Distributor of Subsurface Detection System and Utility Instruments

Dill-Tech

PORTABLE ULTRASONIC FLOWMETER

CLAMP-ON

Its optional thermal energy measurement capability makes it possible to carry out a complete analysis of thermal energy usage in any facility.

PORTABLE ULTRASONIC FLOWMETER

General:

The Portable Ultrasonic Flowmeter works on the transit-time method.
The clamp-on ultrasonic transducers (sensors) are mounted on the external surface of the pipe for non-invasive and non-intrusive flow measurement of liquid in fully filled pipe. Two pairs of transducers are sufficient to cover the most common pipe diameter ranges. In addition, its optional thermal energy measurement capability makes it possible to carry out a complete analysis of thermal energy usage in any facility.
The Insertion ultrasonic transducers (sensors) is hot-tapped mounting, there is no ultrasonic compound and coupling problem; Even though the transducers are inserted into pipe wall, they do not intrude into the flow, thus, do not generate disturbance or pressure drop to the flow. The insertion (wetted) type has the advantage of long-term stability and better accuracy.
This flexible and easy to use flow meter is the ideal tool for the support of service and maintenance activities. It can also be used for the control or even for the temporary replacement of permanently installed meters.

Applications:

General

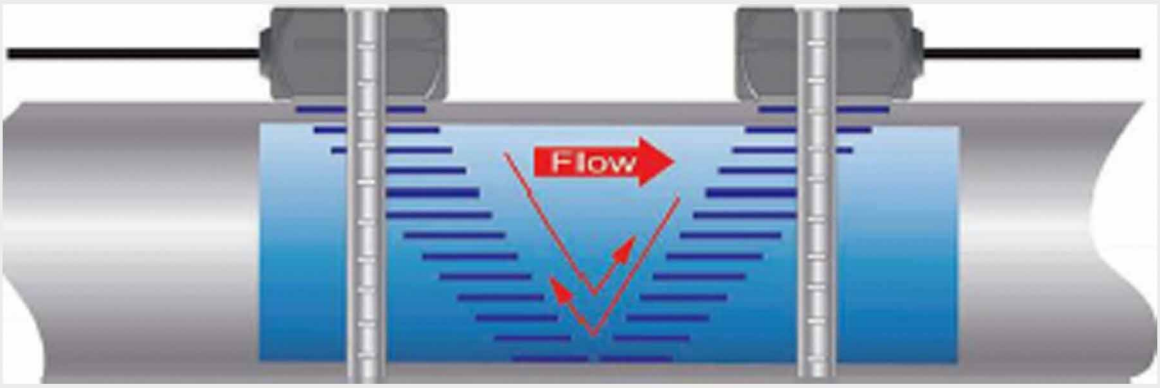
- Service and maintenance
- Replacement of defective devices
- Support of commissioning process and installation
- Performance and efficiency measurement
  - Evaluation and assessments
  - Capacity measurement of pumps
  - Monitoring of regulating valves
- Energy efficincy audits

Water and waste industry - hot water, cooling water, potable water, sea water, etc
Petrochemical industry
Chemical industry - chlorine, alcohol, acids, thermal oils etc
Refrigeration and air conditioning systems
Food, beverage and pharmaceutical industry
Power supply - nuclear powerplants, thermal & hydropower plants, heat energy boiler feed water etc
Metallurgy & mining applications
Mechanical engineering and plant engineering - pipeline leak detection, inspection, tracking and collection.

Water & Waste Water | HVAC | Building | Petrochemical Industry | Metallurgy & Mining

Principle of Measurement:

The Transit Time Difference Correlation Principle makes use of the fact that the time-of-flight of an ultrasonic signal is affected by the flow velocity of the carrier medium. Like a swimmer working his way across a flowing river, an ultrasonic signal travels slower upstream than downstream.
Our ultrasonic flow meters work according to this transit-time principle:



$$V_f = Kdt / TL$$

Where:

V1: Flow velocity
K : Constant
dt : Difference in time of flight
TL : Average Transit Time

When the flow meter works, the two transducers transmits and receives ultrasonic signals amplified by multi beam which travels firstly downstream and then upstream. Because ultra sound travels faster downstream than upstream, there will be a difference of time of flight (dt). When the flow is still, the time difference (dt) is zero. Therefore, as long as we know the time of flight both downstream and upstream, we can work out the time difference, and then the flow velocity (Vt) via the following formula.

