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# SANITARY HIGH ACCURACY MAGNETOSTRICTIVE LEVEL TRANSMITTER

## AccuTrak™

### 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 950 psig (66 bar)
- Temperature Range: -320 to 450° F (-196 to 232°C) 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 Powder Coated Cast Aluminum, Dual Compartment Standard 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 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 170°F (-40 to 77°C) 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 170°F (-40 to 77°C) Standard. Options available for temperatures up to 800°F (427°C)

Maximum Pressure 950 psig @ 300°F (66.8 kg/cm<sup>2</sup> @ 149°C)

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:**

XP / I / 1 / ABCD / T6; DIP / II, III / 1 / EFG / T6 (excludes Probe SW3)  
IS / I / 1 / CD / T4 —ELE0001 / A [excludes RI (secondary analog output) & Honeywell DE option]



NI / I / 2 / ABCD / T4  
**TYPE 4X**

**ATEX:**



**Flameproof:** II 1/2 GD EEx d IIC T6 T80°C; Ⓚ02 ATEX 132659  
Excludes /SW3

**Intrinsically Safe:** ⓀII 1/2 GD EEx ia IIB T6 Ⓚ02 ATEX 132658  
[excludes RI (secondary analog output) & Honeywell DE option]

**Ingress protection classification: IP67**



**China National Supervision and Inspection Centre**

XP EX d IIC T6; GB 3836.1-2000, GB3836.2-2000  
IS EX ia IIB T4; GB 3836.1-2000, GB3836.4-2000

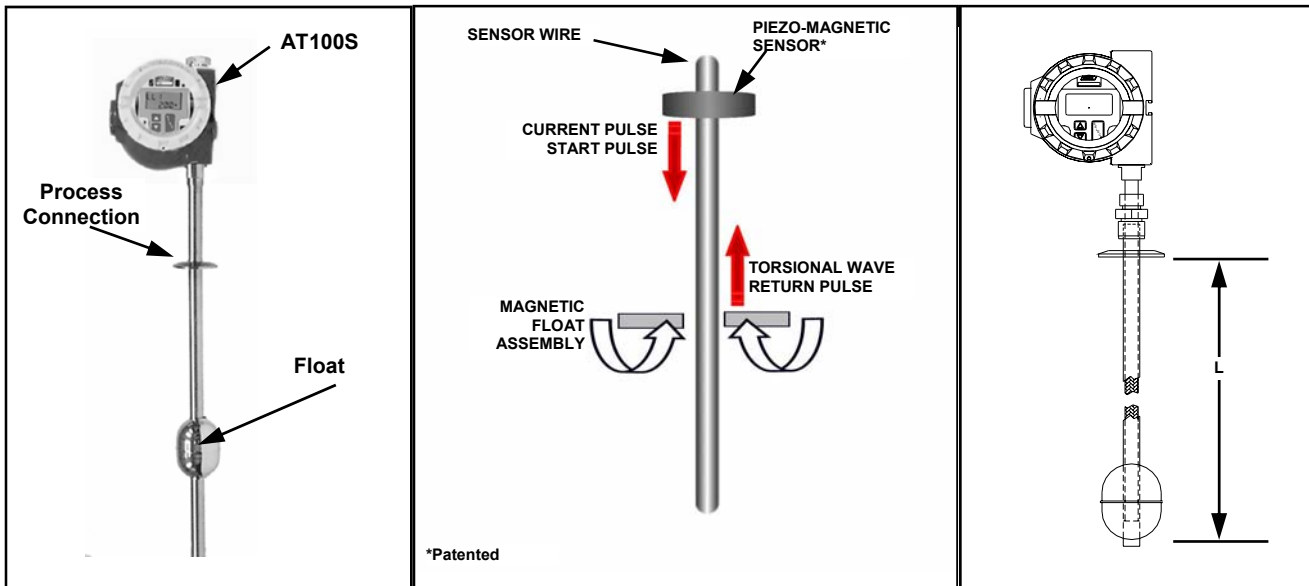
**PRINCIPLE OF OPERATION:**

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**



\*Patented

## ORDERING INFORMATION:

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

#### /a Probe Material

/S6	316L Stainless Steel Standard
/HC	Hastelloy C-276
/A2	Alloy 20

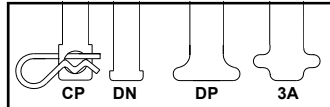
#### /b Transmitter Configuration

/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 300°F / 149°C @ 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	170°F / 77°C Maximum; Top of transmitter is 8" / 20 cm above tank nozzle Note: Max 300°F / 149°C @ 1 hour Clean; Performance not guaranteed during 1 hr. cleaning cycle
/H1	250°F / 121°C Maximum; Top of transmitter is 16" / 40.6 cm above tank nozzle Note: Max 300°F / 149°C @ 1 hour Clean; Performance not guaranteed during 1 hr. cleaning cycle
/H2	450°F / 232°C Maximum; Top of transmitter is 26" / 66 cm above tank nozzle
/H3	800°F / 427°C Maximum; Top of transmitter is 26" / 66 cm above tank nozzle Note: 15 ft. / 4.5 m maximum probe length

## ORDERING INFORMATION:

### /g Electronic Module With 1 ea. Analog Output:

/X	None
/M1	One level
/M2	One level, LCD indicator Add "S" suffix to module option for 21 Segment Strapping Table
/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 Add "S" suffix to module option for 21 Segment Strapping Table (not available with "D" suffix)
/M5A	One level, one temperature point, LCD indicator, HART Protocol, Foundation Fieldbus or Honeywell DE Protocol* (Not available with HP, H3, SW1 or SW3 options) * 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 Add "S" suffix to module option for 21 Segment Strapping Table (not available with "D" suffix)

### /h Second Analog Output (Hart protocol only)

/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 temperature 3. Provides temperature analog output from first module

### /i Approvals:

/FM	Factory Mutual and Canadian Standard Association (CSA)
/CEX	ATEX Flameproof, NEPSI
/CEI	ATEX I.S., NEPSI



### /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.
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**NOTE:** Consult factory for special application requirements.