

Isco 3010 Ultrasonic Flow Transmitter

The 3010 Flow Transmitter is an AC-powered, open channel flow meter engineered for permanent installation. It combines dependable flow measurement with versatile data transmission, to give you economical flow monitoring with the features and reliability you demand.

The 3010's ultrasonic level sensor is mounted above the flow stream and transmits a sound pulse that is reflected from the surface of the flow. The elapsed time between sending a pulse and receiving an echo determines the level in the channel. A built-in temperature sensor automatically compensates for changes in air temperature to ensure measurement accuracy.

Because the sensor does not contact the liquid, the 3010 provides long-term dependability with no scheduled maintenance. It is ideal for measuring flows containing harsh chemicals, grease, suspended solids, or silt.

Accurate Under Tough Conditions

The 3010 automatically adjusts amplifier gain in response to echo strength. This patented* technology maximizes performance in the presence of steam, foam, and turbulence. And, Variable Blanking Distance lets you eliminate false echo problems caused by obstructions such as manhole rungs or the top of a flume.

Fast and Easy Programming

A keypad and backlit LCD make programming fast and easy. Level-to-flow rate conversions for most weirs and flumes are built in, or you can enter an equation. When programming is complete, the 3010 displays data in selectable units of measure. A non-resettable totalizer gives you a permanent record of flow.

Rugged Enclosure

The 3010's lockable enclosure is rated NEMA 4X and IP56 for watertight, dust-tight, corrosion resistant operation. Built-in heaters ensure dependable outdoor operation in cold climates. Field wiring is connected through conduit, or with cables and sealed compression fittings.

*US Patent No. 5,319,974



Versatile Communications

Versatile outputs on the 3010 make it easy to interface with a variety of equipment.

- ▶ A sampler relay will signal your sampler to collect flow proportioned samples.
- ▶ The 4 to 20 mA output will drive your chart recorder, or control a process such as chlorination or pH neutralization.
- ▶ Optional alarm relays activate external equipment such as pumps, alarms, and indicators.
- ▶ An RS-232 output allows the 3010 to communicate with your computer or SCADA system.
- ▶ The remote totalizer output provides an indication of total flow on an Isco Remote Totalizer.

Isco ultrasonic sensors provide long-term dependability with no scheduled maintenance.



Specifications

Isco 3010 Ultrasonic Flow Transmitter		Ultrasonic Sensor							
Size (H x W x D)	15.3 x 10.6 x 7.4 in (38.7 x 27.0 x 18.7 cm)	Length	4 in (10.2 cm)						
Weight	10 lbs (4.5 kg)	Diameter	3.6 in (9.1 cm)						
Material	High-impact molded polystyrene structural foam	Cable Length	25 ft (7.6 m)						
Enclosure (self-certified)	Nema 4X (IP56)	Cable Diameter	0.3 in (0.8 cm)						
Power	104 to 127V AC, 0.075 A or 210 to 260V AC, 0.038 A, 50/60 Hz	Weight (including cable)	2.6 lbs (1.2 kg)						
Display	6 digit backlit liquid crystal, 0.5 in (1.27 cm) high x 0.26 in (0.66 cm) wide digits	Enclosure (self-certified)	NEMA 4X, 6P (IP67)						
Level-to-Flow Rate Conversions		Frequency	40 kHz						
Weirs	V-notch, rectangular, Cipolletti	Range (distance from sensor to liquid)							
Flumes	Parshall, Palmer-Bowlus, Trapezoidal, H	Minimum	2 ft (0.6 m)						
Equation	Two-term polynomial	Maximum	12 ft (3.7 m)						
Totalizer	7 digit mechanical, non-resettable	Span	0 to 10 ft (0 to 3 m)						
Sampler Pacing Output	Isolated contact closure, rated 1 A at 48V DC	Blanking Distance	2 to 12 ft (0.6 to 3.7 m)						
Sampler Input	Event mark, bottle number	Level Measurement Accuracy							
Analog Output	Isolated 4 to 20 mA based on level or flow rate, with or without sampler event marks, into a maximum of 1000 ohms	At 72°F (22°C), still air, and 40 to 70% relative humidity	<table border="1"> <thead> <tr> <th>Head Change*</th> <th>Maximum Error</th> </tr> </thead> <tbody> <tr> <td>1.0 ft. or less (0.31m or less)</td> <td>±0.02 ft (±0.006 m)</td> </tr> <tr> <td>1.0 to 10 ft (0.31 to 3.05 m)</td> <td>±0.03 ft (±0.009 m)</td> </tr> </tbody> </table>	Head Change*	Maximum Error	1.0 ft. or less (0.31m or less)	±0.02 ft (±0.006 m)	1.0 to 10 ft (0.31 to 3.05 m)	±0.03 ft (±0.009 m)
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Relay Outputs (with optional High/Low Alarm Relays)	2 form C relays with field selectable trip points based on flow rate, rated 3 A at 24V AC or DC	Temperature Coefficient	±0.000047 x D per °F (±0.000085 x D per °C)						
Serial Data Output	RS-232 ASCII string of level, flow rate, total flow, sample number, and bottle number, once every 12 seconds 300 baud,	Maximum error over compensated temperature range (per degree of temperature change)	(D = Distance from the transducer to the liquid surface)						
Format	7 data bits, 2 stop bits, even parity	Operating Temperature	-22° to 140°F (-30° to 60°C)						
Remote Totalizer Output	12V pulse	Compensated Temperature	-22° to 140°F (-30° to 60°C)						
Compatible Isco Device	Isco Remote Totalizer	Materials							
Operating Temperature	-20° to 140°F (-30° to 60°C)	Acoustic Window	Glass-reinforced epoxy						
Storage Temperature	-50° to 150°F (-46° to 66°C)	Sensor Housing	Glass-reinforced polyester						
		Cable	Polyvinyl chloride (PVC) jacket						

Ordering Information

Description	Part Number
3010 Ultrasonic Flow Transmitter	68-3010-028
Quick Disconnect Box	60-3404-052
Sensor Sunshade	60-3004-142
Sensor Mounting Bracket	60-2443-092
Sensor Floor Mount	60-3004-117
Calibration Target	60-3004-143
High/Low Alarm Relays	60-3404-028
Remote Totalizer	68-2440-019

*Actual change in vertical distance between the ultrasonic sensor and the liquid surface.

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