



(Less is more)



## **ECHOTEL® Ultrasonic Level Switches**

The more you rely on ECHOTEL ultrasonic level switches, the less you will worry if a tuning fork is up to the job of providing the outstanding quality, reliability and overflow prevention your facility needs.

ECHOTEL® ultrasonic switches provide continuously accurate and reliable level control that outperforms tuning fork technology. While tuning forks have been widely adapted by the industry, the fact is ECHOTEL ultrasonic switches offer more benefits

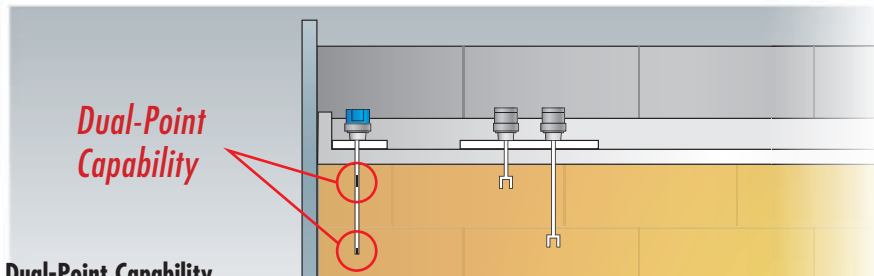
### More Performance



#### Reads All Liquid Densities

- ECHOTEL can read any liquid density, even below 0.6 SG, to provide continuously accurate and reliable level control — and superior overflow prevention.
- Unlike tuning forks, which require you to configure a DIP switch to ensure density calibration — and may not be able to measure low-density liquids — no density adjustments are required with ECHOTEL.

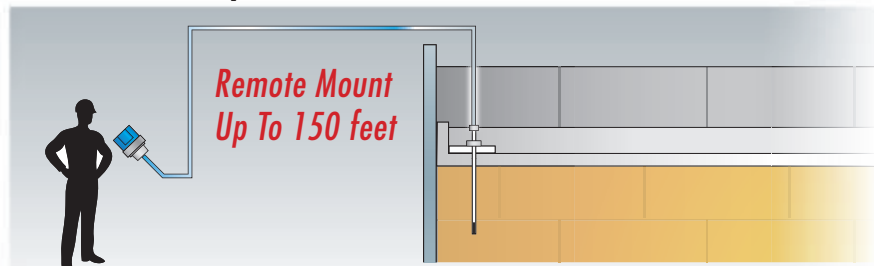
### More Efficiency and Versatility



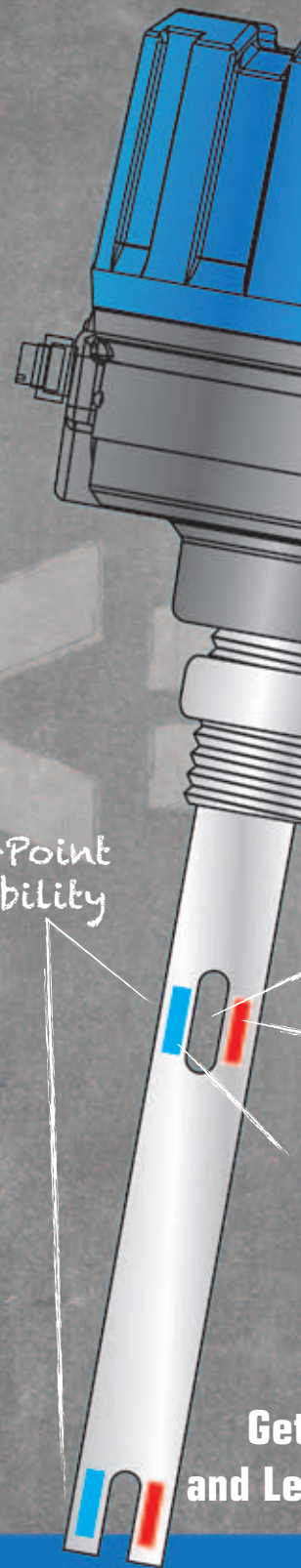
#### Dual-Point Capability

- In addition to the ECHOTEL Model 961 single-point option, the ECHOTEL Model 962 provides dual-point capability to give you two-point measurement from the same unit.
- In contrast to tuning forks that require the purchase and installation of two units — and two separate tank openings — you only need one switch and one tank opening to measure dual-point level with ECHOTEL.

### Remote Mount Capable



- While tuning forks require top-of-tank switch modification, ECHOTEL gives you versatile access and ease of control, with remote mounting capability that can be up to 150 feet away from the transducer.



