Overview

The AST4500 and AST4510 submersible liquid 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. It is also certified for ATEX / IECEx Class I Zone 0 Exia IIB T4 Ga (Ta = -40°C to +80°C). 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
- Pressures up to 100 PSI
- Low Static and Thermal Errors
- Unparalleled Price and Performance
- New Conduit Fitting at Electrical Connection
- Survives Harsh Environments
- Compatible with Wide Variety of Liquids
- EMI/RFI Protection
- ABS (American Bureau of Shipping) Approved

Applications

- Ground Water Level
- Bio-Fuels
- Salt Water Holding Tanks
- Gasoline & Diesel Fuel Tanks
- Fertilizer Tanks
- Earthen & Concrete Dams
- Irrigation Equipment
- Ballast Tanks
- Oil Tanks
- Waste Water Canals

Performance @ 25°C (77°F)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>&lt; ±0.25% BFSL (&lt;±0.5% BFSL for 0-1 PSI)</td>
</tr>
<tr>
<td>Stability (1 year)</td>
<td>±0.25% FS, typical</td>
</tr>
<tr>
<td>Over Range Protection</td>
<td>2X Rated Pressure</td>
</tr>
<tr>
<td>Burst Pressure</td>
<td>5X or 1,250 PSI (whichever is less)</td>
</tr>
<tr>
<td>Pressure Cycles</td>
<td>&gt;50 Million</td>
</tr>
</tbody>
</table>

Environmental Data

Temperature

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating</td>
<td>-40 to 80°C (-40 to 176°F)</td>
</tr>
<tr>
<td>Storage</td>
<td>-40 to 100°C (-40 to 212°F)</td>
</tr>
<tr>
<td></td>
<td>0-100% relative humidity, non-condensing</td>
</tr>
</tbody>
</table>

Thermal Limits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensated Range</td>
<td>0 to 55°C (32 to 132°F)</td>
</tr>
<tr>
<td>TC Zero</td>
<td>&lt;±1.5% of FS (&lt;±2.5%, typ. for 1PSI)</td>
</tr>
<tr>
<td>TC Span</td>
<td>&lt;±1.5% of FS (&lt;±2.5%, typ. for 1PSI)</td>
</tr>
</tbody>
</table>
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 (<±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

Dimensions
### UL Approved Barrier Installation / A01657

#### Class I, Div. 1, Groups C, D
- Class I, Zone 0, Ex d ia IIB T4
- Class I, Zone 0, Ex ia IIB T4

#### Class I, Div. 1, Groups A, B, C, D
- Class I, Zone 0, Ex ia IIC T4

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#### CSA Approved Barrier Installation / A08949

#### Class I, Div. 1, Groups C, D
- Exia IIB, T4
- Exia IIC, T4

#### Class I, Zone 0, Ex ia IIB, T4

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#### Notes:
1. **The transducers listed below are designed for installation in EITHER Class I, Division I, Groups C, D, Class I, Zone 0, Group IIB OR Class I, Division I, Groups A, B, C, D, Class I, Zone 0, Group IIC hazardous locations when connected to Associated Apparatus as described in note I.**
2. **Entity Parameters**
   - **Models**: AST4500, AST4500P, AST4500L, AST4500S, AST4520, AST4520S
   - **Class**: 1, Div. 1, Groups C, D; Class I, Zone 0, Ex ia IIB T4; Class I, Zone 0, Ex ia IIC T4
   - **Vmax**: 28VDC
   - **4-20mA with integral integral cable connector**: 4-20mA with integral connector up to 1000 ft. of integral cable
   - **Input Voltage**: 565 mV
   - **Input Current**: 92 mA
   - **Input Impedance**: 6643 Ω
   - **Input Voltage**: 6649 Ω
   - **Input Current**: 6649 Ω
   - **Input Impedance**: 6649 Ω
   - **Input Voltage**: 6649 Ω
   - **Input Current**: 6649 Ω
   - **Input Impedance**: 6649 Ω
   - **Condition**: Li = 0 Ω
   - **Condition**: Li = 0 Ω
   - **Condition**: Li = 0 Ω
   - **Condition**: Li = 0 Ω

3. **Control Room apparatus shall not generate in excess of 250V (rms).**

4. **Maximum non-hazardous zone voltage shall 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/NEPA 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 to a grounded shorted delta 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.**
# Ordering Information

## AST4510

### Series Type

<table>
<thead>
<tr>
<th>L</th>
<th>00005</th>
<th>P</th>
<th>4</th>
<th>N</th>
<th>1</th>
<th>000</th>
<th>-SS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L= Cone</td>
<td>A= 1/4” NPT Male</td>
<td>P= 1/2” MNPT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Pressure Range

Insert 5-digit pressure range code. Ranges between 0-1 PSI and 0-100 PSI available. *2.5 and 7.5 PSI Sensor must be ordered in inches of H2O.

<table>
<thead>
<tr>
<th>PSIG</th>
<th>Pressure Code</th>
<th>Feet of Water Column @ 4ºC (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>00100</td>
<td>230.07</td>
</tr>
<tr>
<td>0-50</td>
<td>00050</td>
<td>115.33</td>
</tr>
<tr>
<td>0-30</td>
<td>00030</td>
<td>59.20</td>
</tr>
<tr>
<td>0-20</td>
<td>00020</td>
<td>46.13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PSIG</th>
<th>Pressure Code</th>
<th>Feet of Water Column @ 4ºC (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-15</td>
<td>00015</td>
<td>34.60</td>
</tr>
<tr>
<td>0-10</td>
<td>00010</td>
<td>23.07</td>
</tr>
<tr>
<td>0-7.5*</td>
<td>00008*</td>
<td>17.30</td>
</tr>
<tr>
<td>0-5</td>
<td>00005</td>
<td>11.53</td>
</tr>
<tr>
<td>0-2.5*</td>
<td>00002*</td>
<td>5.77</td>
</tr>
<tr>
<td>0-1</td>
<td>00001</td>
<td>2.31</td>
</tr>
</tbody>
</table>

### Pressure Unit

B= Bar | K= kg/cm² | H= Inches H2O | P= PSI

### Outputs

*Contact factory for 0.5-2.5V non-ratiometric (3-5VDC)*

3= 1-5V | 4= 4-20mA (2 wire loop powered)

### Electrical

| N= Conduit fitting, Cable 6 ft. |
| P= Conduit fitting, Cable 10 ft. |
| X= Optional Length (see options) |

### Wetted Material

1= 316L / 304 / Hytrel Cable / Kynar Cord Grip

### Options (Cable Lengths):

| 140= 15 ft. (4.6 m) | 130= 40 ft. (12.2 m) |
| 075= 20 ft. (6.1 m) | 065= 50 ft. (15.2 m) |
| 074= 25 ft. (7.6 m) | 03= 100 ft. (30.5 m) |
| 004= 35 ft. (10.7 m) | 050= 150 ft. (45.7 m) |

### Approval

(Left Blank)= UL ANSI/ISA 12.12.01 Class I Div 1 Intrinsically Safe Groups C, D (formelry UL913)

-SS= CSA157 Class I Div 1 1 Grp C, D Intrinsically Safe, ANSI/ISA 12.27.01 Single Seal and ATEX/IECEx Exia IIC Class I, Zone 0, T4

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

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