



# Ultrasonic Flowmeter

## FL 200

### Clamp On Portable Transit Time



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Our Flowline FL200 portable ultrasonic flow meter is designed by the principle of transit time method. The transit time type ultrasonic flow meter is equipped with two transducers that are clamped on the outside of a closed pipe at a specific distance

The two transducers which function as both ultrasonic transmitters and receivers. The flow meters operate by alternately transmitting and receiving a frequency modulated burst of sound energy between the two transducers. The burst is first transmitted in the direction of fluid flow and then against fluid flow. Since sound energy in a moving liquid is carried faster when it travels in the direction of fluid flow (downstream) than it does when it travels against fluid flow( upstream), a differential in the times of flight( $\Delta T$ ) will occur.

The difference in the transit time measured is directly and exactly related to the velocity of the liquid in the pipe.

# FL200

The hand held/portable ultrasonic flow meter is the most popular flow measurement instruments, featured with low cost, high portability, high accuracy and non-intrusive. The compact, light-weight designing makes the hand-held flow converter truly portable.



# Features

- **Flexible design Concept** Modular design offers better flexibility and ease of operation with high degrees of efficiency.
- **Accurate, cost-effective measurement** Advanced digital signal processing and superior sensor design offer economical and reliable flow measurement.
- **No Process Interruption** Clamp-on Sensors are capable of quick retro-fit at any point in the process allowing easy flow measurement and troubleshooting.

**Wide Application Range** Suitable for a wide range of pipe sizes and materials including lined pipes for both conductive and non-conductive liquids.

- Economic, non-intrusive, flow measurement
- Easy set up and installation; no pressure drops, no moving parts
- Wide range of pipe sizes and materials suitable for lined pipes
- Velocity, volumetric and totalized flow
- Key pad for easy operation
- Data logger

# Applications

- Potable water
- Sewage (with limited particle content)
- Seawater
- Wastewater
- Crude Oil
- Diesel
- Alcohol
- Discharge water
- Other liquids used in industrial applications
  - Power plants
  - Heat energy metering
  - Metallurgy and mines
  - Petroleum and chemicals
  - Food and Pharmaceutical
  - Marine Operations
  - Pulp and paper



# Technical Specifications

<b>Pipe Size</b>	½" -240" (DN15mm-6000mm)
<b>Accuracy</b>	Better than ±1.0% of reading at rates>0.6ft/s (0.2m/s).
<b>Repeatability</b>	0.2%
<b>Velocity</b>	±0.01~±30m/s ±0.03~±105ft/s, bi-direction.
<b>Measuring Period</b>	500mS
<b>Totalizer</b>	7-digit total flow rate of net, positive and negative
<b>Measurement Principle</b>	Transit-time measurement principle (Single-path)
<b>Display</b>	4x16 English letters
<b>Units</b>	English (US.) or Metric. M3, L, Gal, IGL, MGL, CF, BAL, IB, OB etc. The flow unit in terms on time can be per day, per hour, per minute or per second, there are 36 different flow rate units in total for selection.
<b>Input</b>	3 channels of 4-20mA analog input for signals such as temperature, pressure, liquid level, and etc. Accuracy 0.1%. 2 channels of 3-wired PT100 platinum resistance.

# Technical Specifications

<b>Communication Interface</b>	RS-232C, baud-rate: from 75 to 115,200 bps. Protocol made by the manufacturer. User protocols can be made on inquiry.
<b>Data logger</b>	Built-in data logger can store over 2,000 lines of data
<b>Manual Totalizer</b>	7-digit, press-key-to-go totalizer for calibration
<b>Pipe material</b>	All metal, most of plastic, fiber glass, etc. The pipe line is allowed.
<b>Power</b>	3 AAA Ni-MH built-in batteries. When fully charged it will last over 12 hours of operation. 90-230VAC for the charger
<b>Liquid temperature</b>	-40°C—160°C
<b>Liquid Types</b>	Virtually all commonly used clean liquids.
	Liquids with small quantity of tiny particles also be applicable. Particle size should be less than 75µm, particle concentration should less than 10,000 ppm.
	Liquids should contain no or very minor air bubbles
	Examples are chilled/hot water, sea water, waste water, chemical liquids, oil, crude oil, alcohol, beer, etc.
<b>Transducer</b>	Clamp on type transducer, Model M2 for standard, other models for optional

# Transducer Specifications

Parameters	S2 type	M2 type	L2 type
Pipe Size (mm)	DN15-100	DN50-700	DN300-6000
Pipe Size (inch)	1/2-4"	2-28"	12-240"
Material	High Temp. Resistant ABS		
Frequency	1MHZ		
Magnetism	Magnetic		
Temperature	-40°C—160°C		
Protection class	IP67		
Dimension (mm)	45x30x30	71x37x40	91x52x44
Weight (Gram)	75	259	535
Liquid types	Water, sea water, waste water, chemical liquids, oil, crude oil etc.		
Suspension concentration	≤20000ppm, may contain very small amount of air bubbles.		