ULTRASONIC FLOWMETER

FlowSon Series

ULTRASONIC FLOWMETER

ULTRASONIC FLOW METER
Model: FMds-100f
Power Supply: 220V AC
Output.: Rs485 / 4-20mA / OCT
Serial No: 32205182
Protection Class: IP65
Flowtech Measuring Instruments Private Limited

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FLOWSON-InT
Insertion Type

FLOWSON-PT
Portable Type

FLOWSON-CT
Clamp-OnType

Product Description

The wall-mount Ultrasonic Flowmeter is designed to be installed in a fixed location for long-term flow measurement.

The FlowSon CT meter is based on transit-time flow measurement principle. It measures the flow rate of liquid in a closed pipe by using a pair of clamp-on or wetted ultrasonic transducers. In general, the liquid should be full in the pipe, and should contain no or small number of particles or air bubbles. Examples of applicable liquids are: water (hot water, chilled water, city water, sea water, etc.); sewage; oil (crude oil, lubricating oil, diesel oil, fuel oil, etc.); chemicals (alcohol, acids, etc.); waste water; beverage, liquid food, solvents and other liquids.

The state-of-the-art technologies such as advanced signal processing, low-voltage transmitting, small signal receiving, self-adaptation, the latest electronics, etc., are aimed to achieve high accuracy and reliable performance. Besides, the product provides versatile output interfaces, both analogue and digital, which can be easily used by a host computer or a flow controller.
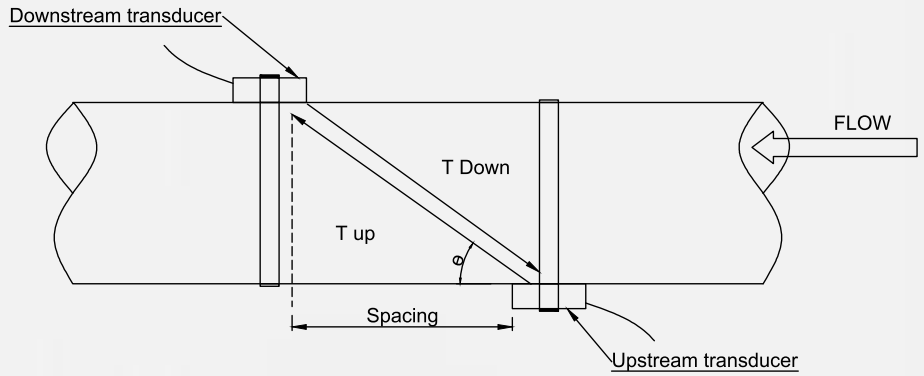
Flow Measurement Principle :

The FlowSon Series ultrasonic flow meter is designed to measure the velocity of liquid within a closed conduit. It uses the well-known transit-time measurement principle, plus our proprietary signal processing and ultrasonic transcribing technologies.

As shown in Figure 1, the utilizes a pair of ultrasonic transducers which are mounted on the pipe upstream and downstream respectively. Each transducer functions as both ultrasonic transmitter and receiver. The main unit operates by alternately transmitting and receiving a coded burst of sound energy between the two transducers.

The transit-times in the upstream direction as well as in the downstream direction are measured. The difference of the two transit times is directly and exactly related to the velocity of the liquid in the pipe.

$$V = \frac{MD}{\sin 2\theta} \frac{\Delta T}{T_{down}} T_{up} \bullet$$

Downstream transducer

FLOW

T Down

T up

Spacing

Upstream transducer

Where,

"Θ" is the angle between the sound path and the flow direction

"M" is the number of times the sound traverses the flow D is the pipe diameter

"Tup£ is the time for the beam travelling from upstream the transducer to the downstream transducer

"Tdown" is the time for the beam travelling from the downstream transducer to the
upstream transducer "ΔT" = Tup – Tdown

The flow rate is then computed by combining the velocity information with pipe parameters and a scale factor. The scale factor is normally determined by calibration in factory.

