



Ultrasonic Clamp on Flow Meter



LF-UF-C

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DESCRIPTION

The transit time flow meter utilizes two transducers that function as both ultrasonic transmitters and receivers. The transducers are clamped on the outside of a closed pipe at a distance from each other. The transducers can be mounted in V method in which case the ultrasound transverses the pipe twice, or W method in which case the ultrasound transverses the pipe four times, or in Z method in which case the transducer are mounted on opposite sides of the pipe and the ultrasound transverses the pipe only once. The selection of mounting method depends on pipe and liquid characteristics. When flow meter works, two transducers transmit and receive the ultrasonic signal which travels firstly downstream and then travels upstream. Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight (Δt). When the flow is still, the time difference (Δt) is zero. Therefore, as long as we know the time of flight both downstream and upstream, we can work out the time difference and the flow velocity (V) and flow volume (Q) the following formula.

Where:

V: Liquid velocity

K: Constant

D: distance between the two transducers.

Dt: difference in time of flight



Transmitter and receivers roles are constantly switched by electronics. Ultrasonic pulses travelling in the direction of the flow, travel path between transducer in a shorter period of time than pulses travelling against the flow. This is because the flow speeds up pulses travelling downstream but slows down pulses travelling upstream.

Application: Raw Water, cooling water, DM water, hot water, chemicals, HVAC energy measurement system, Beverages, food, pharmaceutical, power plants, etc.

Advantages

No moving parts.

Sensor Clamp outside the pipe, no need to cut the lines.

Disadvantages

Old or corroded pipes may impede acoustic signal.

Too much aeration or turbulence can destroy signal.

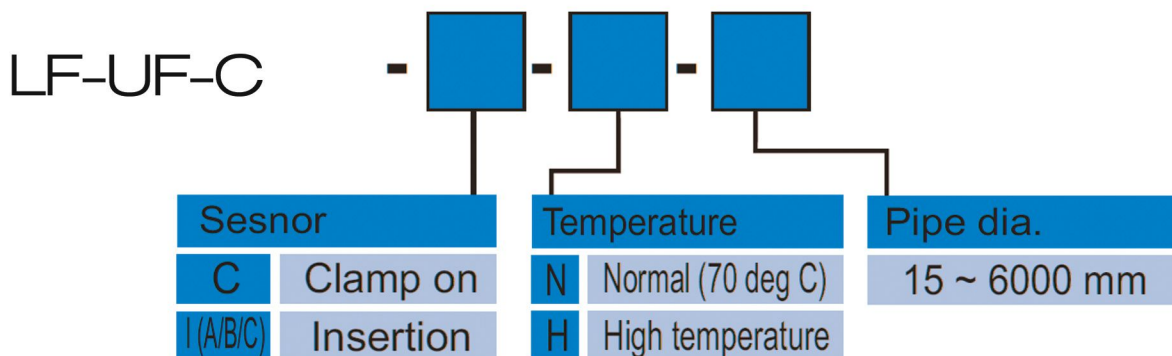


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TECHNICAL SPECIFICATION

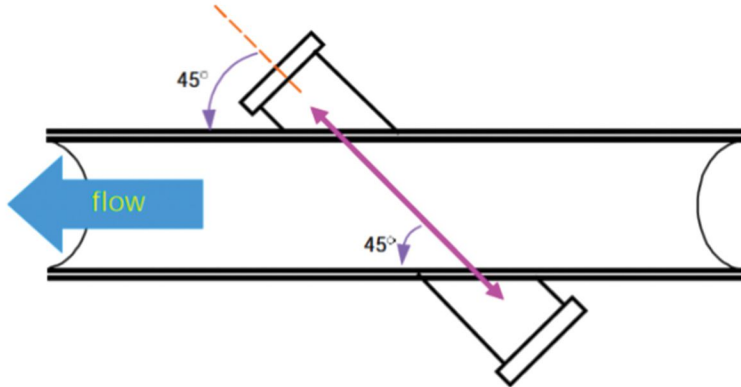
Model	LF-UF-C
Media	25-5000 mm
Temperature	80 deg ^o C/High temp.model also available
Response Time	500 ms
Accuracy	±1% Full range
Frequency	1MHz
Flow Unit Display	M ³ , litre
Sensor Cable	5m x 2 nos.
Accessories	Sensor gel, Mounting Clamps
Sensors	Ultrasonic Clamp On – 2 nos.
Protection	IP65
Display Unit	Wall Mounted, LCD display(Flow rate & totalizer)
Supply	220 V Ac, 50Hz
Output(Optional)	4-20mA, RS 232, RS 485

MODEL SELECTION



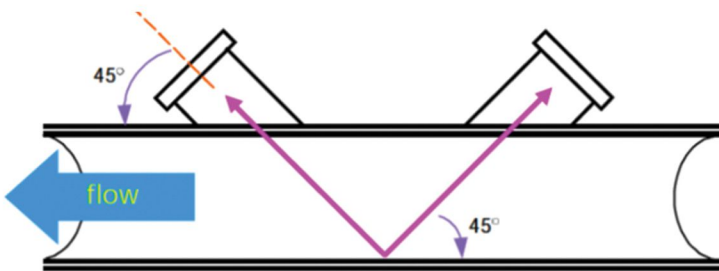
TYPES OF INSTALLATION

A single traverse configuration consists of two transducers mounted across from each other on the pipe figure 1, so that the signal they transmit passes through the fluid.



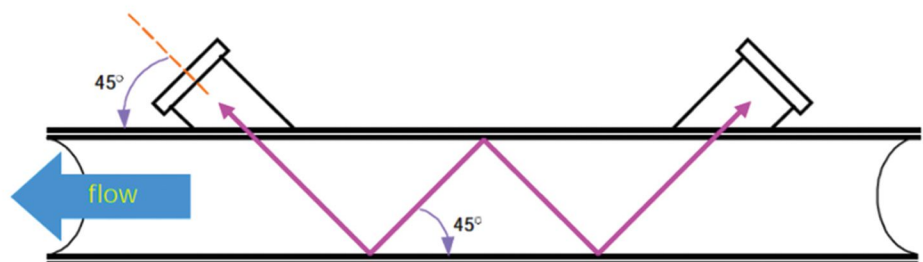
Z - METHOD

A multiple traverse configuration consists of two transducers mounted on the pipe so that the signal traverses the fluid two or more times before reaching the other transducer figure 2. This allows the signal to remain in the fluid longer, increasing the effective length of the signal path, and thus increasing accuracy. The number of times the signal can traverse through the fluid depends on factors such as transducer frequency, pipe size, pipe wall condition, and the fluid being measured.



V - METHOD

W - METHOD



* (All models may differ in looks & all specification may not be part of every version)
* (Specification may vary as per different model selected. Some feature may not be there in model selected.)