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AccuTrak™

Model AT100 HIGH ACCURACY MAGNETOSTRICTIVE LEVEL TRANSMITTER

FEATURES

- High Accuracy: .01% of Full Scale
- Superior Piezo Ceramic Sensor (Patent # 5,473,245)
- Simple Calibration
- Never Requires Re-Calibration: Set It & Forget It
- Dual Compartment Housing with Separate Field Terminal Compartment
- Loop Powered to 75' (22M) Probe Length
- Total and/or Interface Level Measurement
- Pressure to 3000psig (207 bar), Std. 1800 psig (124.1 bar)
- Temperature Range: -320 to 800° F (-196 to 427°C) with options
- Field Replaceable Electronics Module
- Built In RFI / EMI Filter

OPTIONS

- Local Indication with LCD Display
- Two Level Indications
- Temperature Indications
- HART Protocol
- Foundation Fieldbus Output
- Honeywell DE Output
- Glass Viewing Window
- 316L Stainless Steel Enclosure
- 20 Point Strapping Table

SPECIFICATIONS

Electronic Transmitter

Housing type	Explosion Proof Powdered Coated Cast Aluminum or Stainless Steel, Dual Compartment
Electrical Connection	1/2" FNPT or M20
Repeatability	0.005% of full scale or 0.015", whichever is greater
Non-Linearity	0.01% of full scale or 0.035", whichever is greater
Accuracy	0.01% of full scale or 0.050", whichever is greater
Supply Voltage	13.5 to 36 VDC - Loop Powered; 9 to 32 VDC - Foundation Fieldbus
Reverse Polarity Protection	Diode in series with loop
Output	Standard 4-20 mA DC Loop HART protocol (optional) Foundation Fieldbus (optional) <ul style="list-style-type: none"> • ITK4.01 Compliant • 5 AI and 5 PID blocks • 12.5 mA Quiescent Current Draw • LAS Capable
Damping	Honeywell DE (optional) Field adjustable by means of pushbuttons. Range: 0.1 to 36 seconds
Burnout	Jumper selectable upscale (21 mA) or downscale (3.6 mA)
Temperature	-40 to 170°F (-40 to 77°C) Ambient
Humidity	0 to 100% R.H., non-condensing



SPECIFICATIONS

Sensor Tube

	Standard	Options
Material	316L SS	Alloy 20, HSC-276, Teflon Jacketed 316L SS, Electro-Polish
Process Temp.	-320 to 250°F (-196 to 121°C)	800°F (427°C)
Max. Press.	1800 psig @ 300°F (124.1 bar @ 149°C)	3000 psig (206.8bar)
Probe Length	1 to 30 feet (304.8mm to 9.14m)	75 ft (22.3m)
Mounting	3/4 in MNPT compression fitting	Loose and welded flanges, plugs and tri-clamp fittings

Approvals:



FM Factory Mutual Research Corporation
 XP / I / 1 / ABCD / T6; DIP / II, III / 1 / EFG / T6 ¹
 IS / I / 1 / CD / T4 - ELE0001 ²
 IS / I / 1 / ABCD / T4 - ELE1036 ^{2,3}
 NI / I / 2 / ABCD / T4
 TYPE 4X



CSA Canadian Standards Association
 XP / I / 1 / ABCD / T6; DIP / II, III / 1 / EFG / T6 ¹
 IS / I / 1 / CD / T4 - ELE0001 ²
 NI / I / 2 / ABCD / T4
 TYPE 4X



ATEX
 FP: Ⓜ II 1/2 GD EEx d IIC T6 T80°C; Ⓧ 02 ATEX 132659 ¹
 IS: Ⓜ II 1/2 GD EEx ia IIB T6 T80°C; Ⓧ 02 ATEX 132658 ²
 IS: Ⓜ II 1/2 GD EEx ia IIC T4 T80°C; Ⓧ 02 ATEX 132658 ^{2,3}
 Ingress protection: IP67



GOST Russia
 FP: 1ExdIICT6 ¹
 IS: 0ExialIBT6 ²
 Ingress protection: IP67
 Sanitary Hygienic Certificate



