AST4500 & AST4510 *Class 1 Div 1, Groups C and D with Approved Barrier*

Submersible Stainless Steel Media Isolated Pressure Sensor

Overview

The AST4500 and AST4510 submersible level sensors are approved to UL/cUL913 (CSA 157) Class I Div 1, Groups C and D for use in intrinsically safe areas with an approved barrier. For pressure ranges from 0-1 to 0-100 PSI that require a wide range of media compatibility, the submersible series is an excellent solution to level monitoring for indoor and outdoor applications. The AST4500 and AST4510 level sensors are completely sealed for submersion, yet vented through the cable to correct for barometric pressure changes. The welded housing is tested in-house via a helium leak tester to ensure proper protection. The conductors of the cable are also isolated from the outside environment to keep the sensor operational for long-term use. With a removable nose cone, the AST4500 and AST4510 series can be also be installed outside of the tank through a 1/4" NPT pipe connection. In this configuration, the sensor continuously monitors the tank level through a threaded connection outside the tank, yet remains fully submersible for applications with flood prone environments or severe wash-down conditions. Available with voltage or 4-20mA output signals, AST can provide a cost effective solution for level monitoring for a variety of applications.

Benefits

- High Strength Stainless Steel Construction
- No Internal O-rings
- Wide Operating Temperature Range
- Ranges up to 100 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- Rugged Design
- Survives Harsh Environments
- Compatible with Wide Range of Liquids
- EMI/RFI Protection

Applications

- Ground Water Level Measurement
- Earthen & Concrete Dams
- Liquid Tanks
- Gasoline & Diesel Fuel Tanks
- Irrigation
- Waste Water Canals

Performance @ 25°C (77°F)

Accuracy*	< ±0.25% BFSL (<±0.5% BFSL for 0-1 PSI)
Stability (1 year)	±0.25% FS, typical
Over range Protection	2X Rated Pressure
Burst Pressure	5X or 1,250 PSI (whichever is less)
Pressure Cycles	> 50 Million

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

Environmental Data

Temperature	
Operating	-40 to 85°C (-40 to 185°F)
Storage	-40 to 100°C (-40 to 212°F)
Thermal Limits	
Compensated Range	0 to 55°C (30 to 130°F)
TC Zero	<±1.5% of FS (<±2.5%, typ. for 1PSI)
TC Span	<±1.5% of FS (<±2.5%, typ. for 1PSI)
Other	
Shock	100G, 11 msec, 1/2 sine
Vibration	10G peak, 20 to 2000 Hz.
EMI/RFI Protection:	Yes
Rating:	IP-68

Electrical Data

Output	**4-20mA**	**1-5VDC**
Excitation	10-28VDC	10-28VDC
Output Impedance	>10k Ohms	<100 Ohms, Nominal
Current Consumption:	20mA, typical	5mA, typical
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz
Output Noise:	-	<2mV RMS
Zero Offset:	<±1% of FS (<±4% 1PSI)	<±1% of FS (<±4% 1PSI)
Span Tolerance:	<±2% of FS (<±4% 1PSI)	<±1.5% of FS (<±4% 1PSI)
Output Load:	0-800 Ohms@10-28VDC	10k Ohms, min
Reverse Polarity Protection	Yes	Yes

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Ordering Information

AST4510 L 00005 P 4 C 1 000

Series Type

Configuration Interface
L = Cone

Pressure Range
Insert 5-digit pressure range code

Pressure Unit
B = Bar K = kg/cm2
H= Inches H_2O P = PSI

Outputs
3 = 1-5V
4 = 4-20mA

Electrical[+]
C = 6 ft. (1.8 m)
D = 10 ft. (3 m)
X = Optional Length (see options)

Wetted Material
1 = 316L / 304 / Hytrel

Options Cable Lengths:

140 = 15 ft. (4.6 m)	004 = 35 ft. (10.7 m)	003 = 100 ft. (30.5 m)
075 = 20 ft. (6.1 m)	130 = 40 ft. (12.2 m)	050 = 150 ft. (45.7 m)
074 = 25 ft. (7.6 m)	065 = 50 ft. (15.2 m)	

[+] Wiring information available at: *http://www.astsensors.com/mediacenter.php*

Pressure Ranges

AST4500

Gage PSIG	Pressure Range Code	Feet of Water Column @ 4°C (approx.)
0-100	00100	230.67
0-50	00050	115.33
0-30	00030	69.20
0-20	00020	46.13

AST4510

0-15	00015	34.60
0-10	00010	23.07
0-7.5	00208*	17.30
0-5	00005	11.53
0-2.5	00069*	5.77
0-1	00001	2.31

Typical Ranges. All ranges between 0-1 PSI and 0-100 PSI are available. Please consult factory. *2.5 and 7.5 PSI Sensor must be ordered in inches of H_2O.

Barrier Installation

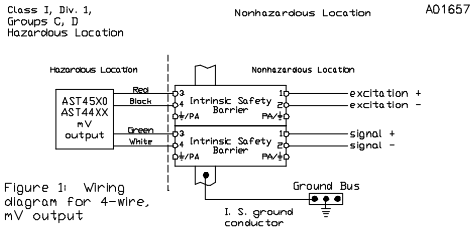


Figure 1: Wiring diagram for 4-wire, mV output

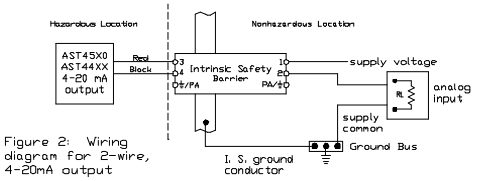


Figure 2: Wiring diagram for 2-wire, 4-20mA output

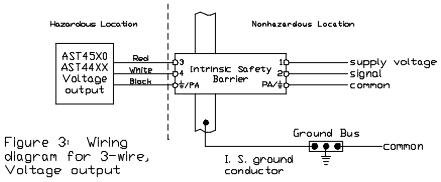


Figure 3: Wiring diagram for 3-wire, Voltage output

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

Entity Parameters
Vmax = 28Vdc
Imax = 175mA
Ci = 0.44uf
Li = 0

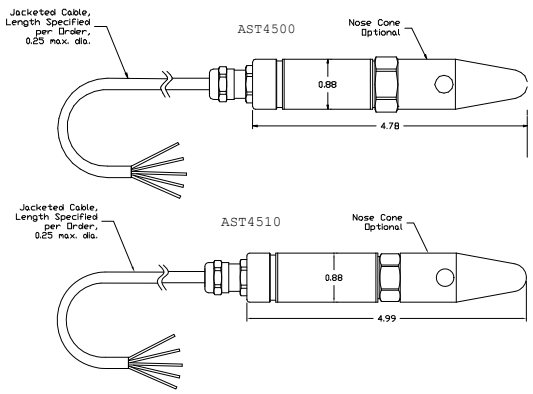
Imax is the total current available from the Associated Apparatus under any condition.

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

2. Control Room aparatus 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.

Dimensional Data



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. All units returned for warranty evaluation must be thoroughly cleaned and free of process residue prior to shipment. Units that are not properly cleaned will be discarded and warranty service will be denied. This warranty does not apply to any units that have been modified; misused, neglected or installed where the application exceeds published ratings. AST4510 is not recommended for use with hydrogen. 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. The nose cone is installed on the sensor with Loctite®. To remove, hold the sensor by the hex with a wrench. Put a screwdriver through both holes of the nose cone and turn counterclockwise. The level sensor will have a 1/4" NPT Male pressure port.