

**TECHNICAL SPECIFICATIONS
FLO-SONIC FPFM**



**FLO-SONIC FPFM
(Full Pipe Flow Meter)
Ultrasonic Transit Time Technology**

The FLO-SONIC FPFM uses the very latest electronic technology combined with highly efficient digital signal processing (D.S.P.), technique which maximize the system performance giving the user significant benefits. FLO-SONIC FPFM gives outstanding measurement capability including the ability to adapt its operation to suit the most challenging site conditions.

The system consists of a hand held control unit and two probes with support and cables.

Features

- Non-invasive external probes clamped on the pipe
- Easy and quick installation
- User friendly operation, set up by keypad or PC software using built-in RS232 serial port
- Automatic control of ultrasonic signal using the ESC mode (Echo Shape Control)
- Automatic zero flow adjustment with %anti air bubble+ signal processing
- Robust, splashproof IP65 control unit enclosure
- Very light weight: less than 2 kg
- Power Supply: 10-36VDC / 100-250 VAC
- Very high accuracy and sensitivity: 0.001 m/sec up to 99m/sec
- Probes available from -100°C to +200°C (pipe temperature)
- Wetted insertion sensors (through 2-nipple) are available for pipe materials like asbest cement or concrete or other material where clamp-on sensors don't work.

Specifications

- 2 lines LCD display . 16 characters . programmable backlight.
- Ergonomic keypad and menu configuration . access code if needed.
- Analog output (x2), relays (x2) and (or 485).
- High resolution time measurement < 0.1 ns.
- Dynamic Gain up to 89 dB.
- Echo analyzer with automatic control (ESC mode)
- Multiparameter : Flow, speed, gain, signal quality ratio, σ

Electrical specifications

- 12 VDC or 24 VDC or 115-230 VAC supply
- Isolated output current 4-20 mA- 250 Ohm
- Static relay 100 V . 100 mA (x2)

Optional accessories include

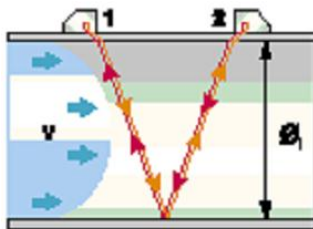
- Extra cable length for probes (l = 5 m)
- GPRS Data Logger with Internet compatibility

ESC mode and automatic zero flow

To achieve accurate flow readings, proper probes selection and installation are required. The E.S.C mode acts as an ~~A~~Auto focus for the ultrasonic signals in order to optimize the acoustic signal. Zero offset adjustment at no flow conditions is not necessary, nevertheless auto zero function can still be used.

Principle of operation*

The FLO-SONIC calculates the (V) speed and the (Q) flow of the fluid by the measurement of the (Δt) difference of the transit times of ultrasonic waves (t_{21} - t_{12}):



$$Q = f (\text{Ø}1 \cdot t_{12} \cdot t_{21})$$

$$\Delta t = t_{21} - t_{12} = Kv$$

with K : proportion coefficient

* The fluid and pipe material should allow for the propagation of ultrasounds

Accuracy

- DN ≤ 100 mm : +/- 2 % of working and +/-zero stability +/- 0.005 m/s
- DN >100 mm : +/- 1 % of working and +/-zero stability +/- 0.003 m/s
- Built in correction for multiproduct.
- Bi-directional measurement
- Volume metering. Choice of units from 0.001 to 100 m³
- Choice of probes installation : /. V. N and W mode

Probes and supports

Flow-Tronic offers a large range of conventional technology and microstructure technology probes with supports designed for easy and secure installation.

Wetted insertion probes (through 2-nipple) are available for pipe materials like asbest cement or concrete where clamp-on sensors do not work.

Enclosure

- Material: ABS Plastic IP66
- Dimensions: 259 x 236 x 96 (W x H x D)

Typical applications*

- Flows in all water applications: Network (potable water, raw water, sewage) . pumping . metering.
- Flow of various oil products . refined . crude oil . multiproducts pipelines.
- Petrochemical and food industries Process . Metering, control.
- Climate and hydraulic engineering . Network balancing . Performance

* With exception for two phase or high viscosity liquids

Changes without notice

Updated 11/10/2010 by BS