IEC International Electromechanical Commission
 IS: EX ia IIB T4 ; IECEx ULD 06.0013X ²



Chinese Approvals Available
 when purchased through
 K-TEK (Tianjin) Level Co. LTD.
 TEDA-Tianjin, China +86 (22) 598 13078

- Notes:** 1. Excludes Probe F1 and SW3 options.
 2. Excludes RI (secondary analog output) & Honeywell DE options.
 3. Fieldbus & FISCO

Safety Third Party Certified Safety Integrity Level (SIL) data (FMEDA analysis) for Safety Instrument Systems

PRINCIPLE OF OPERATION:

The AT100 is based upon the magnetostrictive principle. The sensing tube contains a wire which is pulsed at fixed time intervals creating a magnetic field around the wire. The interaction of the magnetic field around the wire and 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 ceramic 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 position measurement which is proportional to the level of the float.

AT100 Components	Principle of Operation	AT100 Dimensions
	<p>*Patent # 5,473,245</p>	

ORDERING INFORMATION

AT100/a/b/c/d/e/f/g/h/l/j/k:

Example: AT100/S6/LW/A/R1/H0/M4A/X/FM/CF/F1B/48"

/a Probe Material

S6	316L Stainless Steel Standard
A2	Alloy 20
HC	Hastelloy C-276 (1/2" OD SW1 Probe without Sensor Well)
TF	PFA Jacket (1/16" thick) over 316L SS (Max 350°F (177°C) & 50 psig (3.4bar))

/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

R1	Standard Rigid Probe, 5/8" OD Notes: 1. 30 ft. (9.14m) maximum probe length 2. 1400 psig (96.5bar) @ 800°F (427°C) 3. 1600 psig (110.3bar) @ 700°F (371°C) 4. 1800 psig (124.1bar) @ 300°F (149°C)
F1	Flexible Teflon Sensor Inserted into 1" OD Segmented Sensor Well Notes: 1. Only available with /S6, /A2, /HC options. 2. 75 ft. (22.3m) maximum probe length. 3. 300 psig (20.7bar) maximum & 170°F (77°C) maximum. 4. Specify maximum segment length, 10ft. (3.05m) standard. 5. Not suitable for explosion proof service. 6. Suitable for intrinsically safe installation. 7. Not suitable for cryogenic applications.
HP	High Pressure Rigid Probe, 5/8" OD Notes: 1. Not available with /TF probe material option. 2. 30 ft. (9.14m) maximum probe length. 3. 3000 psig (206.8 bar) maximum. 4. Not available with /H3 Process Temperature Option.
SW1	1/2" OD Rigid Probe for Insertion Into 5/8" OD x 0.049" Wall Sensor Well Notes: 1. Specify and order sensor well separately. 2. 20 ft. (6.10m) maximum probe length. 3. Not available with /H3 Process Temperature Option.
SW2	5/8" OD Rigid Probe for Insertion Into 3/4" Sch. 40 or 80 Sensor Well Notes: 1. Specify and order sensor well separately. 2. 30 ft. (9.14m) maximum probe length.
SW3	1/2" OD Flexible 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. (4.57m) 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. Only available with H0 process temperature option.

/e Process Temperature Options

H0	170°F (77°C) Maximum; Top of transmitter is 8" (200mm) above process connection
H1	250°F (121°C) Maximum; Top of transmitter is 16" (406mm) above process connection
H2	450°F (232°C) Maximum; Top of transmitter is 26" (660mm) above process connection
H3	800°F (427°C) Maximum; Top of transmitter is 26" (660 mm) above process connection Note: 15 ft. (4.57m) maximum probe length.

