ATEX Portable Ultrasonic Flow Meter

Self-powered flow computer incorporated in Aluminium case

Ideal for Checkmetering and Verification Applications with Field Proven Accuracy

The new ATEX approved portable ultrasonic flow meter, available exclusively from ABLE, provides up to 24 hours* of uninterrupted liquid or gas** flow metering on a single charge. The optional 'continuous flow' battery pack provides on going flow metering with minimal downtime during battery change.

With its newly designed power source and rugged aluminium case, this self-powered precision transit time flow meter has been engineered to provide usability in hazardous environments without the need to obtain a hot work permit. The compact flow meter weighs less than 25kg making it suitable to carry onboard a helicopter for offshore service.

The quick install clamp-on ultrasonic transducers use award winning WideBeam® technology for accurate and reliable flow metering with high tolerance to varying flow velocities, fluctuating pressure and temperature, and entrainment. The flow computer provides all the features, data logging and outputs expected from the latest in ultrasonic flow metering technology.

Installs without shutting Flow for Survey, Verification and Flow Analysis

Application Profile

Unique Zero-Matic® path software eliminates all zero drift and allows zero flow to be set without the need of shutting down the flow or blocking pipe lines making this new ATEX portable flow meter ideal for applications such as check metering, flow surveys, flow verification, and liquid or gas flow analysis.

*battery life depends on configuration and use
** measurement of liquid and gas is not possible with the same flow meter

Principle of Operation

Sonic pulses are sent both upstream and downstream between pairs of WideBeam® transducers mounted on the same side of the pipe. The transducers are matched to the pipe's sonic properties to produce a wide sonic beam. The beam travels axially through the pipe wall, transmitting a precise, stable waveshape into the liquid or gas. These pulses travel between transducers through two separate paths.

The first measurement path travels through the pipe wall and diagonally through the liquid or gas, reflecting off the far pipe wall to the other transducer. Liquid or gas flow causes a proportional time difference between upstream and downstream transmissions. The system measures this time difference and converts it to a volumetric or mass flow rate. The second sonic path passes between the transducers through the pipe wall only. Since liquid or gas flow does not affect the timing of the pulses in the pipe wall, this path serves as a stable zero flow reference. This eliminates zero drift and allows zero flow to be set automatically without the need to stop the process.

The patented WideBeam® transmission produces a strong, stable signal that extends far beyond the footprint of the transducers to ensure reliable operation.

For slugging applications with high levels of gas entrainment or multi-phase flow metering please contact ABLE for information on the SlugMaster® and multi-phase flow meters.

The Hazardous Area Portable Flow Meter you can count on

The Non-Intrusive Advantage

ABLE's WideBeam® transducers offer considerable performance advantages over conventional flow meters.

- Conventional systems cannot include Zero-Matic® as a ultrasonic zero reference, so they are subject to zero drift and must be zeroed at actual zero flow rate. ZeroClear and Deadband functions simply approximate zero and mask zero offsets.

- Using the pipe as a WideBeam® wave guide greatly extends the aperture of the sonic signal. This produces a wider beam with less beam spreading. The result is more flow information per transmission which is evident in the greater stability, better flow profile averaging and faster response rate of the WideBeam® system. WideBeam® transmission operates at a higher frequency than conventional insertion meters, providing better immunity to valve noise and ambient pipeline noise.

