SANITARY
HIGH ACCURACY MAGNETOSTRICTIVE LEVEL TRANSMITTER

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Model AT100S

FEATURES

- **High Accuracy: .01% of Full Scale**
- **Single & Double Tri-Clamp Installations**
- **Suitable for CIP & SIP Applications**
- **180 Grit Polish Standard**
- **Simple Calibration: Pushbutton or HART Protocol**
- **Never Requires Re-Calibration: Set It & Forget It**
- **Dual Compartment Housing with Separate Field Terminal Compartment**
- **No Drift Due To:**
  - **Dielectric Constant Changes**
  - **Vapor Composition Changes**
  - **Temperature Changes**
  - **Pressure Changes**
- **Loop Powered to 50' (15M) Probe Length**
- **Total or Interface Level Measurement**
- **Pressure to 3000psig (207 bar), Std. 950 psig (66 bar)**
- **Temperature Range: -320 to 450º F (-196 to 232ºC) with options**
- **Field Replaceable Module - No Recalibration Necessary**
- **Built In RFI / EMI Filter**

OPTIONS:

- **Local Indication with Scrolling LCD Display**
- **240 Grit & Electropolished Finish**
- **21 Segment Strapping Table**
- **Temperature Output**
- **HART Protocol, Foundation Fieldbus Output or Honeywell DE Output**
- **Glass Viewing Window**
- **316L Stainless Steel Enclosure**
- **Flexible Waveguide for Low Headroom Applications**

SPECIFICATIONS

Electronic Transmitter

Housing type	Explosion Proof Epoxy Coated Cast Aluminum, Dual Compartment Std. Optional 316L Stainless Steel, Dual Compartment
Repeatability	.005% of full scale or 0.015", whichever is greater
Non-Linearity	.01% of full scale or .035", whichever is greater
Accuracy	.01% of full scale or 0.05", whichever is greater
Loop Supply Voltage	13.5 to 36 VDC
Polarity Protection	Diode in series with loop
Output	Standard 4-20 mAdc Manual field calibration via pushbuttons HART protocol (optional) Foundation Fieldbus (optional) ITK4.01 Compliant (pending - contact Factory) Honeywell DE (optional)
Dampening	Field adjustable by means of pushbuttons. Range: 0.1 to 36 seconds
Burnout	Jumper selectable upscale (21 mAdc) or downscale (3.6mAdc)
Temperature	-40 to 170ºF (-40 to 77ºC) Ambient
Humidity	0 to 100% R.H., non-condensing

SPECIFICATIONS (continued)