/f Electronic Module With 1 ea. Analog Output

X	None
M3	One level, with HART Protocol



ORDERING INFORMATION (continued)



/f Electronic Module With 1 ea. Analog Output (continued)

- M4A** One level, with LCD indicator, and Communications ^{1,2,3,4}
- M4B** Two levels, LCD indicator, and Communications ^{1,2,3,4}
- M5A** One level, one temperature point, LCD indicator, and Communications ^{1,3,4,5}
- M5B** Two levels, one temperature point, LCD indicator, and Communications ^{1,3,4,5}

Notes: 1. Default Communication is HART Protocol
 2. Add "D" suffix to module option for Honeywell DE (class 0 support)
 3. Add "F" suffix to module option for Foundation Fieldbus ITK 4.01 compliant
 4. Add "S" suffix to module option for 20 Point Strapping Table (not available with "D" suffix)
 5. Not available with HP, H3, SW1 or SW3 options.

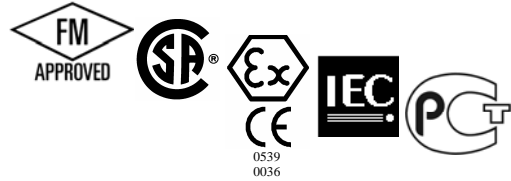
/g Second Analog Output

- X** None
- RI** Second electronic module with 1 ea. Analog output and LCD indication

Notes: 1. Not available with M1, M2 & M3 Module types
 2. Only for use with HART Protocol equipped electronics modules
 3. The RI100 is only approved as an Explosion Proof device
 4. Analog output field selectable to any of the two levels or temperature
 5. Housing type will be same as primary transmitter housing (/c above)

/h Approvals^{1,2}

- FM** Factory Mutual
- CSA** Canadian Standards Association
- CEX** ATEX Flameproof
- CEI** ATEX I.S.
- IEI** International Electromechanical Commission I.S.
- GR** GOST Russia



Notes: 1. All Explosion Proof Approvals exclude Probe F1 and SW3.
 2. All Intrinsically Safe Approvals exclude RI (secondary analog output) & Honeywell DE options.

/i Process Connection

- X** None (use with /SW1, /SW2 and /SW3 probe types)
- CF** Standard adjustable compression fitting 3/4" MNPT (1"MNPT with /F1 probe type)
- FL** Flange or plug (shipped loose) with FNPT thread for use with compression fitting (specify type, material and rating from SLG-0001-1 Flange Designation Chart)
- WP** Flange or Plug welded to the sensor tube without compression fitting (specify type, material and rating from SLG-0001-1 Flange Designation Chart)

/j Float Type

- X** None (Use this selection with /SW1, /SW2, & /SW3 probe types)
- Fnn** Selection from Standard Float Chart (SLG-0003-1) or specify /FXX for custom float

/k Insertion Length

- L** Specify inserted length from process connection to end of probe in inches or millimeters or meters Consult factory for ML, L1 & L2. There is an unusable range of 2.5 inches minimum (12" for /F1) at the bottom of the sensing tube (which can be reduced depending upon float dimensions). The unusable range at the top of the sensor tube will be affected by the float dimensions.

NOTE: Consult factory for special application requirements.

Available Accessories:

M20 ISO FITTING: M20 Female Electrical Connection (MM - Brass or MMS - Stainless Steel)

For fastest response to inquiries provide a completed AT100 Application Data Sheet or the Serial Number of an existing AT100.

QuikShip ORDERING INFORMATION

QuikShip transmitters with the following model number are available for shipment in 1-5 working days . No deviation from the QuikShip model number will be accepted.

Model Number: AT100/S6/LW/A/R1/H0/M4A/X"approval"/CF"float"/"L"				
QuikShip #	"L" dimension	QuikShip #	"L" dimension	Replace the word "approval" with the required approval code: FM, CSA, CEX, CEI, IEI, or GR Replace the word "float" with one of the following AT100 QuikShip floats: F1B, F2B, F17B, or F15B.
AT100QS1	15.3" (389mm)	AT100QS5	63.3" (1608mm)	
AT100QS2	27.3" (694mm)	AT100QS6	75.3" (1913mm)	
AT100QS3	39.3" (999mm)	AT100QS7	87.3" (2218mm)	
AT100QS4	51.3" (1303mm)	AT100QS8	99.3" (2523mm)	