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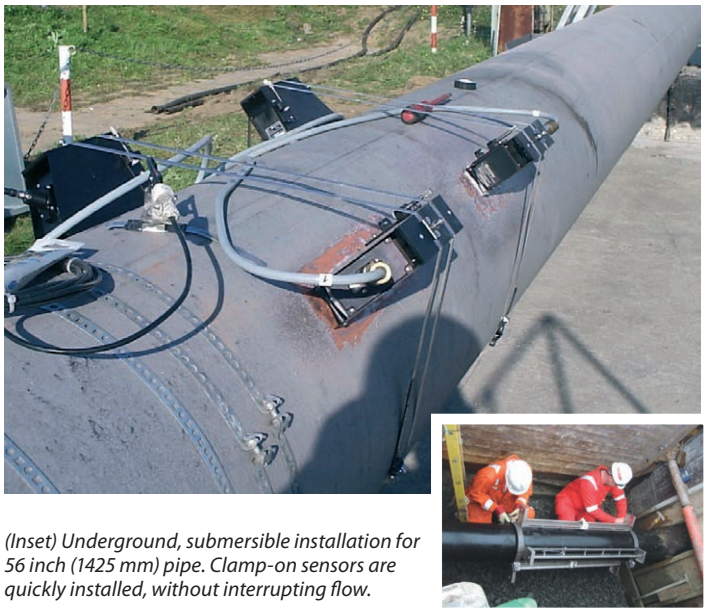
ATEX Portable Ultrasonic Flow Meter®



(Inset) Underground, submersible installation for 56 inch (1425 mm) pipe. Clamp-on sensors are quickly installed, without interrupting flow.

Functions provided

- Reliable and proven technology in operation all over the world, particularly in the petrochemical industry
- Versatile set up for less than ideal pipe conditions
- Complete application & operation diagnostics, to assure calibration and operational integrity
- Internal Datalogger

Portable features

- Non-intrusive design with WideBeam® transducers
- High tolerence to aeration and entrainment
- Can be operated from a zone 2 area with the intrinsically safe transducers in zone 1 or 0
- 24 hour* battery operation with optional 'continuous flow' battery pack
- Operation with Reflexor transducers
- Zero-Matic® prevents zero drift and eliminates need to shut flow and block-in line for zero setting

System components

- 1010GC NEMA 4X flow display transmitter
- 1011G field clamp-on transducers
- Optional 1000 ohm platinum RTD temperature sensor

PERFORMANCE SPECIFICATIONS	
Typical Accuracy	0.5% to 1% of rate (Pipe condition and flow profile dependent)
Calibrated Accuracy	Within 0.10% to 0.25% of measured value, application dependent
Repeatability	<0.05% – 0.10% (Pipe condition dependent)
Rangeability/Turndown	100:1 nominal to 1000:1 extended
Liquid Temperature	-40˚C to 120˚C (-40˚F to 250˚F)
Flow Range	± 30 m/s,(± 100 f/s) bi-directional
Flow Sensitivity	0.0003 m/s, (0.001 f/s) flow rate independent
Data Refresh Rate	80hz
Pipesize Range	25 – 1525Mm (Dependent on tranducers supplied)
FEATURE SPECIFICATIONS	
Display	128 x 240pixel, back-lit LCD
Rtd Temp Sensor	Optional 1000 Ohm, high precision 4-wire x 2
Menu Access	32 key keypad RS-232 serial port
Outputs	Isolated 4 to 20 mA, Programmable Standard x 2 Isolated 4 to 20 mA, Programmable Optional x 2 0 to 10 VDC, Menu Programmable x 2 Open Collector Digital Pulses (Quadrature) x 4 Optically Isolated Digital Pulse & Source 0 to 5KHz – TTL Pulse Square Wave x 2 RS-232 Serial Port
Optional Outputs	Modbus RS422
Status/Alarm I/O	Programmable, 4 Form C Relays Programmable 4 N.O. Mer. Wet. Relays (Opt.) Optically Coupled Output Logic Gates Totalizer Clear Switch Input Totalizer Hold Switch Input Opto Iso. Totalizer Clear Switch Input Opto Iso. Totalizer Hold Switch Input
Datalogger	1 Megabyte, Programmable for 17 Data Functions
POWER SPECIFICATIONS	
Hazardous Area Approved Nimh Batteries	4 x 12v cells for 24V, 16A/hr supply. IP66 batteries with IP67 connector. Weight per cell 4kg.
Europe ATEX Approved as a category 2 device for use in a safe area or zone 1 and zone 2 classified areas. Up to 24 hours operation.	

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