-Span C, Viton, 304 Stainless Steel, Aluminum 6061, RoHS Solder, Loctite 680 (meets NSF61)



Performance @ 25°C (77°F)	
Accuracy	<± 1.0% of FS
Stability	± 0.5%FS, typ
Line Pressure Max	200 PSI
Burst Pressure	2000 PSI
Pressure Cycles	>100,000 Cycles

Environmental Data	
Temperature Range	
Operating Range	-40 to 80°C (-40 to 175°F)
Storage Temperature	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
Temp. Comp. Zero	<±1.5%
Temp. Comp. Span	<±1.5%
Other	
Reverse Polarity	Yes

Electrical Data		
Output	0-5V Three Wire	4-20mA
Excitation	10-28VDC	10-28VDC
Output Change with Input Voltage Change	<0.1% from 10 to 32 VDC	-
Current Consumption:	< 10mA	-
Bandwidth	5Hz	5Hz
Output Noise:	< 1mV, RMS	< 0.0035mA, RMS
Zero Offset:	< ± 1% FS	< ± 1% FS
Span Tolerance:	< ± 1.5% FS	< ± 1.5% FS
Output Load:	5k Ohms, min.	0-800 Ohms@10-28 VDC



Ordering Information

AST5100 J 00050H 4 Y 5 000

Series Type

Process Connection
J= 1/8" Female NPT

Pressure Code (See Chart)

Pressure Unit
H= Inches H₂O
P= PSI

Outputs
2= 0-5V 3-wire
4= 4-20mA

Electrical
Y= M12x1 Eurofast Connector

Wetted Material
5= Nickel Alloy 52, Ni-Span C, Viton, 304 Stainless Steel,
Aluminum 6061, RoHSSolder, Loctite 680 (meets NSF61)

Options
000= No Special Options

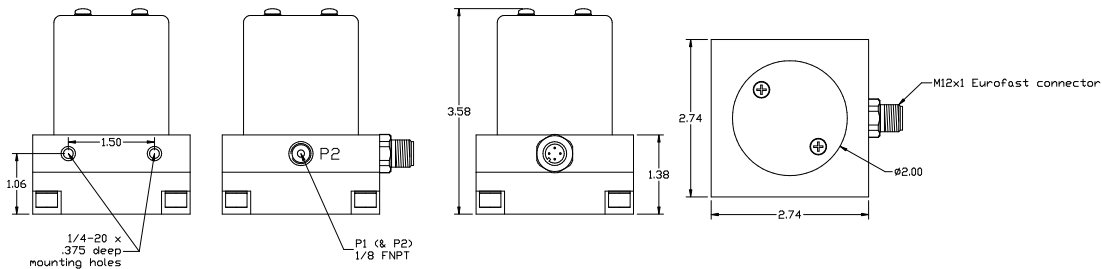
Mating PUR 22 AWG Cable Assembly	
Part Number	Cable Length
A10089	4 feet (1 m)
A10090	10 feet (4 m)

Pins	Conductor Colors	0-5V 3-wire	4-20mA
Pin 1	Brown	+V	+V
Pin 2	White	N/C	N/C
Pin 3	Blue	-V	-V
Pin 4	Black	V Out	N/C

Differential Pressure	Pressure Code	Proof Pressure (P1>P2)	Proof Pressure (P2>P1)
0-5 inch H ₂ O (12.5 mbar)	00005H	5 PSI	3 PSI
0-10 inch H ₂ O (25 mbar)	00010H	5 PSI	3 PSI
0-20 inch H ₂ O (50 mbar)	00020H	8 PSI	5 PSI
0-50 inch H ₂ O (125.5 mbar)	00050H	15 PSI	10 PSI
0-100 inch H ₂ O (249 mbar)	00100H	35 PSI	25 PSI
0-200 inch H ₂ O (498 mbar)	00200H	35 PSI	25 PSI
0-15 PSID (1034 mbar)	00015P	75 PSI	50 PSI

The over-pressure specification is the maximum pressure the AST5100 can see without damage. Any pressure applied over the listed numbers will likely damage the sensor and will, at minimum, cause a permanent zero shift. Over-pressure between 2X span and the numbers listed applied to port P1 will likely cause no permanent harm. Over-pressure of between 2X span and the numbers listed applied to port P2 may cause a temporary zero shift. To recover from a zero shift caused by negative over-pressure to P2 within the listed limits, apply a positive over-pressure P1 to just under the listed limit for a duration of 5 minutes. Remove the over-pressure and check the zero with no pressure applied. If the zero has not recovered, repeat the positive over-pressure and recheck zero. If it has not recovered after the second try, the zero has been permanently shifted. Contact the factory.

