

MINISONIC® 600 - 2000 - SPEED - G

A range of ultrasonic flowmeters



MINISONIC® 600
MINISONIC® 2000
MINISONIC® G
MINISONIC® SPEED

Pipe sizes from DN 10 to DN 600 mm (liquids)

Pipe sizes up to 3300 mm (liquids)

Gas volume metering, DN size depending on pressure

Open channel velocity measurement

- ✓ Non-Invasive (clamp-on) probes (except G version) or intrusive (wetted) probes
- ✓ Low cost simple installation
- ✓ On site "dry" calibration possible
- ✓ Automatic echo adjustment with ESC mode (Echo Shape Control)

- ✓ Water resistant to IP 67
- ✓ Virtually no maintenance required
- ✓ High accuracy with no time drift
- ✓ Security of totalizations-Security locked of the converter cabinet with seals

Principle

The MINISONIC calculates the speed, (v) the flow (Q) and the volume (Vol) of a fluid by measuring the (Δt) difference of transit time of ultrasonic wave ($t_{21} - t_{12}$)

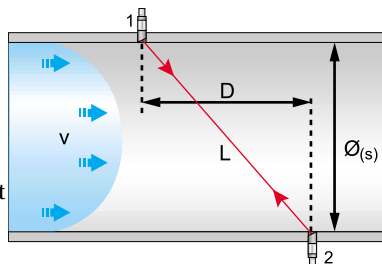
$$\Delta t = t_{21} - t_{12}$$

$$v \approx \Delta t \times c^2 / (2 \times D \times Kh)$$

$$Vol = Q \times t$$

C : speed of sound in the fluid

Kh : hydraulic coefficient



Typical applications *

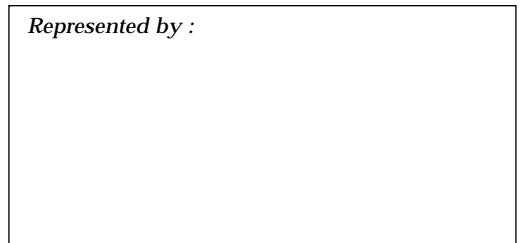
- Water flow of all types of water : Network (potable water, waste water) - Pumping - Metering.
 - Flow of various oil products - Refined - Crude oil- Multiproduct pipelines.
 - Petrochemical and food industries process.
 - Replacement of outdated equipment - retrofitting.
- * With exception for two phases or high viscosity liquids



Ultrasonic Measurements



Represented by :



DESCRIPTION

Its new electronics allows MINISONIC to suit all cases, and this, thanks to an enhanced emission power, to a more gain performant receiver, to a better noise rejection (+20 to 30 dB at final) and to a new digital signal and measurement processing.

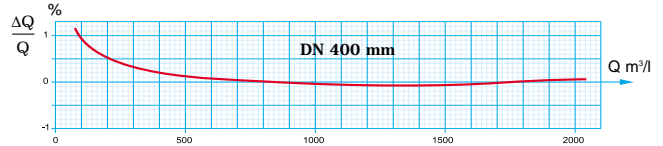
The metering unit consists of one converter, two probes with support and cables.

RESOURCES

- 2 lines LCD display - 16 characters - Programmable backlight.
- Ergonomic keypad and menu driven configuration - access code if needed.
- Gain dynamic up to 89 dB.
- High resolution time measurement < 0.1 ns
- Echo analyser with zero flow automatic control (ESC mode): automatic mode when commissioning
- Multiparameter : Flow, speed, gain, signal quality ratio
- Windows software PC LS_600 W for extended calibration, expertise and data saving.

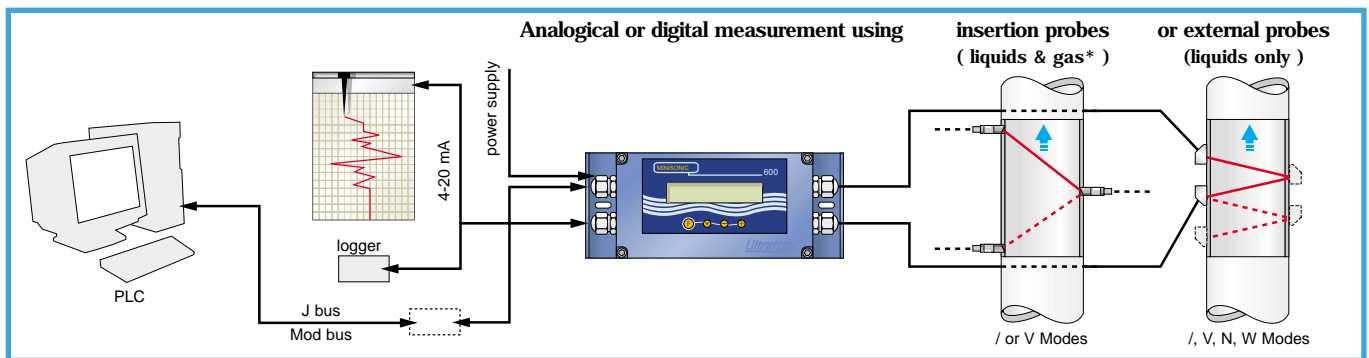
ESC MODE AND AUTOMATIC ZERO FLOW

The best accuracy would be achieved by a proper selection of probes together with a strict installation. Good hydraulic conditions must be obtained : upstream straight length >20D minimum. The ESC mode which acts as an 'Auto focus' for the ultrasonic signals in order to optimise the global acoustic adjustment would ensure proper results.



PERFORMANCES

- Typical accuracy following dry calibration : 0.5 % (DN > 100 mm). Calibration curve can also be linearized
- 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
- Repeatability on test loop : 0.05%
- Bi-directional measurement +/- 50 m/s
- Volume metering. Choice of unit from 1 cl to 100 m3
- Built-in correction for multiproduct or for laminar/turbulent transitions flow.



* limited depending on site conditions

ELECTRICAL CHARACTERISTICS

- A CE product
- Power supply : 9 to 18 VDC (option : 48 V) or 7 to 25 VAC - extra : external transformer 110 V or 230 VAC .
- Isolated output current 4-20 mA (x2) - 1500 Ohm depending on supply current - active output wiring available.
- Static relay (x2) 100 V/100 mA/10 VA max
- RS 232 or 485 output, 9600 Bauds maximum or JBus/ModBus protocol

MECHANICAL CHARACTERISTICS

- Aluminium cabinet - epoxy coated.
- IP 67 protection - Ambient T° = - 25 + 50 °C
- Size - Weight :
 - Industrial type : 237 x 108 x 79 mm - 1.5 Kg (Wall or pipe mounting)
 - Ex proof type (IxHxP) : 244 x 130 x 232 mm - 6.6 Kg
- Large range of probes IP 55 to IP 68, insertion or external - Industrial support.



Certifications

ATEX (pending)
 IP 67 - LCIE N° 7 415 010
 EXD : EEx 'd' IIC T6 - LCIE N° 01.E.6023
 Probe Ex 'm' - LCIE N° 98.D6099 X
 Probe Ex 'i' - 1589/..LCIE 92.C6042 X
 + Ultrasafe zener barrier : LCIE 96.D6143 X