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COMPACT MAGNETOSTRICTIVE LIQUID LEVEL TRANSMITTER FOR DIRECT INSERTION

Model AT500

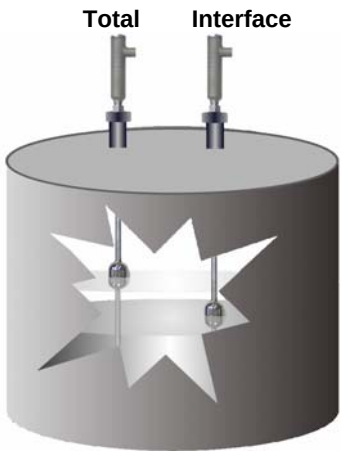
FEATURES

- **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 170ºF (-40 to 77ºC) Ambient
Humidity	0-100% R.H. non-condensing
Electrical Connection	1/2” FNPT Standard; M20 Optional
Enclosure Rating	IP67



AT500 Sample Applications
Total and Interface
Measurement

SPECIFICATIONS

Sensor Tube

Material	316/316L Stainless Steel, 5/8" OD
Operating Temperature	-40 to 170ºF / -40 to 77ºC **Standard** Up to 250ºF / 121ºC with 10" extension (H1)
Max Pressure	1800 psig @ 250ºF **Standard** 124.1 bar @ 121ºC **Standard**
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/I/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/I/1/ABCD/T4 Ta=77°C; I/0/AEx ia IIC/T4 Ta=77°C-ELE 0035/NC; Entity;
NI/I/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

GOST Russia:
Flameproof: 1ExdIICT6
Intrinsically Safe: 0ExiaIICT6

Ingress protection classification: IP67

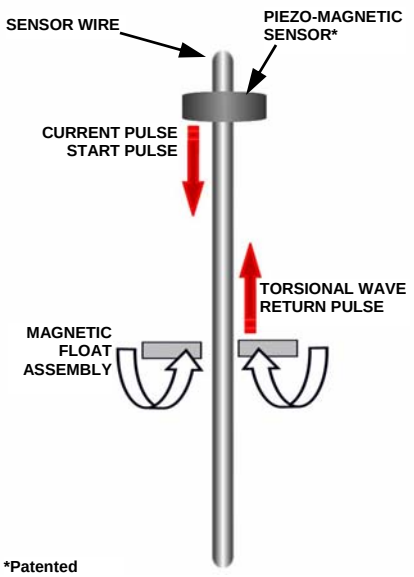
Safety — Third Party Certified Safety Integrity Level (SIL) data (FMEDA analysis) for Safety Instrument Systems engineering is available.

PRINCIPLE OF OPERATION

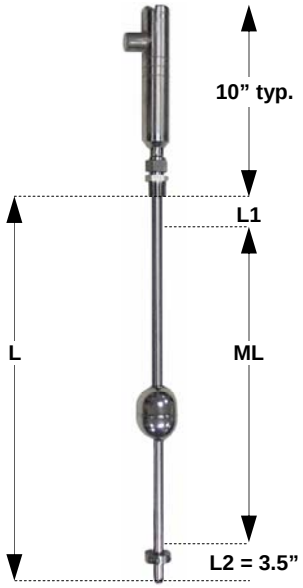
The AT500 is based upon the magnetostrictive principle. The sensing tube contains a wire which is pulsed at fixed time intervals. The interaction of the current pulse with the magnetic field created by the magnetic float causes a torsional stress wave to be induced in the wire. This torsion propagates 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.

AT500 Components

Principle of Operation



Dimensions



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	170ºF / 77ºC Maximum **Standard**
	H1	250ºF / 121ºC. 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
	GR	GOST Russia
	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 Flange Selection chart (SLG-0001-1).

/i **Float Type**

	Fnn	Selection from Standard Float Chart (SLG-0003-1) 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		

Available Accessories

CD	Centering Disk: specify stilling well inside diameter
M20 ISO FITTING	M20 Connection
CONHEA4F	3 pin female cable connector with weatherproof cap rated for general purpose & intrinsically applications only.
CONHEA4M	3 pin male cable connector with weatherproof cap rated for customers cable at loading station. General purpose & intrinsically safe applications only.

ORDERING INFORMATION for QuikShips

Quick Shipment is available (see models below). The AT500 Application Data Sheet must be provided with the Purchase Order to ensure a 1-5 working day shipment. When ordering replacement transmitters, please provide the serial number from the existing transmitter. Incomplete inquiries will not be processed. No deviation from the QuikShip configuration will be accepted. Please replace the word "float" with one of the following AT100 QuikShip floats: F1B, F2B, F17B OR F15B. Replace the word "approval" with the appropriate approval.

QS#		
AT500QS1	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /13.125"	Pre-cut Standard Insertion Length
AT500QS2	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /25.125"	Pre-cut Standard Insertion Length
AT500QS3	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /37.125"	Pre-cut Standard Insertion Length
AT500QS4	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /49.125"	Pre-cut Standard Insertion Length
AT500QS5	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /61.125"	Pre-cut Standard Insertion Length
AT500QS6	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /73.125"	Pre-cut Standard Insertion Length
AT500QS7	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /85.125"	Pre-cut Standard Insertion Length
AT500QS8	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /97.125"	Pre-cut Standard Insertion Length
AT500QS9	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /109.125"	Pre-cut Standard Insertion Length
AT500QS10	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /121.125"	Pre-cut Standard Insertion Length
AT500QS11	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /133.125"	Pre-cut Standard Insertion Length
AT500QS12	AT500/S6/L/S/R1/H0/F5/ approval /CF/ float /145.125"	Pre-cut Standard Insertion Length

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