SUBMERSIBLE
Flush Diaphragm Liquid Level Sensor
AST4520

Overview
The AST4520 Flush Submersible liquid level sensor is the cost effective solution for level monitoring of turbulent tanks with viscous media. Approved to UL/cUL913 Class 1 Division 1 IS, Groups C and D with an approved barrier, the product ensures a safe, reliable source for level measurement. The AST4520 is also certified to ATEX / IECEx Class I Zone 0 Exia IIB T4 Ga (Ta = -40°C to +80°C).

The AST4520 is offered with pressure ranges from 0-2.5 to 0-15 PSIG. The AST4520 steel cage front end design allows for proper flow of liquids while keeping the sensor at the bottom of the tank or well. With an engraved stainless steel housing and Kynar PVDF cable, this sensor is built to handle the toughest environments.

Benefits
- Engraved Housing
- Protective Steel Cage Assembly
- Kynar PVDF Cable
- Compatible with Wide Variety of Chemicals
- Ruggedly Designed for Harsh Waste Water Environments
- Suitable for Waste, Salt, Brackish, or Fresh Water Systems
- EMI/RFI and Reverse Polarity Protection
- Lightning and Surge Protection
- Competitively Priced for OEM Applications
- ABS (American Bureau of Shipping) Approved
Applications
- ABS (American Bureau of Shipping) Approved
- Lift Stations - Wastewater, Storm Water, Industrial Applications
- Food Tanks
- Viscous Media Tanks
- Heavy Oil

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

Environmental Data

Temperature
- Operating: -40 to 80°C (-40 to 176°F)
- Storage: -40 to 100°C (-40 to 212°F)
0-100% relative humidity, non-condensing

Thermal Limits
- Compensated Range: 0 to 55°C (32 to 132°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**

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

**Dimensions**

[Diagram of the sensor dimensions]
UL Approved Barrier Installation / A01657

The transducers listed below are designed for installation in either Class I, Division 1, Groups C,D, or Class I, Zone 0. The user must ensure the suitability of the equipment for the application.

Entity Parameters

Model: AST4000, AST440P, AST4300, AST4500, AST4600
Class I, Groups C,D; Class I, Zone 0 Ex is IIIB T4; Class I, Zone 0 ACx is IIIB T4
Vmax = 28V

Model: AST440P
Class I, Groups C,D; Class I, Zone 0 Ex is IIIC T4; Class I, Zone 0 ACx is IIIC T4
Vmax = 145V

Model: AST4600
Class I, Div. 1, Groups A,B,C; Class I, Zone 0 Ex is IIIC T4; Class I, Zone 0 ACx is IIIC T4
Vmax = 28V

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Sensor Solutions / AST4520

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CSA Approved Barrier Installation / A08949

The transducers listed below are designed for installation in either Class I, Division 1, Groups C,D, or Class I, Zone 0. The user must ensure the suitability of the equipment for the application.

Entity Parameters

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Class I, Div. 1, Groups C,D; Class I, Zone 0 Ex is IIIB T4; Class I, Zone 0 ACx is IIIB T4
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Model: AST440P
Class I, Div. 1, Groups A,B,C; Class I, Zone 0 Ex is IIIC T4; Class I, Zone 0 ACx is IIIC T4
Vmax = 145V

Model: AST4600
Class I, Div. 1, Groups A,B,C; Class I, Zone 0 Ex is IIIC T4; Class I, Zone 0 ACx is IIIC T4
Vmax = 28V

4-20mA with integral connector
4-20mA with integral connector
All EXCEPT 4-20mA with integral connector
All EXCEPT 4-20mA with integral connector

1. The following conditions must be satisfied:

- Vnom or Vnom > |Eac| or |Ebc| > |Eca| + 50cmf
- La or Lo > L1 + L2 + Lcapacitive

2. The maximum total customer cable length for 4-20mA transmitters is 4000 ft. The total customer cable length for all other transmitters is not to exceed 500 ft.

3. 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/NFPA 70.
AST4520

Series Type
Y= G1/2 with steel cage
T= G1/2 flush diaphragm without steel cage

Process Connection

Pressure Range
Insert 5-digit pressure range code. Ranges between 0-2.5 PSI and 0-15 PSI available. *2.5 and 7.5 PSI Sensor must be ordered in inches of H2O.

<table>
<thead>
<tr>
<th>Pressure Code</th>
<th>Feet of Water Column (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>00015</td>
<td>34.38</td>
</tr>
<tr>
<td>00010</td>
<td>23.07</td>
</tr>
<tr>
<td>00208*</td>
<td>17.30</td>
</tr>
<tr>
<td>00005</td>
<td>11.53</td>
</tr>
<tr>
<td>00069*</td>
<td>5.77</td>
</tr>
</tbody>
</table>

Pressure Unit
H= Inches H2O P= PSI

Outputs
(Contract factory for 0.5-2.5V non-ratiometric (3-5VDC)
3= 1-5V
4= 4-20mA (2 wire loop powered)

Electrical
X= Optional Length (see options)

Wetted Material
1= 316L Sensor / 304 SS Housing / Kynar Cable

Options (Cable Lengths):
353 = 25 ft. (7.62 m)
354 = 50 ft. (15.24 m)
355 = 75 ft. (22.86 m)

Approval
(Left Blank)= UL ANSI/ISA 12.12.01 Class I Div 1 Intrinsically Safe Groups C, D (formerly UL913)
-SS= CSA167 Class I Div 1 Grps 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

NORTHER AMERICA
American Sensor Technologies, Inc. (AST), a TE Connectivity Company
Tel: 1 800-522-6752
Email: customercare.molvable@te.com

ASIA
Hong Kong Sensor Technologies (HKST), a TE Connectivity Company
Tel: 86 0400-820-6015
Email: customercare.shzn@te.com

TE.com/sensorsolutions
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