

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 electronics houses an 8-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
- 8-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
- Mounted horizontally or vertically
- Compact dual conduit cast aluminum electronics housing



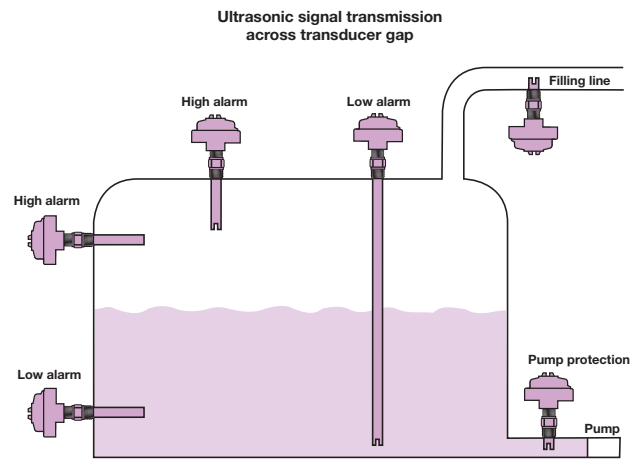
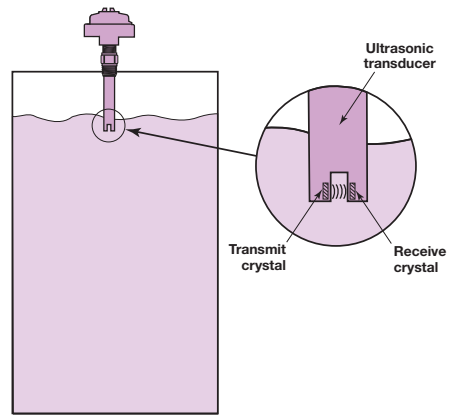
APPLICATIONS

- Seal Pot Level
- Low Level Alarm
- High Level Alarm
- OEM/Skid Packages
- Pump Protection

TECHNOLOGY

The Model 910 Level Switch uses ultrasonic energy to detect the presence or absence of liquid in a 316 stainless steel 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.



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: 8 amps @ 120 VAC, 8 amps @ 240 VAC 8 amps @ 24 VDC, 0.5 amps @ 125 VDC Hermetically sealed DPDT: 5 amps @ 120 VAC, 5 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 Pressure: | 800 psig (55 bar) |
| Mechanical Design Pressure: | 1500 psig (103 bar) |

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/FMc approvals |
| P | Aluminum sand cast with 3/8" NPT dual conduit, FM/FMc/ATEX/IECEX approvals |
| W | Aluminum sand cast with M20 dual conduit, FM/FMc/ATEX/IECEX approvals |

TRANSDUCER UNIT OF LENGTH

| | |
|---|--|
| 1 | English (actuation length in inches) – CRN Available |
| M | Metric (actuation length in centimeters) |

PROCESS CONNECTION

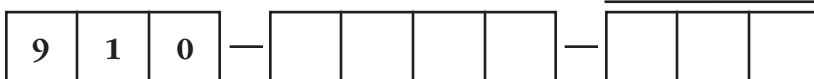
| | |
|---|--|
| A | 3/8" NPT |
| 2 | 1" NPT |
| 9 | 1" BSP |
| 1 | 1" 150 lb. ASME raised face flange |
| C | 1 1/2" 150 lb. ASME raised face flange |
| D | 2" 150 lb. ASME raised face flange |
| E | 1" 300 lb. ASME raised face flange |
| F | 1 1/2" 300 lb. ASME raised face flange |
| G | 2" 300 lb. ASME raised face flange |

INPUT POWER

| | |
|---|---|
| 0 | 120 VAC with 8-amp DPDT gold flash relay |
| 1 | 240 VAC with 8-amp DPDT gold flash relay |
| 2 | 24 VDC with 8-amp DPDT gold flash relay |
| H | 120 VAC with 5-amp DPDT hermetically sealed relay |
| J | 240 VAC with 5-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 |
| Available ESP lengths: 1", 2", 4", 6", 8", 12" |
| 3 cm to 244 cm in 1 cm increments (with Transducer Unit of Length code M) Example: 6 centimeters = 006 ② ③ |



① 1" (code 001) minimum with NPT process connections, 2" (code 002) minimum with hygienic or ASME flanged process connections.

② 3 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.

AGENCY APPROVALS



Explosion Proof / Dust Ignition Proof

US/Canada: FM19US0170X/FM20CA0034X

Class I, Div 1, Groups B, C, D T6
Class II, III, Div. 1 Groups E, F, G T6
SINGLE SEAL

Type 4X

US: Class I, Zone 1 AEx db IIC T6 Gb

Canada: Ex db IIC T6 Gb

SINGLE SEAL

-40°C ≤ Ta ≤ +70°C

Probes > 60 inches Ta = -20°C ≤ Ta ≤ 70°C
IP66

Flame Proof

ATEX – FM20ATEX0005X

Integral:

II 2 G Ex db IIC T6 Gb

-40°C ≤ Ta ≤ +70°C

Probes > 60 inches Ta = -20°C ≤ Ta ≤ 70°C
IP66

IEC IECEX FMG20.0004X

Ex db IIC T6 Gb

-40°C ≤ Ta ≤ +70°C

Probes > 60 inches Ta = -20°C ≤ Ta ≤ 70°C
IP66

Non-Incendive

US/Canada

US: Class I Div. 2, Groups A, B, C D T5

Class II, III, Div. 2 Groups F and G T5

SINGLE SEAL

-40°C ≤ Ta ≤ +70°C

Probes > 60 inches Ta = -20°C ≤ Ta ≤ 70°C
IP66

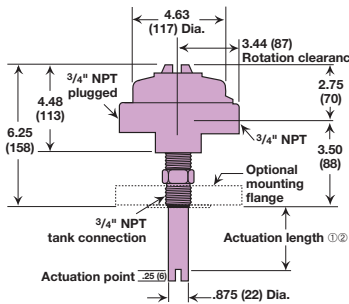
AVERTISSEMENT! Danger d'explosion éventuel. Ne brancher ou débrancher des équipements que si l'alimentation électrique a été coupée ou si la zone est réputée non dangereuse.



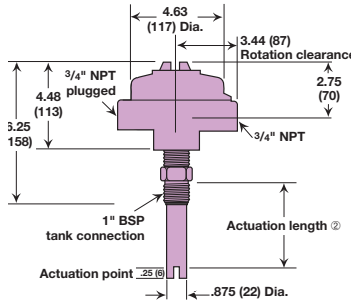
These units are in compliance with the EMC-directive 2014/30/EU, the PED-directive 2014/68/EU and the ATEX directive 2014/34/EU.

DIMENSIONAL SPECIFICATIONS

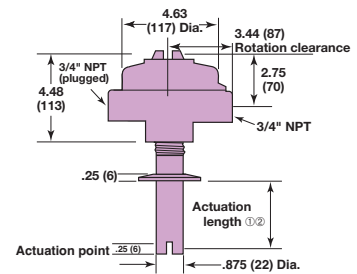
INCHES (MM)



**NEMA 4X/7/9,
aluminum housing
3/4" NPT dual conduits**



**NEMA 4X/7/9,
aluminum housing
3/4" NPT dual conduit
(w/1" BSP process conn.)**



**NEMA 4X/7/9,
aluminum housing
3/4" NPT dual conduit
(with hygienic flange)**

QUALITY



All Magnetrol Model 910 Level Switches are warranted free of defects in materials or workmanship for eighteen months 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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Performance specifications are effective with date of issue and are subject to change without notice.

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