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# COMPACT MAGNETOSTRICTIVE LIQUID LEVEL TRANSMITTER FOR DIRECT INSERTION

## Model AT500

### FEATURES:

- Mounts from Top of Tank
- High Resolution 4-20 mA DC Output
- Simple Mounting and installation
- Very Compact Design
- Calibrates Without Opening Enclosure
- Stainless Steel Enclosure
- Custom Floats Available
- Measurement of Total or Interface Level

### SPECIFICATIONS

#### Electronic Transmitter

Repeatability	.01% of full scale or 0.030", whichever is greater
Non-linearity	.02% of full scale or .07", whichever is greater
Accuracy	.02% of full scale or .10", whichever is greater
Loop Supply Voltage	13.5 to 36 VDC
Housing Type	Explosion proof 316L SS with 1/2" FNPT Electrical Connection
Polarity Protection	Diode in series with loop
Output	Standard 4-20 mA DC Calibration via magnets
Failsafe	Field Selectable: Upscale or Downscale
Operating Temperature	Electronics -40 to 170°F (-40 to 77°C) Ambient
Humidity	0-100% R.H. non-condensing
Electrical Connection	1/2" FNPT Standard; M20 Optional
Enclosure Rating	IP67

#### Sensor Tube

Material	316/316L Stainless Steel, 5/8" OD
Operating Temperature	-40 to 170°F / -40 to 77°C <b>Standard</b> Up to 250°F / 121°C with 10" extension (H1)
Max Pressure	1800 psig @ 250°F <b>Standard</b> 124.1 bar @ 121°C <b>Standard</b>
Measuring Range	1 to 16 ft. / 0.3 to 4.8 m
Mounting	Standard 3/4" MNPT compression fitting (refer to ordering information for options)

#### Approvals



#### Factory Mutual Research Corporation:

XP/II/1/ABCD/T6 Ta=77°C; I/1/AEx d IIC/T6 Ta=77°C;  
DIP / II ,III / 1 / EFG / T6 Ta=77°C  
IS/II/1/ABCD/T4 Ta=77°C; I/0/AEx ia IIC/T4 Ta=77°C-ELE 0035/NC; Entity;  
NI/II/2/ABCD/T4 Ta=77°C; S/II,III/2/FG/T5 Ta=77°C; NEMA 4X

#### CSA International:

##### Hazardous Locations

Class I, Div. 1, Grps A,B,C,D; Class II, Div. 1, Grps E,F,G; Class III;  
Class I, Zone 1, Ex d, IIC T6:

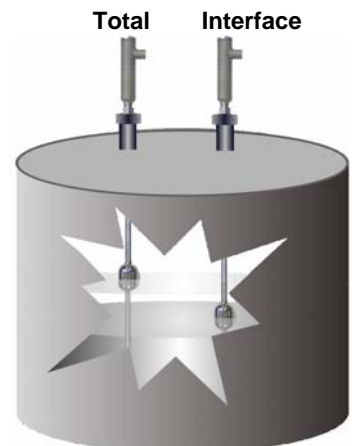
##### Intrinsically Safe Entity - For Hazardous Locations:

Class I, Div. 1, Grps A,B,C,D, Temp. Code T4;  
Class I, Zone 0, Ex ia IIC T4 when installed per drawing ELE0035,  
Max. operating temp. 77°C, Encl. Type 4X.

#### ATEX:

Flameproof: EX II 1/2 GD T85C EEx d IIC T6  
Intrinsically Safe: EX II 1 GD T85C EEX ia IIC T6  
Third Party Certified Safety Integrity Level (SIL) data (FMEDA analysis) for Safety Instrument Systems engineering is available.

