

# AST4500 & AST4510 Submersible Stainless Steel Media Isolated Pressure Sensor

CSA Approved For Hazardous Locations with Approved Barrier

## Overview

The AST4500 and AST4510 submersible pressure sensors are approved to CSA 157 Class 1 Div 1, Groups C and D for use in intrinsically safe areas with an approved barrier. For pressure ranges from 0-2.5 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.

## Benefits

- **ANSI/ISA - 12.27.01.2003 Certified "Single Seal"**  
(No need for expensive secondary seal)
- **CSA 157 Class 1 Div 1 Groups C, D IS** with approved Barrier (page 2)
- 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
- 500VAC Isolation

## Applications

- Ground Water Level Depth Measurement
- Earthen & Concrete Dams
- [Liquid Tanks \(p.39\)](#)
- Gasoline & Diesel Fuel Tanks
- Irrigation
- Waste Water Canals

## Performance @ 25°C (77°F)

Accuracy*	< ± 0.25% BFSL
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
TC Span	<±1.5% of FS

### 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	<10mA
Bandwidth	(-3dB): DC to 250 Hz	(-3dB): DC to 1kHz
Output Noise	-	<2mV RMS
Zero Offset	<±1% of FS	<±1% of FS
Span Tolerance	<±2% of FS	<±1.5% of FS
Output Load	0-800 Ohms@10-28VDC	10k Ohms, min
Reverse Polarity Protection	Yes	Yes

## Ordering Information

**AST4510 L 00005 P 4 C 1 000 -SS**

### Series Type

### Configuration Interface

L = Cone

### Pressure Range

Insert 5-digit pressure range code

### Pressure Unit

B = Bar K = kg/cm<sup>2</sup>  
H = Inches H<sub>2</sub>O P = PSI

### Outputs

1 = 0.5-4.5V ratiometric  
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

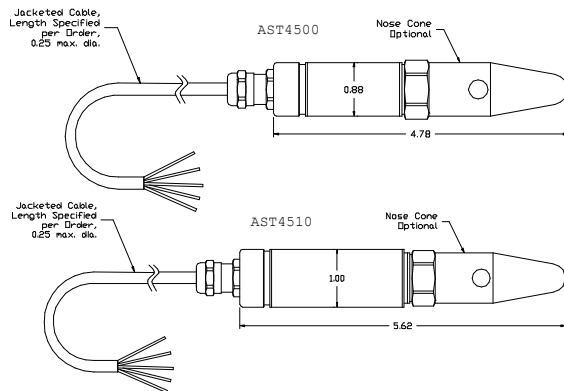
1 = 316L Hytrel

### 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)

### Single Seal

## Dimensional Data



Output	Red	Black	White	Green
4-20mA	+V Supply	Ground	N/C	Case GND
3W Voltage	+V Supply	Ground	+ Signal	Case GND

## 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.

## Pressure Ranges\*

AST4500	Gage PSIG	Pressure Range Code
	0-100	00100
	0-50	00050
	0-30	00030
	0-20	00020

AST4510	Gage PSIG	Pressure Range Code
	0-15	00015
	0-10	00010
	0-7.5	00208**
	0-5	00005

	Gage PSIG	Pressure Range Code
	0-2.5	00069**

\*Typical Ranges. All ranges between 0-2.5 PSI and 0-100 PSI are available. Please consult factory.

\*\*2.5 and 7.5 PSI Sensor must be ordered in inches of H<sub>2</sub>O.

## Barrier Installation

Class I, Div. 1, Groups C, D Nonhazardous Location A08949  
Hazardous Location

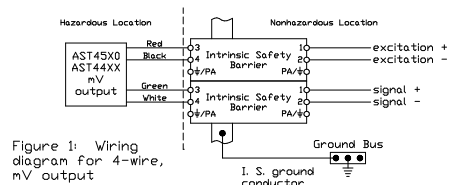


Figure 1: Wiring diagram for 4-wire, mV output

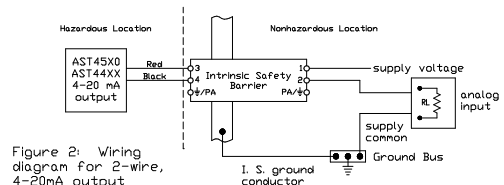


Figure 2: Wiring diagram for 2-wire, 4-20mA output

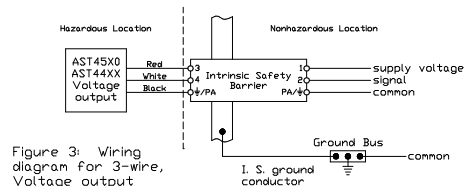


Figure 3: Wiring diagram for 3-wire, Voltage output

### Entity Parameters

Models AST4400, AST4410 and AST44LP	Models AST4400, AST4410 and AST44P with integral cable	Models AST4500, AST4510 and AST4520
V <sub>max</sub> = 28 Vdc I <sub>max</sub> = 175 mA C <sub>i</sub> = 0.45 uF L <sub>i</sub> = 0	V <sub>max</sub> = 28 Vdc I <sub>max</sub> = 175 mA C <sub>i</sub> = 0.45 uF L <sub>i</sub> = 1.32 uH	V <sub>max</sub> = 28 Vdc I <sub>max</sub> = 175 mA C <sub>i</sub> = 0.46 uF L <sub>i</sub> = 16.3 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.

Barrier parameters must meet the following requirements:

$$V_{oc} \text{ or } U_o \leq V_{max} \quad C_a \text{ or } C_o \geq C_i + C_{cable}$$

$$I_{sc} \text{ or } I_o \leq I_{max} \quad L_a \text{ or } L_o \geq L_i + L_{cable}$$

$$P_o \leq P_i \text{ (if applicable)}$$

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.

The following conditions must be satisfied:

$$V_{oc} \text{ or } U_o \leq V_{max} \quad C_a \text{ or } C_o \geq C_i + C_{cable}$$

$$I_{sc} \text{ or } I_o \leq I_{max} \quad L_a \text{ or } L_o \geq L_i + L_{cable}$$

$$P_o \leq P_i \text{ (if applicable)}$$

3. Maximum non-hazardous area voltage must not exceed 250 V.

4. Installation should be in accordance with Canadian Electrical Code, Part I.

5. 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.