



Echotel® Model 910 Ultrasonic Level Switch

DESCRIPTION

Echotel Model 910 Level Switches utilize ultrasonic contact technology for measuring level in clean liquid applications. The dual conduit hub electronics houses a 10-amp DPDT gold flash relay that is field selectable for high or low level fail-safe applications. There are no moving parts that come in contact with the medium. The Echotel Model 910 is an integrally mounted system, comprised of surface mount electronics and a 316 stainless steel transducer. Hazardous area location approvals are available from FM, CSA, and ATEX.

FEATURES

- Measures level within 0.25" (6 mm) from the end of the tip-sensitive transducer gap
- 10-amp DPDT gold flash or 5-amp DPDT hermetically sealed relay
- Surface mount conformal coated electronics
- FM, CSA, and ATEX approved for hazardous locations
- Variety of mounting options including NPT and BSP threaded, flanges and hygienic connections
- No calibration required
- 316 stainless steel transducer
- May be mounted either horizontally or vertically
- Compact NEMA 4X/7/9 dual conduit hub cast aluminum electronics housing
- Available in 14 standard actuation lengths from 1" to 96" (2.5 to 244 cm)
- Two-year product warranty



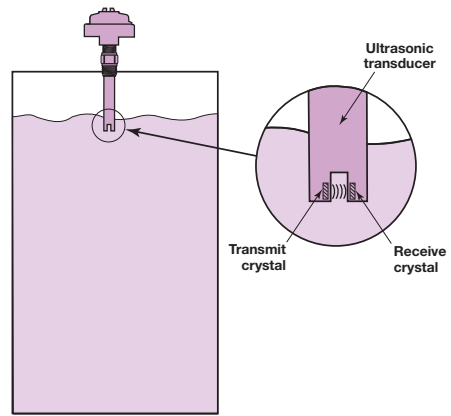
APPLICATIONS

- Water and wastewater
- Food and beverage
- Pulp and paper
- Petrochemical
- Power
- Pharmaceutical
- Chemical

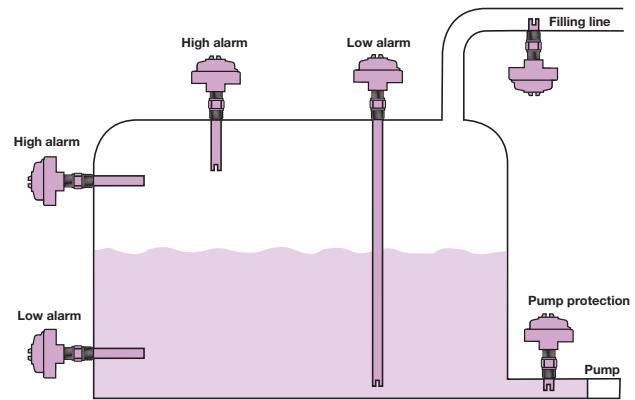
TECHNOLOGY

The Model 910 Level Switch uses ultrasonic energy to detect the presence or absence of liquid in a 316 SS tip sensitive transducer gap. The basic principle behind ultrasonic contact technology is that high-frequency sound waves are easily transmitted across a transducer gap in the presence of a liquid medium, but are severely attenuated when the gap is dry. The Model 910 uses an ultrasonic frequency of 3 MHz to perform this liquid level measurement in a wide variety of process media and application conditions.

The transducer uses a pair of piezoelectric crystals that are encapsulated in epoxy at the tip of the transducer. The crystals are made of a ceramic material, such as lead zirconate. The transmit crystal converts an electrical signal from the Model 910 electronics into an ultrasonic signal. When liquid is present in the gap, the receive crystal is able to sense the ultrasonic signal from the transmit crystal and convert it back to an electrical signal. This signal is sent to the electronics to indicate the presence of liquid in the transducer gap. When there is no liquid present, the ultrasonic signal is attenuated, and the receive crystal is not able to sense the sound waves from the transmit crystal.



Ultrasonic signal transmission across transducer gap



Typical applications and mounting positions

ELECTRICAL SPECIFICATIONS

Power Supply:	120 VAC (+10%/-15%), 50/60 Hz 240 VAC (+10%/-15%), 50/60 Hz 24 VDC (±10%)
Power Consumption:	2.5 VA nominal
Relay Output:	Gold flash DPDT ^① : 10 amps @ 120 VAC, 10 amps @ 240 VAC 10 amps @ 24 VDC, 0.5 amps @ 125 VDC Hermetically sealed DPDT: 5 amps @ 120 VAC, 3 amps @ 240 VAC 5 amps @ 24 VDC
Repeatability:	0.078" (2 mm)
Fail-safe:	Field selectable high or low
Calibration:	None required
Ambient Temperature:	Electronics: -40° to +158° F (-40° to +70° C)
Process Temperature:	Transducer: -40° to +250° F (-40° to +121° C)
Shock:	ANSI/ISA-S71.03 Class SA1
Vibration:	ANSI/ISA-S71.03 Class VC2
Operating/Non-Operating Pressure:	800/1500 psig (55/103 bar)

^① Gold flash DPDT relay is rated at 8 amps when used with housing codes 5 or P

SWITCH

MODEL NUMBER



Models available for quick shipment, usually within one week after factory receipt of a complete purchase order, through the Expedite Ship Plan (ESP)

HOUSING

A	Aluminum sand cast with 3/8" NPT dual conduit, FM or CSA approvals
Y	316 stainless steel with 3/8" NPT single conduit, FM or CSA approvals
P	Aluminum sand cast with 3/8" NPT dual conduit, FM, CSA, and ATEX approvals
5	316 stainless steel with 3/8" NPT single conduit, ATEX approval