Get  
and Le

Dual-Point

Remote Mounting

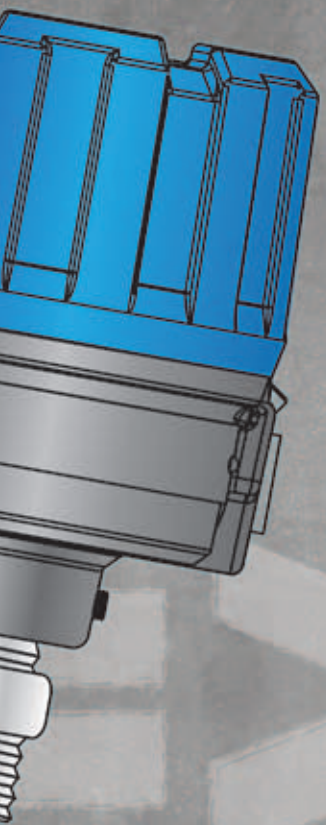
Switch Point < 6"

Extensive Selection of Transducer Mat

Advanced Self-Testing

No Density Calibration Required





## More Information and Diagnostics

*Malfunction*



*Level Alarm*

### Two Separate Relay Outputs

- ECHOTEL ultrasonic units allow you to configure two separate relay outputs for diagnostics and level alarms to give you more information – and ensure compliance with industry safety guidelines.

## Advanced Diagnostics Capabilities

*Red Light Indicates Fault*



*Green Light Indicates Normal Operation*

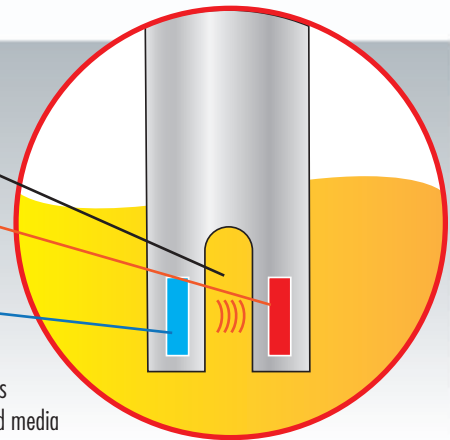
- ECHOTEL also offers advanced diagnostics capabilities compared to tuning forks, with thorough testing of electronics, transducer, piezoelectric crystals and for the presence of electromagnetic noise.

## More Advanced Technology

*Transducer Gap*

*Receive Crystal*

*Transmit Crystal*



### Ultrasonic Gap Technology

- ECHOTEL uses pulsed signal technology that only transmits pulsed sound waves across the transducer gap when liquid media is present, so density does not matter.
- When liquid is present in the transducer gap, a receive crystal senses the ultrasonic signal from the transmit crystal and converts it to an electrical signal to indicate liquid is present.

**More Performance –  
Less Worry – with ECHOTEL**

	Echotel	Tuning Forks
	✓	✗
	✓	✗
	✓	Limited
Materials	✓	✗
	✓	✗
	✓	✗

*With ECHOTEL ultrasonic level control, you'll be assured of superior overfill prevention across your tank inventory. It's a simple equation of more performance and less worry that you can count on from Magnetrol® – the level control experts.*



# ECHOTEL® Ultrasonic Level Switches Technical Specifications

## Electronics Specifications

### Model 961 / 962 with Relay Output

Supply Voltage	18 to 32 VDC, or 102 to 265 VAC, 50/60 Hz
Relay Outputs	961: One DPDT level relay and one SPDT malfunction relay 962: Two SPDT level relays and one SPDT malfunction relay
Relay Ratings	DPDT: 5 amps @ 120 VAC, 250 VAC, and 30 VDC, 0.4 amp @ 110 VDC SPDT: 5 amps @ 120 VAC, 250 VAC, and 30 VDC, 0.15 amp @ 125 VDC
Fail-safe	Selectable for high or low level
Power Consumption	961/962 Less than 3 watts
Ambient Temperature	-40° to +160° F (-40° to +70° C)

### Model 961 / 962 with Current Shift Output

Supply Voltage	11 to 35 VDC
Current Shift Output	961: 8 mA normal operation, 16 mA level alarm ( $\pm 1$ mA) 962: 8 mA normal operation, 12 mA lower gap alarm, 16 mA upper gap alarm ( $\pm 1$ mA) 961/962: 3.6 mA or 22 mA selectable fault signal ( $\pm 1$ mA)
Loop Resistance	104 ohms with 11 VDC input, 1100 ohms with 35 VDC input
Fail-safe	Selectable for high or low level
Power Consumption	961/962: Less than 1 watt
Ambient Temperature	-40° to +160° F (-40° to +70° C)

## Transducer Specifications

Materials	316 Stainless steel, Hastelloy C-276, Monel, Kynar (PVDF), CPVC
Maximum Pressure	2000 PSI (138 bar) material dependent
Activation Lengths	1" – 130" (3 to 330 cm)

## Performance Specifications

Repeatability	$\pm 0.078$ " (2 mm)
Response Time	½ second typical
Time Delay Variable	Adjustable between 0.5 – 45 seconds on rising and falling levels
Self-Test	Automatic: Continuously verifies operation of electronics, transducer, piezoelectric crystals and electrical noise Manual: Push button verifies operation of electronics, transducer and piezoelectric crystals
Shock Class	ANSI/ISA-S71.03 Class SA1
Vibration Class	ANSI/ISA-S71.03 Class VC2
Humidity	0 - 99%, non-condensing
Electromagnetic Compatibility	Meets CE requirements EN 61326

**Rely on ECHOTEL ultrasonic level switches. For more information contact your Magnetrol representative**



**Worldwide Level and Flow Solutions™**

**CORPORATE HEADQUARTERS**

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Bulletin: 51-250.0 • Effective: October 2012