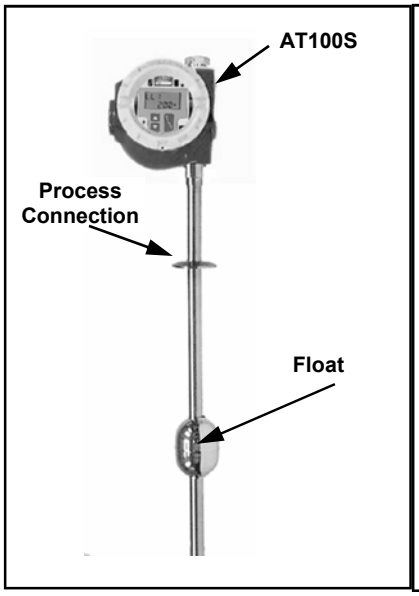
Sensor tube

Material	316L Stainless Steel standard. Alloy 20, Hastelloy C-276, Teflon Jacketed 316L SS & Electro-Polish optional
Operating Temperature	-40 to 170ºF (-40 to 77ºC) Standard. Options available for temperatures up to 800ºF (427ºC)
Maximum Pressure	950 psig @ 300ºF (66.8 kg/cm^2 @ 149ºC); 3000 psig (210 kg/cm^2) with options
Measuring Range	1 to 50 feet
Mounting	Tri-Clamp fitting standard; Refer to ordering information for options.
Approvals	**FM Factory Mutual Research Corp and CSA Canadian Standards Association Hazardous Locations (excludes Foundation Fieldbus option):** XP / I / 1 / ABCD / T6; DIP / II, III / 1 / EFG / T6 (excludes Probe F1) IS / I / 1 / CD / T4 —ELE0001 / A (excludes RI analog output & D HART option) NI / I / 2 / ABCD / T4 **TYPE 4X** **CENELEC (excludes Foundation Fieldbus option):** **Flameproof:** EEx d IIC T6 (excludes Probe F1) **Intrinsically Safe:** EEX ia IIB T6 (excludes RI analog output & D HART option) **Ingress protection classification:** IP67

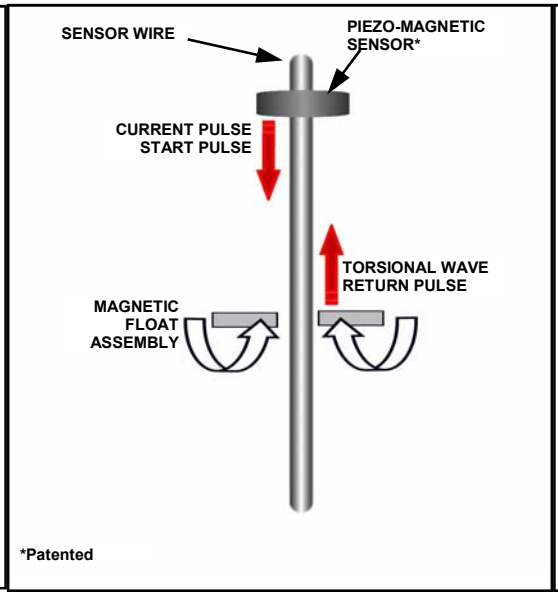
PRINCIPLE OF OPERATION:

The AT100S is based upon the magnetostrictive principle. The sensing tube contains a wire which is pulsed at fixed time intervals and 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.

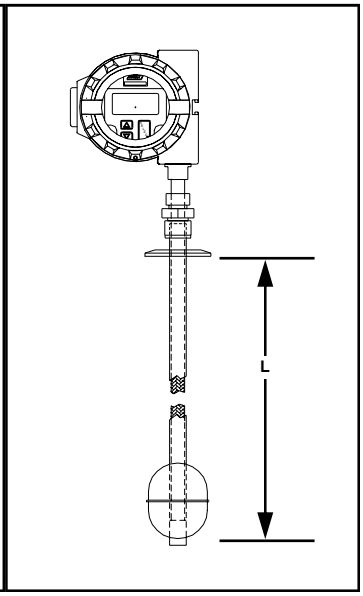
AT100S Components



PRINCIPLE OF OPERATION



AT100S DIMENSIONS



ORDERING INFORMATION:

AT100S/a/b/c/d/e/f/g/h/l/j/k/l:

/a Probe Material

/S6	316L Stainless Steel Standard

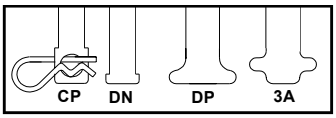
/b Transmitter Configuration

/L	Standard Local Transmitter
/LW	Standard Local Transmitter with Window Cover
/T	Local Transmitter with Top Access or Readout
/TW	Local Transmitter with Top Access or Readout and Window Cover
/C	Offset Transmitter with Vapor Seal for Service Below Ambient
/CW	Offset Transmitter with Vapor Seal for Service Below Ambient and Window Cover

/c Transmitter Housing

/A	Standard Dual Compartment Aluminum Housing
/S	Dual Compartment 316L Stainless Steel Housing