Safety



AT500 Sample Applications  
Total and Interface  
Measurement

**ORDERING INFORMATION**

**AT500/a/b/c/d/e/f/g/h/i/j:**

- /a Probe Material**  
**S6** 316L Stainless Steel **Standard**
- /b Transmitter configuration**  
**L** Local Transmitter **Standard**
- /c Transmitter Housing**  
**S** 316L Stainless Steel Housing **Standard**
- /d Probe Type**  
**R1** Rigid Probe 5/8 in. O.D. (16 ft./ 4.87m maximum probe length) **Standard**  
**SW1** 1/2" OD Probe for Insertion into 5/8" OD x 0.049" Wall Sensor Well  
Note: Specify and order sensor well separately.  
**SW2** 5/8" OD Probe for Insertion into 3/4" Sch. 40 or Sch. 80 Sensor Well  
Note: Specify and order sensor well separately.
- /e Process Temperature Options**  
**H0** 170°F / 77°C Maximum **Standard**  
**H1** 250°F / 121°C. Maximum (Top of transmitter is 17 in. / 43 cm above tank nozzle)
- /f Electrical Connection**  
**F5** 1/2 in. FNPT **Standard**  
**M2** M20 Connection  
**RF** RFI Filter with 1/2 in. MNPT connection and flying leads
- /g Approvals**  
**FM** Factory Mutual and CSA Canadian Standard Association  
**CEI** ATEX Intrinsically Safe  
**CEX** ATEX Flameproof  
**AAR** AAR Association of American Railroad Certification with FM Approval
- /h Process Connection**  
**CF** 3/4 in. MNPT x adjustable compression fitting **Standard**  
**FL** Flange with 3/4 in. NPT tap shipped loose; Specify from chart FLNG-0202-1.
- /i Float Type**  
**Fnn** Selection from Standard Float Chart (FLT-0202-1) F1B, F2B, F17B, F15B **Standard**  
 or specify /FXX for custom float
- /j Length**  
**L** Standard lengths:  

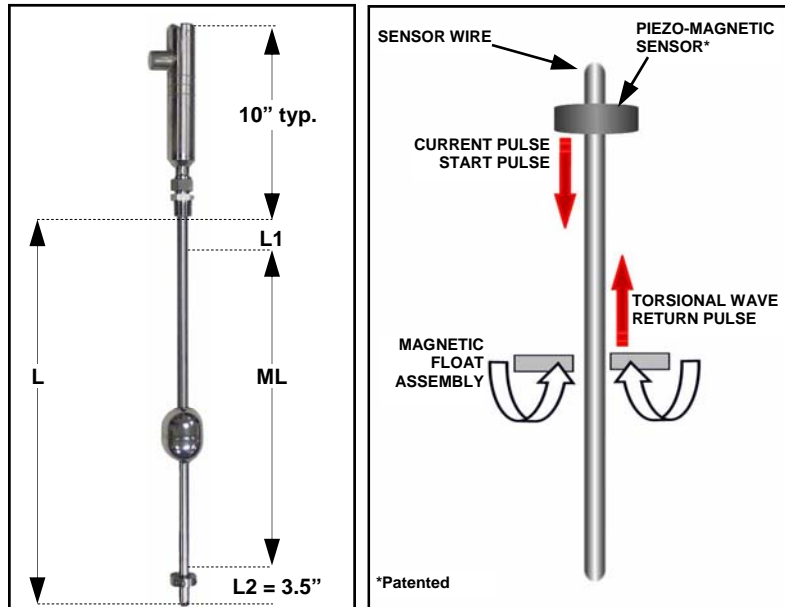
15.5 in. / 394 mm	27.5 in. / 698 mm	39.5 in. / 1003 mm
51.5 in. / 1308 mm	63.5 in. / 1613 mm	75.5 in. / 1918 mm
87.5 in. / 2222 mm	99.5 in. / 2527 mm	111.5 in. / 2832 mm
123.5 in. / 3137 mm	135.5 in. / 3442 mm	147.5 in. / 3746 mm

 Custom Lengths to 16 ft. / 4876 mm specified in inches or millimeters



**PRINCIPLE OF OPERATION:**

The AT500 is based upon the magnetostrictive principle. The sensing tube contains a wire which is pulsed at fixed time intervals. The interaction of the current pulse with the magnetic field created by the magnetic float causes a torsional stress wave to be induced in the wire. This torsion propagates along the wire at a known velocity, from the position of the magnetic float and toward both ends of the wire. A patented piezo-magnetic sensing element placed in the transmitter assembly converts the received mechanical torsion into an electrical return pulse. The microprocessor-based electronics measures the elapsed time between the start and return pulses and converts it into a 4-20 mA output which is proportional to the level being measured.



**DIMENSIONS**

**PRINCIPLE OF OPERATION**