Dimensional Data



Installation Guidelines

The AST5100 must be mounted on a flat surface within $\pm 15^\circ$ to the ideal 0° plane to maintain specifications. Do not Overtighten the pressure connections or insert any objects in P1 or P2 to avoid damaging the sensing element. When using isolation valves, both should be mounted close to the sensor. For liquid level and wet applications, install bleed screw adapters close to P1 and P2 so that trapped air can be purged if needed. For optimum performance, always make sure pressure is equalized within the pressure range chart ranges. The AST5100 has asymmetric protection on P1 and P2.

Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.

Differential Pressure Transducer



AST5300

AST53ED

AST53EN

ISO9001:2008



The AST5300 offers low DP ranges in high line pressure with excellent burst pressure capabilities. The DP has no oil filled cavities and no internal o-rings to fail; making it ideal for food and beverage, oil & gas, pharmaceuticals, semiconductor industries and cold ambients.

Benefits

- Oil free - no containment issues
- Wide operating media temperature
- Wide range of media compatibility
- Compact size
- **Explosion Proof Rated**
 - CSA30 Class I Zone 1 Group IIC
 - Class I Division 1 Groups A, B, C, D
 - Class II, Division 1, Groups E, F and G
 - Class III Division 1
- **Non-Incendive Rated**
 - CSA213 Class I Division 2 Groups A, B, C, D
 - ANSI/ISA 12.27.01 Single Seal Device

Applications

- Flow measurement - liquids and gases
- High Purity Gases
- Tank level monitoring
- Ballast measurement
- Filtration
- Cryogenics

Environmental Data

Temperature

Operating	-40 to 85°C (-40° to 185°F)
Storage	-55 to 120°C (-67° to 248°F)
Media	-55 to 125°C (-67° to 257°F)
Compensated Range	-5 to 65°C (23° to 149°F)
TC Zero	<± 0.5% (-5 to 65°C) of FS
TC Span	<± 0.5% (-5 to 65°C) of FS

Performance @ 25°C (77°F) [% of FS]

Line Pressure	1,500 PSI
Burst Pressure	5,000 PSI
Linearity	<± 0.2%
Stability	<± 0.5%
Zero Offset (10 to 30°C)	<± 1.0%
Zero Offset (-40 to 85°C)	<± 3.0%
Span Tolerance	<± 0.2%

Electrical Data

Output	0-5V, 1-5 Three Wire	4-20mA	0.5-4.5V Ratiometric
Excitation	10-28VDC	10-28VDC	5VDC, reg
Current Consumption:	5mA, typ	-	5mA, typ
Output Load:	10k Ohms	0-800 Ohms	10k Ohms
Reverse Polarity Protection	Yes	Yes	Yes



Ordering Information

AST53 **00** **DP** **0010** **P** **4** **M** **8** **000**

Series Type

Approval

00= OEM
ED= Explosion proof
EN= Non-Incendive

Mounting / Pressure Connection

DP= Threaded Fittings (1/4" FNPT)

Differential Pressure

0010= 10 PSI

Pressure Unit

P= PSI

Output

1= 0.5-4.5V ratiometric
2= 0-5V (3-wire)
3= 1-5V
4= 4-20mA

Electrical Connection (see table)

Subject to Approval Type Selected

Wetted Material

8= 316L & Inconel x750

Options

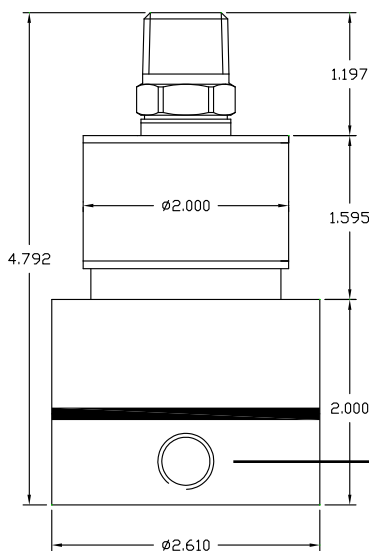
00= No Special Options

Electrical Connection Table		00	ED	EN
I	DIN 43650-A	*		*
M	Conduit, 4ft.	*		*
N	Conduit, 6ft.	*		*
R	6-Pin Bendix PT06	*		
T	Conduit, 18AWG, 24 in		*	
U	Conduit, 18AWG, 48 in		*	
W	Conduit, 18AWG, 2m		*	
Y	Turck M12 4-Pin Eurofast	*		

