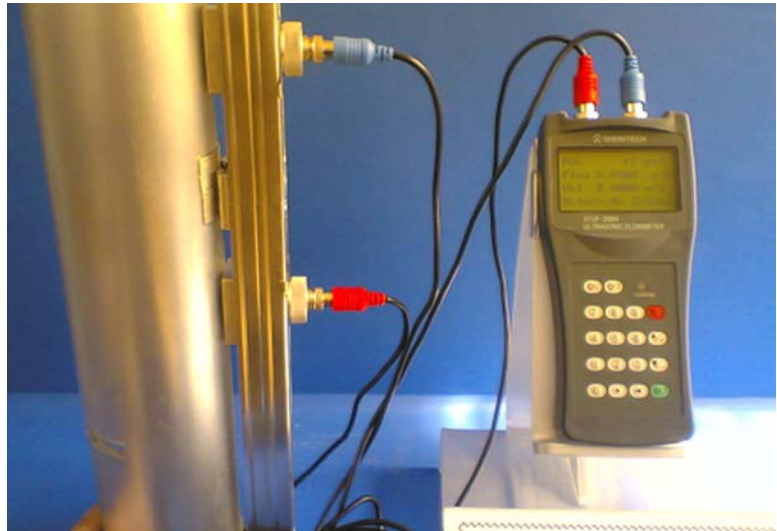


HANDHELD ULTRASONIC FLOWMETER

Advanced Clamp - On Transit Time Technology for Accurate Flow Measurement

Features and Benefits

- Wide flow measurement range, from 0.03 to 105ft/s (0.01m/s ~ 32m/s).
- Bi-directional. Totalizer for net, positive and negative flow.
- High accuracy, better than $\pm 1\%$ of velocity.
- Wide pipe size range, from 1/2" to 240" (DN15 ~ DN6,000).
- Suitable for all commonly used pipe materials.
- Rechargeable battery for 10 hours of operation.
- Built-in data logger.
- NIST Standard.
- Self-explanatory user interface. Very easy to operate.
- Windows PC software for data download and real-time data display.
- Signal quality tracking and self-adjusting capabilities automatically match transducer to pipe material
- Light weight (1.2lbs/538g for the handset). Compact enclosure. Very portable.
- Can also be deployed as a remote RTU for long-term flow monitoring application
- Easy and economical installation. No need for hole drilling, pipe cutting, etc.
- Noninvasive. No pipe disturbance. No moving parts. No pressure drop. No maintenance.
- Ideal for both clean and opaque liquid flow.



The OMNI-TUF-200H Handheld Clamp-on Ultrasonic Flowmeter is one of the most powerful flowmeters available for liquid measurement. The utilization of our proprietary ultrasonic signal processing, transit-time measurement and signal quality tracking technologies allows the flowmeter to measure liquid flow rate from outside of a pipe reliably and accurately.

The OMNI-TUF-200H flowmeter is carefully

designed so that it is very compact and easy to use. A user can use one hand to hold as well as to operate the flowmeter main unit. The user-interface is self-explanatory and very easy to follow. Besides, the unique clamp-on fixture design makes the installation very simple and no special skills or tools required. Due to the non-intrusive nature of the clamp-on technique, there is no pressure drop, no moving parts, no leaks and no contamination.

Applications

The OMNI-TUF-200H flowmeter is ideal for flow surveys and closed-pipe applications where non-invasive measurement of liquids is required. Benefited from our advanced digital signal processing technology, the handheld flowmeter works reliably in both clean and opaque liquid flow. Examples of applications include:

- Water, including hot water, chilled water, city water, sea water, etc.
- Sewage and drainage water with small particle quantity.
- Oil, including crude oil, lubricating oil, diesel oil, fuel oil, etc.
- Chemicals, including alcohol, acids, etc.
- Solvents.
- Beverage and food processors.
- HVAC hot and cool water, water/glycol solutions.
- Water and waste treatment.
- Power plants (nuclear power plants, thermal & hydropower plants), heat energy boiler feed water
- Energy consumption supervision and water conservation management
- Metallurgy and mining applications (e.g., acid recovery)
- Marine operation and maintenance
- Pulp and paper
- Pipeline leak detection, inspection, tracking and collection
- Energy measurement and balancing
- Network monitoring



Specifications

Accuracy	Better than 1%
Repeatability	0.2%
Accuracy	Normally better than $\pm 1\%$ for velocity above 0.6ft/s (0.2m/s).
Response Time	0-999 seconds, user-configurable
Velocity	$\pm 0.03 \sim \pm 105$ ft/s ($\pm 0.01 \sim \pm 32$ m/s), bi-directional
Pipe Size	1/2" ~ 240" (DN15mm ~ DN6,000mm)
Pipe Material	All metals, most plastics, concrete, lined pipe
Units	English (U.S.) or metric
Totalizer	7-digit totals for net, positive and negative flow respectively