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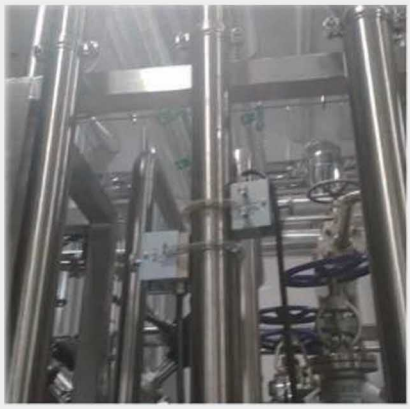
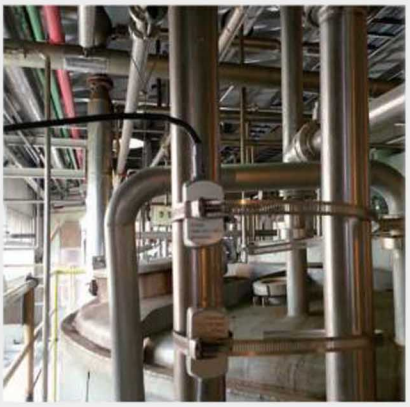
Application Pictures:








Features:

• 50-hour battery (rechargeable), color LCD display all integrated into a rugged, watertight enclosure.

• Data logger function.

• The heat measurement function by configuring with paired temperature sensors.

• Non-invasive transducers.

• Wide bi-directional flow range of 0.01 mis to 12 mis. Wide liquid temperature range: -35't-200't.

• Works reliably in both clean and somewhat dirty liquids with turbidity<10000ppm.

• Lightweight and easily transportable in box.

Specifications:

Transmitter:

Measurement principle	Ultrasonic transit-time difference correlation principle
Flow velosity range	0.01 to 12m/s, bi-directional
Resolution	0.25mm/s
Repeatability	0.2% of reading
Accuracy	±1.0% of reading at rates >0.3m/s; ±0.003m/s of reading at <0.3m/s
Response time	0.5s
Sensitivity	0.0003m/s
Damping of displayed value	0-99s (selectable by user)
Liquid Types Supported	Both clean and somewhat dirty liquids with turbidity <10000 ppm
Power Supply	AC: 85-265V Up to 50 hours with fully charged internal batteries
Enclosure type	Portable
Degree of protection	IP66
Operating temperature	-20°C to +60°C
Housing material	ABS
Display	4.3” colour LCD display, 16 keys
Units	User Configured (English and Metric)
Rate	Rate and Velocity Display
Totalized	gallons, ft^3, barrels, lbs, litres, m^3, kg
Thermal energy	unit GJ, KWh can be optional
Communication	4-20mA, OCT, RS232, RS485 (Modbus), Datalogger, GPRS
Size	270(h)*215(w)*175(d)mm
Weight	3kg

Transducer:

Degree of protection	IP65 according to EN60529 (IP67 or IP68 Upon request)
Suited Liquid Temperature	-35°C~200°C
Transducer Size	Type B 40(h) *24(w) *22(d)mm Type A 46(h) *31(w) *28(d)mm
Pipe diameter range	20-50mm for type B; 40-5000mm for type A
Material of transducer	Aluminum + Peek
Cable Length	Std: 5m
Temperature Sensor	Pt1000 clamp-on Accuracy: ±0.1%

Configuration Code:

Portable Ultrasonic Flowmeter										
	Power Supply									
	A	85-265VAC								
		Output Selection 1								
		N	N/A							
		1	4-20mA (accuracy 0.1%)							
		2	OCT							
		3	RS232 Output							
		4	RS485 Output (ModBus-RTU Protocol)							
		5	Data storage function							
		6	GPRS							
			Output Selection 2							
			Same as above							
			Output Selection 3							
				Transducer Type						
				B	DN20 - 50 -35 ~ 200°C					
				A	DN40 - 5000 -35 ~ 200°C					
					Temperature Input Sensor					
					N	None				
					T	Clamp-on PT1000 (DN20-1000) (0~200°C)				
						Pipeline Diameter				
						DNX	e.g. DN20 - 20mm, DN5000 - 5000mm			
							Cable length			
							5m	5m (standard 5m)		
							Xm	Common cable Max 300m (standard 5m)		
							XmH	High temp. cable Max 300m		

A - 1 - 2 - 5 - /LTP - A -N - DN100 - 5m (example configuration)

Description:
Power supply: 85-265VAC; output:4-20mA, OCT & Data storage function; transducer type: A for DN40-5000 -35 ~ 200°C; Without PT1000 temperature sensor; DN100 application; 5m transducer cables.

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