The line pressure specification is the maximum pressure the AST5300 can see without damage. Any pressure applied over the listed number will likely damage the transducer and will, at minimum, cause a permanent zero shift. Line pressure should be applied evenly to both ports during start up and shut down. A Line pressure of 500 psi or less can be applied to one pressure port with the other port at 0psi and will not cause a zero shift of the output. Pressure above 500 PSI to one side may cause a temporary zero shift.

To recover from a zero shift caused by negative over-pressure to "L" (low / downstream process connection) within the listed limits, apply a positive over-pressure "H" (high / upstream process connection) to 1,450 PSI for a duration of five minutes. Remove the over-pressure and check the zero with no pressure applied. If the zero has not recovered, repeat the positive over-pressure and recheck zero. If it has not recovered after the second try, the zero has been permanently shifted. Contact the factory.

Dimensional Data



Process Connections

DP = 1/4" FNPT

H = high / upstream pressure

L = low / downstream pressure

For warranty information, please visit: www.astensors.com

AST5400 Differential

Pressure Transducer



Overview

The AST5400 differential pressure (DP) transducer can measure line pressures up to 5,000 PSI with a turndown ratio of 15 to 1. Using Krystal Bond™ Technology, the AST5400 contains no silicone oil, O-rings, or welds. This MEMS pressure sensor technology completely isolates the media to the pressure ports, thus eliminating contamination risk. The low strain level on the diaphragm results in accurate, repeatable measurements. The AST5400 can be used to measure differential pressure across a filter, monitor level in a sealed or vented tank, or calculate flow across an orifice plate.

With its digital compensation, this series offers excellent linearity and performance over temperature. The electronics now offer a fail safe condition on the output signal. If the transducer were to experience a fault condition, the transducer can be programmed to rail the output signal to 10% below the minimum or 10% above maximum output signal to notify the user of an issue and protect the system from undesirable conditions. The AST5400 also offers excellent flexibility in its configuration, allowing for a variety of wetted materials and pressure ports.



Benefits

- Krystal Bond™ Technology
- ASIC compensation
- Turndown capability
- Both or either pressure port can see full line pressure - **No expensive balancing valves required!**
- Line pressure up to 5,000 PSI
- Smart electronics with failure condition protection
- Wide variety of materials for a variety of media

Applications

- Aerospace
- Analytical Instruments
- Fuel Systems
- Hydraulics
- Hydrogen (316L only)
- Labs / Metrology
- Medical
- Military
- Test Stands
- Desalination Equipment (Inconel718 Recommended)

Performance @ 25°C (77°F)

Total Error Band*	<± 1% of Line Pressure
Maximum Line Pressure	5,000 PSI (350 Bar)
Proof Pressure**	2X Line pressure
Burst Pressure	5X Line pressure
Pressure Cycles	> 100 Million

*Typical Values shown; Combined effects of Zero Offset, Span Tolerance, Thermal Zero, Thermal Span, Non-linearity, Repeatability and Hysteresis. **For higher line pressures, contact factory.

Environmental Data

Temperature

Operating	-20 to 70°C (-4 to 158°F)
Storage	-50 to 125°C (-58 to 250°F)

Thermal Performance

Compensated Temp. Range	-20 to 70°C (-4 to 158°F)
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Other

Shock:	100G, 10msec, 1/2 sine
EMI/RFI Rating:	Yes
Vibration:	10G peak, 20 to 2000Hz
IP Class:	IP-66; IP-67 Optional