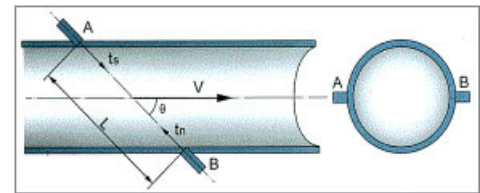
Liquid Types	Virtually all liquids (full pipe)
Liquid Temp	32° F ~ 212° F (0°C ~ 100°C)
Security	Setup Modification Lockout. Access code needed for unlocking
Display	4x16 letters
Digital Interface	RS-232C. User protocol can be made on enquiry.
Transducers	Model M1 for standard, other 3 models for optional
Transducer Cable	Standard 2x15' (2x5m). Contact the factory for longer cable
Power Supply	3 AAA Ni-H built-in batteries. When fully recharged, it will last over 10 hours of operation. 100V-240VAC for the charger
Data Logger	Built-in data logger can store over 2,000 lines of data
Housing Material	Aluminum alloy protective case. Suitable for normal and harsh environment
Case Size	7.9"x3.6"x1.3" (200mmx92mmx32mm)
Handset Weight	1.2 lbs (538g) with batteries

How Does the OMNI-TUF-200H Flowmeter Work

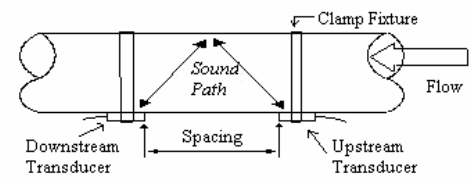
The OMNI-TUF-200H flowmeter is based on transit-time measurement principle, as shown in the following figure.

A typical transit-time flow measurement system utilizes two transducers (A and B) that function as both ultrasonic transmitter and receiver. The transducers are clamped on the outside of a closed pipe at a specific distance from each other. The flowmeter operates by alternately transmitting and receiving a coded burst of sound energy between the two transducers and measuring the transit time that it takes for sound to travel between the two transducers. The difference in the transit time measured is directly and exactly related to the velocity of the liquid in the pipe.

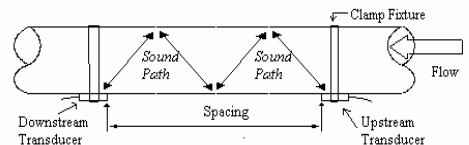
The transducers can be mounted in three methods, Z-method, V-method and W-method, depending on pipe size. Z-method is used for large pipe. The two transducers are installed on opposite sides of the pipe. V-method is used for medium size pipe. The two transducers are on the same side, thus, the sound transverses the flow twice. W-method is usually used for small pipe. The sound transverses across the flow four times.



Z-method




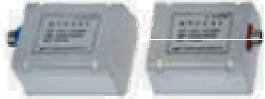


V-method



W-method

Optional Transducers

	<p>Type S Handheld small size transducer (magnetic with mounting rack and handle) Dim 7.9"x1"x1" (200x25x25mm³), handle length 3.9" (100mm) For pipe size ½" ~ 4" (DN15 ~ DN100mm)</p>
	<p>Type M Medium size transducer (magnetic with mounting rack) Dim 11"x1.6" x1.6" (280x40x40mm³) for each For pipe size 2" ~ 28" (DN50 ~ DN700mm)</p>
	<p>Type M1 Standard medium size transducer (magnetic with clamp-on fixture) Dim 2.4"x1.8" x1.8" (60x45x45mm³) For pipe size 2" ~ 28" (DN50 ~ DN700mm)</p>
	<p>Type L1 Large size transducer (magnetic with clamp-on fixture) Dim 3.1"x2.7" x2.2" (80x70x55mm³) For pipe size 11" ~ 240" (DN300 ~ DN6,000mm)</p>

Model Selection

OMNI-TUF - 200H - □



- 1 --- Type S for pipe size ½" – 4" (DN15 ~ DN100mm)
- 2 --- Type M for pipe size 2" – 28" (DN50 ~ DN700mm)
- 3 --- Type M1 for pipe size 2" – 28" (DN50 ~ DN700mm)
- 4 --- Type L1 for pipe size 11" – 240" (DN300 ~ DN6,000mm)

Example: OMNI-TUF-200H-12: handheld ultrasonic flowmeter with type S and M transducer
OMNI-TUF-200H-4: handheld ultrasonic flowmeter with type L transducer

OMNI-TUF-200H-12: handheld ultrasonic flowmeter with type S and M transducer are standard kits