

# Ultrasonic portable flowmeter



**MINISONIC® P** An advanced portable flowmeter incorporating over 30 years of practical field experience  
Suitable for pipes from 10 to 3300 mm diameter

- ✓ Non-Invasive External probes clamped on the pipe
- ✓ Easy and quick installation
- ✓ User friendly operation, set up by keypad or software
- ✓ Automatic control of ultrasonic signal using the ESC mode (Echo Shape Control)
- ✓ Automatic zero flow adjustment with "anti air bubble" signal processing
- ✓ Robust, watertight (IP67) control unit enclosure
- ✓ Very light weight: less than 1 Kg
- ✓ Battery life : Up to 40 hours continuous operation
- ✓ Very high accuracy and sensitivity : 0.001 m/sec up to...99 m/sec
- ✓ Probes available from -100°C to +200 °C (pipe temperature)

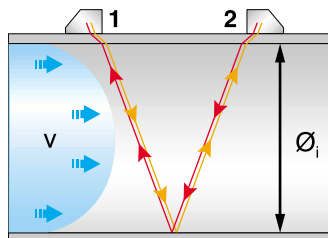
## Principle \*

The MINISONIC P calculates the (v) speed and the (Q) flow of the fluid by the measurement of the ( $\Delta t$ ) difference of the transit times of ultrasonic waves ( $t_{21} - t_{12}$ ):

$$Q = f (\varnothing_i, t_{12}, t_{21})$$

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

with K : proportion coefficient



\* The fluid should allow for the propagation of ultrasounds

## 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 hydraulical engineering – Network balancing – Performance

\* With exception for two phases or high viscosity liquids



**Ultrasonic Measurements** 

Represented by :



## SYSTEM DESCRIPTION

MINISONIC P uses the very latest electronic technology combined with highly efficient digital signal processing (D.S.P.) technics which maximise the system performance giving the user significant benefits. MINISONIC P 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.

## SPECIFICATION

- 2 lines LCD display - 16 characters - Programmable backlight.
- Ergonomic keypad and menu configuration - access code if needed.
- Analog output (x2), relays (x2) and R/S 232 (or 485).
- High resolution time measurement < 0,1 ns
- Dynamic Gain up to 89 dB.
- Echo analyser with automatic control (ESC mode)
- Multiparameter : Flow, speed, gain, signal quality ratio.....

## ESC MODE AND AUTOMATIC ZERO FLOW

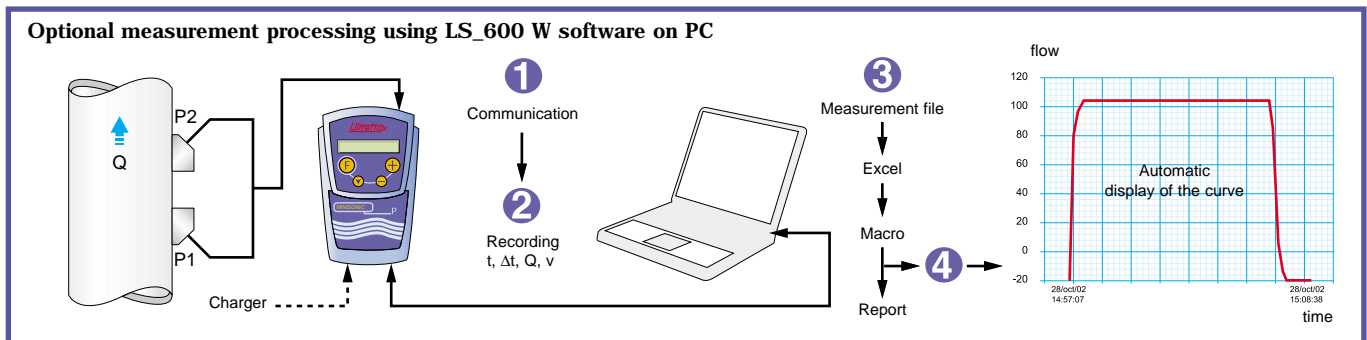
To achieve accurate flow readings, proper probes selection and installation are required.

The E.S.C. mode acts as an 'Auto focus' for the ultrasonic signals in order to optimise the acoustic signal.

Zero offset adjustment at no flow conditions is not necessary, nevertheless auto zero function can still be used.

## PERFORMANCE

- Typical accuracy following dry calibration : 0.5 % (DN > 100 mm), linearity on test loop : 0.1 %, repeatability 0.05 %
- Practical accuracy with common liquids (water,.....) :  
DN ≤ 100 mm : +/- 2 % if v > 0,3 m/s if not +/- 5 mm/s  
DN > 100 mm : +/- 1 % if v > 0,3 m/s if not +/- 2 mm/s
- Built-in correction for multiproduct or for laminar/turbulent transitions flow.
- Bi-directional measurement
- Volume metering. Choice of units from 0.001 to 100 m3
- Choice of probes installation : /, V, N and W modes.



## ELECTRICAL SPECIFICATION

- A CE product
- Internal battery 12 V - NIMH non pollutant
- Charger 90 V - 260 V AC - 12 to 14 h charging. External supply option.
- Isolated output current 4-20 mA- 250 Ohm
- Static relay 100 V - 100 mA (x2)

## KIT DESCRIPTION

MINISONIC P kit includes :

- 1 carrying bag for MINISONIC P, including pocket for cable (l=2.5 m, for pipes of approx ID 800 mm)
- 1 charger, 1 PC cable and software LS\_600W (disk or CD)

Extra : Probes and attaching system stored in separate carrying bag or case with a coupling agent

Optional accessories include:

- Extra cable length for probes (l = 5 m)
- External data logger with software
- Oscilloscope interface (echo analysis)

## MECHANICAL SPECIFICATION

- ABS enclosure with carrying pocket  
Dimensions : 220 x 115 x 64 mm.  
Converter weight : 850 g.
- IP 67 protection against dust and immersion
- Use temperature: - 10 °C to + 50 °C

## PROBES AND SUPPORTS

Ultraflux offers a large range of conventional technology and microstructure technology probes with supports, designed for easy and secure installation.