/d Probe Type



/3A	3A Approved Sensor with Non-Removable Float (approval pending)
/DP	Drain in Place Sensor with Non-Removable Float
/CP	Clean in Place with Float Retaining Clip
/DN	Drain in Place, No Through Hole, No Float Retainer
/SW1	1/2" OD Probe for Insertion into 5/8" OD x 0.049" Wall Sensor Well Note: Order sanitary sensor well separately (SWS-0202-1)
/SW3	1/2" OD Flexible SS Braided Probe for insertion into 5/8" OD x 0.49" wall Sensor Well Notes: 1. (Max 300ºF / 149ºC @ 1 hour Clean.) 2. 15 ft. / 4.5 m maximum probe length. 3. Available with /S6 probe material only. 4. Not suitable for explosion proof service. 5. Probe is not hermetically sealed. For use in conditioned (non-condensing) indoor locations only. 6. Not available with H1 or H2 process temperature option. 7. Order sanitary sensor well separately (SWS-0202-1)

/e Probe Finish

/X	None, use this selection with /SW1 & /SW3 probe types.
/1F	Standard 180 Grit Finish (Suitable for 3A Service)
/2F	240 Grit Finish
/EP	240 Grit and Electropolished

/f Process Temperature Options

/H0	170ºF / 77ºC Maximum; Top of transmitter is 8" / 20 cm above tank nozzle Note: Max 300ºF / 149ºC @ 1 hour Clean
/H1	250ºF / 121ºC Maximum; Top of transmitter is 16" / 40.6 cm above tank nozzle Note: Max 300ºF / 149ºC @ 1 hour Clean
/H2	450ºF / 232ºC Maximum; Top of transmitter is 26" / 66 cm above tank nozzle

ORDERING INFORMATION:

/g Electronic Module With 1 ea. Analog Output:

/X	None
/M1	One level
/M2	One level, LCD indicator
/M3	One level, HART Protocol, Foundation Fieldbus or Honeywell DE Protocol*
/M4A	One level, LCD indicator, HART Protocol, Foundation Fieldbus or Honeywell DE Protocol* * Default is HART Add "D" suffix to module option for Honeywell DE (class 0 support) Add "F" suffix to module option for Foundation Fieldbus ITK 4.01 compliant (pending) Add "S" suffix to module option for 20 Segment Strapping Table (not available with "D" suffix)
/M5A	One level, one temperature point, LCD indicator, HART Protocol

Note: For Strapping / Linearization Table add **S** suffix to M2, M4A & M5A electronic modules; not available with HP, H3, SW1 or SW3 options

/h Second Analog Output

/X	None
/RI	Second electronic module with 1 ea. Analog output and LCD indicator Notes: 1. M1, M2 & M3 not available 2. Analog output field selectable to any of the two levels or ' 3. Provides temperature analog output from first module

/i Approvals:

/FM	Factory Mutual and Canadian Standard Association (CSA)
/CE	Cenelec

/j Process Connection

/Tnn	Tri-Clamp; Specify "nn" as follows: 10 = 1", 15 = 1.5", 20 = 2.0", 25 = 2.5" up to 6"
/TLnn	Tri-Clamp loose, to be welded by customer. Specify 'nn' as follows: 10 = 1.0", 15 = 1.5" 20 = 2.0", 25 = 2.5" up to 6"
/STnn	Sensor Well Tri-Clamp for Double Tri-Clamp installation and use with /SW1 & /SW3 sensor well
/CF	Adjustable 1/2" to 5/8" compression fitting for use with /SW1 & /SW3 sensor well
/WP	Other welded process connection; Specify type, material and rating

/k Float Type

/X	None; Use this selection with /SW1, & /SW3 probe types
/Fnn	Selection from Standard Float Chart (FLT-0202-1) or specify /FXX for custom float

/k Length

/L	Specify inserted length from top of tank nozzle in inches or millimeters or meters Consult factory for ML, L1 & L2. There is an unusable range of 2.5 inches minimum at the bottom of the sensing tube (which can be reduced depending upon float dimensions). The unusable range at the top is affected by the float dimensions.
NOTE:	Consult factory for special application requirements.

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