Three types of transducers can be used with the main unit, the clamp-on transducer, the insertion wetted transducer (also called "hot tap") and the flow-cell transducer. All of them do not block the flow, thus, do not generate pressure drop. The transducers can be mounted in V- method where the sound transverses the pipe fluid twice, or in W-method where the sound transverses the pipe fluid four times, or in Z-method where the transducers are mounted on opposite sides of the pipe and the sound crosses the pipe fluid once. The selection of the mounting methods depends on pipe and liquid characteristics

Applications:

The FlowSon CT flow meter can be applied to a wide range of pipe flow measurements. Applicable liquids include pure liquids as well as liquid with small quantity of tiny particles. Examples are:

Water

Ultra Pure Liquids

Oil

Chemicals

Plant Effluent

Sewage with small particle content

Beverage Liquid Food

Solvents & Other Liquids

Sensor Specification :

Transducer Type	Picture	Spec.	Model	Pipe Size	Temperature	Dimension
Standard Clamp on Type		Small	S2	DN15~DN100	-30~90ºC	54x25x32mm
		Medium	M2	DN50~DN700	-30~90ºC	64x39x44mm
		Large	L2	DN300~DN6000	-30~90ºC	97x54x53mm
High Temperature		Small	H2	DN15~DN100	-30~160ºC	54x25x32mm
		Medium	HM	DN50~DN700	-30~160ºC	64x39x44mm
		Large	HL	DN300~DN6000	-30~160ºC	97x54x53mm
Insertion Type		Standard	TC-1	DN80~DN6000	-30~160ºC	190x80x55mm
		Longer Type	TC-2	DN80~DN6000	-30~160ºC	335x80x55mm

Technical Specification :

Type		Performance/Specification
Transmitter	Principle	Ultrasonic transit-time principle, Four-byte IEEE754 floating-point artimetic
	Accuracy	± 1.0%, Maintaining at 10% less volume
	Display	LCD Display
	Output	One 4-20mA current output, impedance 0-1K.accuracy ± 1.0% One OCT pulse output (width 6-1000ms,Default 200ms) One relays output
	Input	Three 4-20mA current input Accuracy : ±1.0% Collect temperature, pressure signal etc. Can connect with thres-wire Pt100 plastinium resistance to measure heat
	Data Interface	Isolated RS 485 interface can upgrade flowmeter through PC, support modbus
Cable		Normal below 50mm Select RS 485 communication, Transmission distance can over thousand meters
Pipe condition	Material	Steel, Stainless Steel, Cast iron,Copper,PVC,Aluminum,FRP
	Diameter	15-6000mm
	Installation	Upstream 10D, Downstream 5D, 30D away from the pump outlet
Medium	Fluid	Water, Seawater, Acid liquid, Beer, Alcohol, Oil and any other liquid that can spread sonic
	Temperature	-30~160ºC
	Turbidity	10000 RPM and Litter Bubbles
	Velocity	0~±10ms
Operating Environment	Temperature	Transmitter: 20~60ºC, Transducer : 30~160ºC
	Humidity	Transmitter: 85%RH; Transmitter protection grade: IP 68;Water depth<2m
Power Supply		DC8-36V or AC85-264V
Consumption		1.5w

Product Ordering Information

Order Code for Ultrasonic Flow Meter Model

Sensor Details	Description	Code
	Insertion Type	InT*
	Clamp-On Type	CT
	Portable Type	PT

Sensor size	Description	Code
	Small	S
	Medium	M
	Large	L

*Only "S & M" in Insertion Type

Mounting Details	Description	Code
	With Spool Piece	M 1
	Without Spool Piece	M 2

Output	Description	Code
	4-20mA	O 1
	4-20mA + HART	O 2

Communication Output	Description	Code
	RS 485	O 3

Power Supply	Description	Code
	230 VAC	P 1
	24 VDC	P 2
	110 VAC	P 3
	Battery Operated	P 4
	Customised	P 5

Protection	Description	Code
	Weather-Proof	WP
	Flame-Proof	FLP

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