

## Clamp-on sonar well flow surveillance

Expro's ActiveSONAR flow meter represents the next generation of clamp-on sonar flow monitoring technology for single and multiphase flows.

Building on 10 years experience with SONAR based measurement, ActiveSONAR technology provides enhanced performance for surveillance applications with low flow rates and heavy walled piping. ActiveSONAR utilizes an array of clamp-on sensors attached to the outside of the pipe. Flow rate is determined using Expro's sonar processing techniques to measure the speed at which naturally-occurring coherent structures flow past the sensor array. Whereas PassiveSONAR tracks these flow structures by monitoring the strain in the pipe caused by the pressure perturbations associated with the coherent flow structures, ActiveSONAR determines the flow velocity by tracking the interaction of externally generated acoustic pulses with these same naturally occurring coherent flow structures.

Expro's ActiveSONAR systems complement Expro's PassiveSONAR technology by providing the following features and advantages:

- Clamp-on installation
- Robust operation in wellhead and process piping
- Single and multiphase flow

### Applications:

Wellhead Production Surveillance:

Dry Gas

Wet gas type I & II (Volumetric Gas Rate)

Water injection

Gas injection – WAG wells / Gas lift

### Benefits:

Clamp-on multiphase process surveillance:

Provides mixture flow rate for a wide range of single and multiphase flows

Installation without production shutdown

No pressure drop or permanent pressure loss

Measurement independent of process pressure and pipe schedule

Large turndown

Calibration-free operation

Standard DCS and SCADA communications (RS-485 MODBUS)



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### Technical Specifications:

Parameter	Specifications	Comments
Pipe diameters	2" to 12", 24"	Inquire with Expro for availability of other sizes
Flow velocity range	0.5 to 50 m/s (1.5 to 150 ft/s)	
Calibrated flow range	3 to 27 m/s (10 to 90 ft/s)	Gas flow
	0.8 to 6 m/s (2.7 to 20 ft/s)	Liquid flow
Flow rate accuracy	±2.0% of reading <sup>(a)</sup>	
Sensor head	Clamp-mounted onto the existing pipe section; designed for permanent installation	Sensor head requires 0.3 meters (1 foot) of straight pipe free of weldments or fittings
Operating Temperature Range:		
Ambient Temperature	-45°C to +60°C (-49°F to +140°F)	
Process Temperature	-45°C to +125°C (-49°F to +257°F) <sup>(b)</sup>	
Communication protocol	Modbus RS485 RTU/ASCII 4-20mA output (optional external accessory)	
Ingress Protection (IP) Rating		
Transmitter	IP-66	
Sensor Head	IP-67	
Power requirements	18 to 35 VDC, 12 watts	
Hazardous Area Classification	1. ATEX Zone 1: FM09ATEX0038X  II 2 G Ex d mb IIB T6...T4 -45°C (-50°C) ≤Ta≤+60°C IP66/67 IECEx Gb: IECEx FMG 09.0005X Ex d mb IIB T6...T4 -45°C (-50°C) ≤Ta≤+60°C Gb IP66/67 2. US: Class I, Division 2 Groups CD Ta = -45°C (-50°C) to +60°C IP66/IP67 Type 4X 3. Canada: Ex d m IIB T6...T4 for installation in Class I, Division 2 Groups CD T6...T4 -45°C (-50°C) ≤Ta≤ +60°C IP66/IP67 Type 4X	

<sup>(a)</sup> Accuracy can be function of installation

<sup>(b)</sup> US temperature rating: -45°C to +100°C (-49°F to +212°F)