

Isco 3020

Submerged Probe Flow Transmitter

The 3020 flow transmitter is AC powered for permanent installation, and is usually preferred for sites where wind, steam, foam, or turbulence are factors.

It has no internal data storage, but provides 4 -20 mA analog and RS-232 serial outputs, as well as relay switches and pulsed DC totalizer outputs for flexible interfacing and control.

The 3020 measures liquid level using a differential pressure transducer, and calculates flow using built in level-to-flow conversions. Submerged probe measurement accuracy is unaffected by wind, steam, foam, turbulence, or air temperature fluctuations. The probe accurately senses pressure, even when covered with silt and sand, and the venting system automatically compensates for changes in atmospheric pressure.

Safe for hazardous locations

Isco Submerged Probes are UL Classified for Class I, Division 1, Groups A, B, C & D hazardous locations when installed using the Intrinsically Safe Barrier and Quick Disconnect Box. This makes the submerged probe safe to use in locations where flammable gases may be present.

A keypad and backlit LCD make programming fast and easy. Level-to-flow rate conversions for most weirs and flumes are built in, but you can enter an equation or use an optional Characterization PROM chip if desired. When programming is complete, the 3020 displays data in selectable units of measure. A non-resettable totalizer gives you a permanent record of flow.



Isco Submerged Probes are ideal for applications where wind, steam, foam, or turbulence exist.



Standard Features

- ◆ Built in level-to-flow conversions are included for most weirs, flumes, and other devices.
- ◆ Non-resettable mechanical totalizer provides tamper-proof record of cumulative flow.
- ◆ Lockable enclosure is rated NEMA 4X and IP56.
- ◆ Built-in heaters assure dependable outdoor operation in cold climates.
- ◆ A sampler relay will signal your sampler to collect flow-proportioned samples.

Applications

- ◆ Flow measurement where wind, steam, foam, or turbulence exist.
- ◆ Flow-proportional control of processes, such as chlorination or pH neutralization, using the 4 to 20 mA output.
- ◆ Optional alarm relays activate external equipment such as pumps, alarms, and indicators.
- ◆ Transmitting flow data to computer or SCADA system using RS-232 output.

Specifications

3020 Flow Transmitter	
Size (H x W x D)	15.3 x 10.6 x 7.38 in (38.7 x 27 x 18.7 cm)
Weight	10 lbs (4.5 kg)
Material	High-impact molded polystyrene structural foam
Enclosure (self-certified)	NEMA 4X (IP65)
Power	104 to 127V AC, 0.075 A or 208 to 254V AC, 0.038A, 50/60 Hz
Display	6 digit backlit liquid crystal, 0.5 in (1.27 cm) high x 0.26 in (0.66 cm) wide digits
Level-to-Flow Rate Conversions	Weirs V-notch, rectangular, Cipolletti Flumes Parshall, Palmer-Bowlus, Trapezoidal, H Equation Two-term polynomial Characterization PROM Factory programmed with any level-to-flow rate relationship (optional)
Totalizer	7 digit mechanical, non-resettable
Sampler Pacing Output	Isolated contact closure, rated 1 A at 48V DC
Sampler Input	Event mark, bottle number
Analog Output	Isolated 4-20 mA based on level or flow rate, with or without sampler event marks, into a maximum of 1000 ohms Compatible Isco Recording Device 2410 Circular chart Recorder
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
Serial Data Output	RS-232 ASCII string of level, flow rate, total flow, sample number, and bottle number, once every 12 seconds Format 300 baud, 7 data bits, 2 stop bits, even parity
Remote Totalizer Output	12V pulse Compatible Isco Device Isco Remote Totalizer
Operating Temperature	-20° to 140°F (-30° to 60°C)
Storage Temperature	-50° to 150°F (-46° to 66°C)

Submerged Probe									
Hazardous Location Rating	UL Classified for use in Class I, Division 1, Groups A, B, C, & D hazardous locations as defined by Article 500 of the National Electrical Code when installed with Isco Intrinsically Safe Barrier and Quick Disconnect Box per control drawing 60-3403-131.								
Length	9.5 in (24.1 cm)								
Diameter	0.875 in (2.2 cm)								
Frontal Area	0.765 in ² (4.93 cm ²)								
Cable Length	25 ft (7.6 m)								
Cable Diameter	0.3 in (0.8 cm)								
Weight (including cable)	3 lbs (1.4 kg)								
Level Measurement Method	Submerged pressure transducer mounted in the flow stream								
Transducer Type	Differential linear integrated circuit pressure transducer								
Level Measurement Range	0.1 to 10 ft (0.03 to 3.05 m)								
Maximum Allowable Level	20 ft (6.1 m)								
Level Measurement Accuracy	<table border="0"> <tr> <td>Level*</td> <td>Error</td> </tr> <tr> <td>1 to 5 ft (0.03 to 1.52 m)</td> <td>1 to 5.0ft (±0.003 m)</td> </tr> <tr> <td>1 to 7 ft (0.03 to 2.13 m)</td> <td>1 to 7.0 ft (±0.009 m)</td> </tr> <tr> <td>1 to 10 ft (0.03 to 3.05 m)</td> <td>1 to 10 ft (±0.03 m)</td> </tr> </table> <i>Non-linearity, repeatability, and hysteresis at 77°F (25°C). Does not include temperature coefficient.</i>	Level*	Error	1 to 5 ft (0.03 to 1.52 m)	1 to 5.0ft (±0.003 m)	1 to 7 ft (0.03 to 2.13 m)	1 to 7.0 ft (±0.009 m)	1 to 10 ft (0.03 to 3.05 m)	1 to 10 ft (±0.03 m)
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Temperature Coefficient	<table border="0"> <tr> <td>Level*</td> <td>Error</td> </tr> <tr> <td>1 to 4 ft (0.03 to 1.22 m)</td> <td>±0.005 ft/°F (±0.0027m/°C)</td> </tr> <tr> <td>4 to 10 ft (1.22 to 3.05 m)</td> <td>±0.007 ft/°F (±0.0038m/°C)</td> </tr> </table> <i>Maximum error over compensated temperature range (per degree of temperature change)</i>	Level*	Error	1 to 4 ft (0.03 to 1.22 m)	±0.005 ft/°F (±0.0027m/°C)	4 to 10 ft (1.22 to 3.05 m)	±0.007 ft/°F (±0.0038m/°C)		
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Operating Temperature	32° to 160°F (0° to 71°C)								
Compensated Temperature	32° to 100°F (0° to 38°C)								
Materials	Submerged probe Type 316 stainless steel, chlorinated polyvinyl chloride (CPVC) Cable Polyvinyl chloride (PVC)								

*Actual vertical distance between the submerged probe and the liquid surface.

Ordering Information

Description	Part Number
3020 Submerged Probe Flow Transmitter	
for conduit installation	68-3020-001
for non-conduit installation	68-3020-002
Quick Disconnect Box	60-3224-003
Intrinsically Safe Barrier	60-3404-060
High/Low Alarm Relays	60-3404-028
Remote Totalizer	68-2440-019
2410 Circular Chart Recorder	
24-hour Recording Format	68-2410-006
7-day Recording Format	68-2410-007



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