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

Acumen

Expro PassiveSONAR™ VF Flow Meter

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 ½" 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