TRANSDUCER UNIT OF LENGTH

1	English (actuation length in inches)
M	Metric (actuation length in centimeters)

PROCESS CONNECTION

A	3/8" NPT
2	1" NPT
9	1" BSP
3	1 1/2" hygienic 16 AMP fitting (compatible with Tri-Clover® Tri-Clamp®)
4	2" hygienic 16 AMP fitting (compatible with Tri-Clover Tri-Clamp)
1	1" 150 lb. ASME raised face flange
C	1 1/2" 150 lb. ASME raised face flange
D	2" 150 lb. ASME raised face flange
E	1" 300 lb. ASME raised face flange
F	1 1/2" 300 lb. ASME raised face flange
G	2" 300 lb. ASME raised face flange

INPUT POWER

0	120 VAC with 10-amp DPDT gold flash relay
1	240 VAC with 10-amp DPDT gold flash relay
2	24 VDC with 10-amp DPDT gold flash relay
H	120 VAC with 5-amp DPDT hermetically sealed relay
J	240 VAC with 3-amp DPDT hermetically sealed relay
K	24 VDC with 5 amp DPDT hermetically sealed relay





ACTUATION LENGTH

1" to 96" in 1" increments (with Transducer Unit of Length code 1) Example: 4 inches = 004 ① ③
3 cm to 244 cm in 1 cm increments (with Transducer Unit of Length code M) Examples: 6 centimeters = 006 ② ③
Available ESP lengths ④ : 1", 2", 4", 6", 8", 12", 16", 22"



① 1" (code 001) minimum with NPT process connections, 2" (code 002) minimum with hygienic or ASME flanged process connections.
 ② 2.5 cm (code 003) minimum with NPT process connections, 5 cm (code 005) minimum with 1" BSP, or hygienic or ASME flanged process connections.
 ③ Consult factory for longer lengths.
 ④ Consult factory for ESP metric length codes.

AGENCY APPROVALS

AGENCY	MODEL APPROVED	APPROVAL CATEGORY	APPROVAL CLASSES
 FM APPROVED	910-XXXX-XXX	Explosion Proof	Class I, Div. 1; Groups B, C & D Class II, Div. 1; Groups E, F, & G Class III, NEMA Type 4X, T6
	910-XXXX-XXX	Non-Incendive	Class I, Div. 2; Groups A, B, C, & D Class II, Div. 2; Groups F & G Class III, NEMA Type 4X, T5
 CSA	910-XXXX-XXX	Explosion Proof	Class I, Div. 1; Groups C & D Class II, Div. 1; Group E, F, & G Class III, Type 4X, T6
	910-XXXX-XXX	Non-Incendive	Class I, Div. 2; Groups A, B, C, & D Class II, Div. 2; Groups E, F, & G Class III, Type 4X, T5
 ATEX	910-5XXX-XXX 910-PXXX-XXX		 II 1/2 G EEx d IIC T6/Ex e II T6

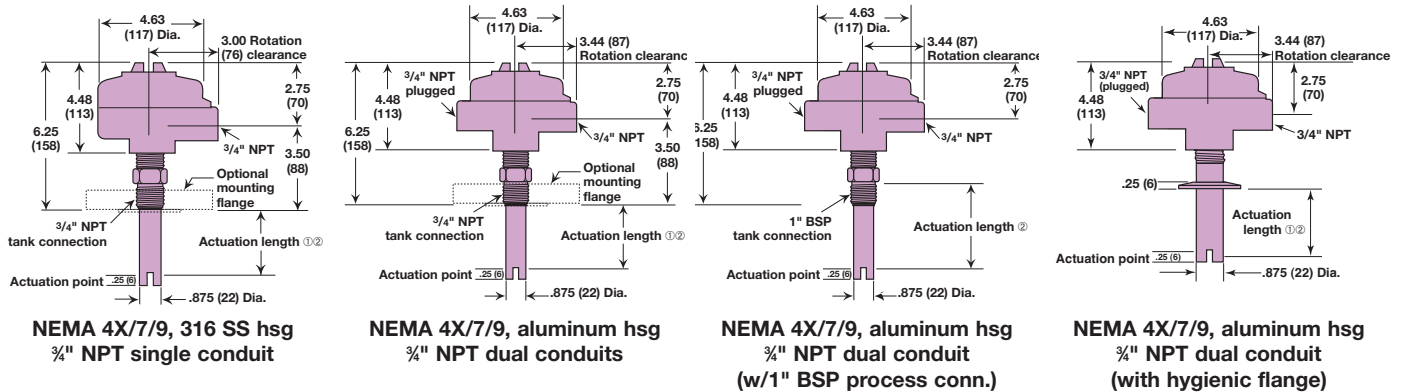
Note: Consult factory for Brazilian INMETRO BR-Ex d IIC T6 IP66 approval.



These units have been tested to EN 50081-2 and EN 50082-2 and are in compliance with the EMC Directive 89/336/EEC.

DIMENSIONAL SPECIFICATIONS

INCHES (MM)



QUALITY



All Magnetrol Model 910 Level Switches are warranted free of defects in materials or workmanship for two full years from the date of original factory shipment.

If returned within the warranty period; and, upon factory inspection of the control, the cause of the claim is determined to be covered under the warranty; then, Magnetrol will repair

or replace the control at no cost to the purchaser (or owner) other than transportation.

Magnetrol shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of equipment. There are no other warranties expressed or implied, except special written warranties covering some Magnetrol products.

For additional information, see Instruction Manual 51-604.



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