



## TR100 Ultrasonic Flow Meter

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If you are interested in any items ,or your customers require to fill ,please contact us ,we will provide you the products with high quality and good services ,and reply you as soon as possible

### Feature

- The sensor being clamp-on type , there's no pressure loss. The sensor are easily mounted on the surface of pipe without interrupting the flow for installation or maintenance
- Advanced intelligent display , computation and printing to suit user's diversified requirement. The flow is displayed in all pertinent engineering units  
It run out of regular power (110V / 220V), built-in battery or DC power
- Using the most advanced direct-time-measuring method, the unit offers a signal resolution of 0.2 ns. In addition, advanced data processing functions



### Description

When an ultrasonic wave travels in a liquid, the flow of the liquid will cause it's speed to change. When it travels in the flow direction, it's speed increases and against it, it decreases. By measuring the difference in travel time between both directions, one can measuring the flow speed. As shown in Chart 1 , a pair of sensor are mounting configuration can be "Z" or "V" . The time-difference of ultrasonic signals transmitted and received across upstream and downstream are calculated as below;

$$TUP = \frac{MD/\cos \theta}{Co + VSIN \theta} \quad (1) \quad TDOWN = \frac{MD/\cos \theta}{Co - VSIN \theta} \quad (2)$$

M – travel Time

D – inner diameter

$\theta$  – transmit angle

Co – fluid static sound velocity

TUP – travel time of upstream signal

TDOWN – travel time of downstream signal

$\Delta T$  – time difference as per equations (1) and (2) , Using these,

We can get the average velocity across the pipe diameter :

$$V = \frac{MD}{\sin 2\theta} \cdot \frac{\Delta T}{TUP \times TDOWN}$$



# Wall mount Ultrasonic flow meter TR-100F1

Model TR-100F1 is an advanced high-accuracy wall-mount ultrasonic flowmeter. It employs a pair of clamp-on ultrasonic transducers to measure the flow from outside of a pipe. Due to the non-intrusive nature of the clamp-on technology, there is no pressure drop, no moving parts, no leaks and no contamination. The installation is very simple and no special skills or tools are required



## Specifications

Items	Performance & Index	
Main instrument	Principle	Low voltage , multi-pulse
	Accuracy	1% better , repeatability of 0.5% measuring period : 500ms
	Display	Backlit LCD display shows instantaneous flow / calorific value and accumulated flow / calorific value, flow rate , time etc.
	Output signals	Electric current output of 4-20mA or 0-20mA , impedance of 0-1K , precision of 0.1%
		OCT output : positive / negative / net flow or integrating flow rate pulse signal or instantaneous flow rate frequency signal (from 1-9999Hz)
		Can output 20 digital signals (such as no signal , negative flow etc)
		The instrument buzzer can be set to warn of alarm conditions (i.e. high or low discharge levels )
	Input Signals	Five electric current signals input (temperature , pressure , fluid level),one signal for dual purpose
	Automatic memory of a cumulative flow of last 64 days 64 months , 5 years	
Cable	SEYV 75-2 maximum cable length of 500 meters,	
	Pipe Materials	Steel , stainless steel , cast iron , cement pipe , PVC, aluminium , glass steel etc.
	Internal pipeline	15mm-6000mm
Pipe condition	Straight pipeline	Transducer should be installed as follows : Upstream 10D ,Downstream 5D and 30D from the pump exit
	Type	Water , seawater , sewage , PH liquids , alcohol , beer , oils etc.
	Temperature	00C -1100C
Measuring fluids	Turbidity	Below 10000ppm
	Flow rate	0~130m/s
	Flow direction	Positive and negative flow measured, and can calculate the total discharge or calorific value.
Operating conditions	Temperature	Main instrument Temperature : -300C to +800C
		Flow transducer -400C to 1100C
	Humidity	Main instrument : 85%RH
		Flow transducer : can be used underwater to a depth lower less than 3m.
Power source	AC220V or DC8~36V OR AV7~30V	
Power consumption	2W	
Weight	2.5Kg	

## Mounting you can choose



### Wall mounted

Chinese /English display  
Solid structure with die-cast  
Aluminium enclosure  
Weight : 2.5Kg  
Power : AC220V or DC 24V



### Rack-mounted

Chinese / English display  
Solid structure with die-cast  
Aluminium enclosure  
Weight : 1.5Kg  
Power : AC220V or DC 24V

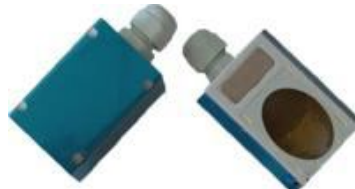
## Flow Transducers you can choose

### 1. Clamp - on Transducer



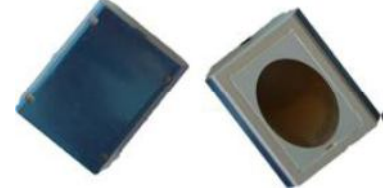
#### Standard S1

Sensor (Magnetic)  
For pipe size DN15~100mm  
Temperature below 70°C



#### Standard M1

Sensor (Magnetic)  
For pipe size DN50~1000mm  
Temperature below 70°C



#### Standard L1

Sensor (Magnetic)  
For pipe size DN300~6000mm  
Temperature below 70°C

### 2. Insert Transducer



#### For steel/copper pipes

For DN50mm or bigger  
Liquid temperature  $\leq 110^{\circ}\text{C}$   
186mm



#### For cast iron pipes

For DN50mm or bigger  
Liquid temperature  $\leq 110^{\circ}\text{C}$   
228mm



#### For cement pipes

For DN100mm or bigger  
Liquid temperature  $\leq 110^{\circ}\text{C}$   
330mm

## Cable for SEYV75-2 TR100F ultrasonic flow meters / calorimeters

Special signal output for TR100F ultrasonic flow meters / calorimeters The electric cable is designed to prevent electromagnetic interference or interference from other signals

A pair of clamp-on transducer to measure the flow from outside of a pipe, there is no pressure drop, no moving parts, no leaks and no contamination. The installation is very simple and no special skills or tools are required.

Technical parameter	S1-Type 	M1-Type 	L1-Type 	S1H-Type 	M1H-Type 
Pipe size(mm)	DN15-100	DN50-700	DN300-6000	DN15-100	DN50-700
Pipe size(inch)	(1/2"~4")	(2"~28")	(12"~240")	(1/2"~4")	(2"~28")
Material	ABS			Special high-temperature materials	
Frequency	1MHZ				
Installation method	V(N,W)	V,Z	Z	V(N,W)	V,Z
Calibration	Calibrate with the main unit				
Magnetism	Magnetic		No magnetic		
Application of temperature	32°F~158°F (0°C~70°C)		32°F~320°F(0°C~160°C)		
Protection class	IP68 (can work in water, and water depth≤3 meter)				
Dimension (mm)	45x30x30	60x45x45	80x70x55	90x85x24	90x82x29
weight (g)	75	250	650	94	150
Liquid types	Water , sea water , waste water , chemical liquids , oil , crude oil , alcohol , beer, etc.				
Suspension concentration	≤20000ppm,may contain very small amount of air bubbles.				
Pipe material	All metals , most plastics , fiber glass , etc,				
Dedicated shielded transducer cable	Shielded transducer cable , can be extended to 500 meter x 2, contact the manufacturer for longer cable requirement				