Electrical Data

Output	1-5V, 0-5V	1-6V, 1-10V, 0-10V	0.5-4.5V Ratiometric	4-20mA (three wire)
Excitation	10-28VDC	15-28VDC	5VDC, Regulated	10-28VDC
Current Consumption	< 15mA	< 15mA	< 15mA	-
Sampling Rate	200Hz	200Hz	200Hz	200Hz
Output Noise	< 1mV, RMS	< 1mV, RMS	< 1mV, RMS	< 1mV, RMS
Output Load	5k Ohms, min.	5k Ohms, min.	5k Ohms, min.	0-800 Ohms@10-28VDC
Reverse Polarity Protection	Yes	Yes	Yes	Yes



Ordering Information

5400 F 01000 P 5 Y 0 0500 H 00

Series Type

Process Connection
 A= 1/4" Male NPT
 B= 1/8" Male NPT
 F= 7/16-20 UNF Male
 R= 7/16-20 UNF Female

Line Pressure
 Insert 5 -digit code from chart

Pressure Unit
 P= PSI B= BAR, K= kg/cm2

Outputs
 1= 0.5-4.5V ratiometric [5VDC Supply] 5= 0-10V
 2= 0-5V 6= 1-6V
 3= 1-5V G= 1-10V
 4= 4-20mA

Electrical
 A= 2 ft. (24 AWG) (0.6m) I= DIN43650 A
 B= 4 ft. (24 AWG) (1.2m) L= Conduit 2 ft. (0.6m)
 C= 6 ft (24 AWG) R= 6 Pin Bendix
 D= 10 ft (24 AWG) Y= M12x1 Eurofast
 E= Mini DIN 43650C

Wetted Material
 0= 17-4PH 1= 316L 2= Inconel718 (contact factory for availability)

Differential Pressure
 Insert 4-digit code from Chart

Fail Condition
 N= Not Specified H= Fail High L= Fail Low

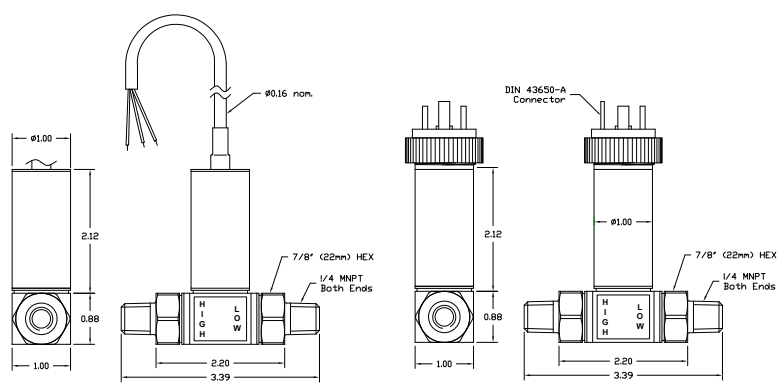
Options
 00= No Special Options

Line Pressure*

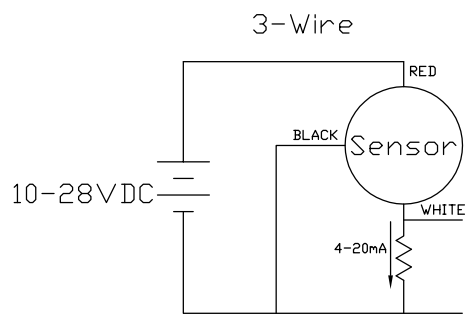
		50	100	300	500	1,000	2,000	5,000
	CODE	00050	00100	00300	00500	01000	02000	05000
Differential Pressure* (PSID)	10	0010	✓	✓				
	20	0020	✓	✓	✓			
	50	0050		✓	✓	✓		
	75	0075		✓	✓	✓	✓	
	100	0100		✓	✓	✓	✓	
	150	0150			✓	✓	✓	
	200	0200			✓	✓	✓	✓
	300	0300			✓	✓	✓	
	500	0500				✓	✓	✓
	750	0750					✓	✓
1,000	1000						✓	
2,000	2000						✓	
5,000	5000							✓

*Other ranges available; contact factory.

Dimensional Data



4-20mA Wiring Schematic



Warranty

Workmanship - AST, Inc. pressure transmitters have a limited one-year warranty to the original purchaser. AST, Inc. will replace or repair, free of charge, any defective transmitter. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST's sensors are made with pride in New Jersey, USA. If in the area please feel free to stop by for a visit!

Installation/Applications - The purchaser is responsible for media compatibility, functional adequacy, and correct installation of the transmitter.