

Acumen

Expro PassiveSONAR™ VF Flow Meter

Expro PassiveSONAR™ flow meter is a member of the sonar class of clamp-on flow meters, for single and multiphase volumetric flow measurement.

Sonar flow meters combine sophisticated submarine sonar array processing techniques with state-of-the-art digital signal processors and transducers. The PassiveSONAR flow meter employs an array of passive strain-based sensors to track the velocity of turbulent eddies in the fluid flow. The velocity is then used to determine the volumetric flow rate for single-phase flows.

Applications

- Oil (including black oil) or gas/condensate production
- Water/gas injection
- Downstream gas and liquid flow
- Tanker oil loading/unloading

Features and benefits

- Well suited to multiphase liquid flows
- Applicable to a wide range of flow rates and pressures
- Excellent performance on large diameter pipes
- No pressure drop or leak risk
- Unaffected by corrosive or erosive fluids
- Completely non-intrusive, clamp-on design



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Technical specifications		
Parameter	Specifications	Comments
Pipe diameter range	2" to 30" NPS	Enquire about other sizes
Flow velocity range	Liquid: 1 to 10 m/s Gas: 6 to 50 m/s	
Flow rate accuracy	+/-2% of full range reading	Whereas accuracy can be improved over a reduced measurement range
Repeatability	+/-0.3%	
Sensor head	Clamp-mounted onto the existing pipe section	Sensor head requires 1m (3ft) of straight pipe free of fittings
Transmitter	Programmable by keypad or PC interface, self-diagnostic, and data logging capability	LCD display with backlight. Provides flow rate, status, and diagnostics 1.
Transmitter to sensor cable	Unarmoured cable, connected at one end	Cable lengths up to 90m (300ft) Optional armoured cable
Cable Entries	4 x 1/2" NPT	
Operating temperature range		
Ambient temp - sensor head	-40°C to +60°C	
Ambient temp - transmitter	-20°C to +60°C	Can be remote from sensor 2.
Process temperature	-40°C to +100°C	
Digital outputs	Serial communications ports Pulse/frequency and alarm	RS-485, half-duplex Isolated solid-state switches
Serial communication protocol	Modbus (slave) RTU/ASCII	Enquire about other protocols
Analog output	Two (2) isolated 4-20mA inputs	Enquire about other protocols
Analog input	Two (2) 4-20mA inputs	For use with 2-wire transmitters
Ingress protection (IP) rating		
Transmitter	IP-55	Type 4X. After installation on pipe
Sensor head	IP-55	
Diagnostic interfaces	USB port	For data history, config and diag data via USB memory stick only
	10Base-T Ethernet	For setup/diags using a laptop
Power requirements	AC version: 100-240Vac, 25W DC version: 18 to 36Vdc, 25W	
Mounting	Pole or pipe mount	
Methods of protection	Non-sparking (nA) Intrinsic safety (ic)	Intrinsic safety applies to the sensor Head cable and 4-20mA inputs
Hazardous area classification		
ATEX model	ATEX Zone 2, Group IIB	Suitable for Groups IIA and IIB
US/Canada model	Class I, Div 2, Groups A-D	Also suitable for Class I, Zone 2

Note: Other sizes and configurations are available to meet most applications, for more information contact your local Expro representative or email acumen@expro.com

1. For Zone 2: no transmitter window for display
2. For Zone 2: -20° to +57°C