

Ultrasonic level meter

◆◆◆ WSL-CGB Series Wall-mounted ultrasonic flow meter



The WSL-CGB Series ultrasonic flow meter is designed to measure the fluid velocity of liquid within a closed conduit.

The transducers are a non-contacting, clamp-on type, which will provide benefits of non-fouling operation and easy installation.

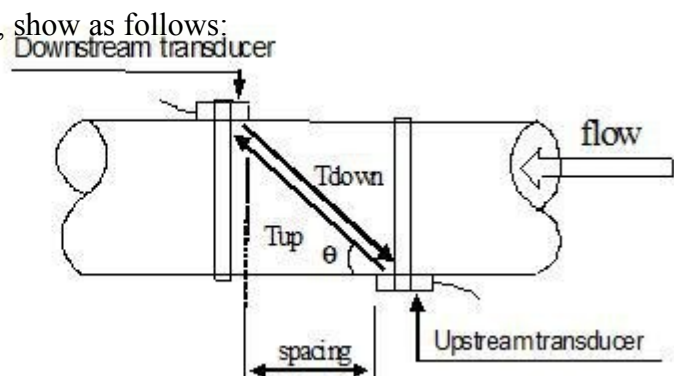
Features

- ★ Linearity: 0.5%, Repeatability: 0.2%, Accuracy: ±1%
- ★ Easy to operate.
- ★ Several type transducers for selection, measuring pipe size is from DN15mm to DN6000mm
- ★ Adopt low voltage, multi-pulse technology to improve accuracy, useful life and reliability.
- ★ Powerful Recording Function, record the totalizer data of the last 64 days/64 monthes/5 years.

Principle

The WSL-CGB Series 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 specific distance from each other. The transducers can be mounted in V-method where the sound transverses the pipe twice, or W-method where the sound transverses the pipe four times, or in Z-method where the transducers are mounted on opposite sides of the pipe and the sound crosses the pipe once. This selection of the mounting method depends on pipe and liquid characteristics. The flow meter operates by alternately transmitting and receiving a frequency modulated 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, show as follows:

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



Where

θ is the include angle to the flow direction M is
the travel times of the ultrasonic beam D is the
pipe diameter

Tup is the time for the beam from upstream transducer to the downstream one Tdown

is the time for the beam from downstream transducer to the upstream one

$$T = T_{up} - T_{down}$$

Optional transducer

- ★ TS-1 clamp-on type transducer, pipe size from DN15-100
- ★ TM-1 clamp-on type transducer, pipe size from DN50-1000mm
- ★ TL-1 clamp-on type transducer, pipe size from DN300-6000mm
- ★ HTS-1 clamp-on type transducer, pipe size from DN15-100mm
- ★ HTM-1 clamp-on type transducer, pipe size from DN50-1000mm

Typical application

The wall-mounting 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 (hot water, chilled water, city water, sea water, waste water, etc.);
- ★ Sewage with small particle content;
- ★ Oil (crude oil, lubricating oil, diesel oil, fuel oil, etc.);
- ★ Chemicals (alcohol, acids, etc.);
- ★ Plant effluent;
- ★ Beverage, liquid food;
- ★ Ultra-pure liquids;
- ★ Solvents and other liquids

Technical parameters

Items		Specifications	
Main unit	Accuracy	Better than $\pm 1\%$	
	Repeatability	Better than 0.2%	
	Principle	Transit-time measuring principle	
	Measurement Period	500ms	
	Display	LCD with backlight, display accumulated flow/heat, instantaneous flow/heat, velocity, time etc.	
	Output		Analogue output: 4-20mA or 0-20mA current output. Impedance 0 ~ 1k . Accuracy 0.1%.
			OCT output: Frequency signal (1~9999HZ)
		Relay output: over 20 source signal (no signal, reverse flow etc.) RS485 serial port	
	Input	Three analogue input Three-wire PT100 resistor input (optional)	
	Other functions	Automatically record the totaliser data of the last 64 days / 64 months / 5 years; The power-on time and corresponding flow rate of the last 64 power on and off events. Allow manual or automatic flow loss	

		compensation The instrument working status of the last 64 days
pipe	material	Steel, stainless steel, cast iron, cement pipe, copper, PVC, aluminum, FRP etc. Liner is allowed
	Size	15-6000mm
	Straight pipe section	In the upstream it must be beyond 10D, in the downstream it must be beyond 5D, in the upstream the length must be beyond 30D from the access of the pump. (D stands for pipe diameter)
Liquid	Types	Water, sea water, industrial sewage, acid & alkali liquid, alcohol, beer, all kinds of oils which can transmit ultrasonic single uniform liquid
	Temperature	Standard: -30°C - 90°C , High-temperature : -30°C - 160°C
	Turbidity	Less than 10000ppm, with a little bubble
	Flow Direction	Bi-directional measuring, net flow/heat measuring
Environment	Temperature	Main Unit: -30°C - 80°C
		Transducer: -40°C -110°C, Temperature transducer: select on enquiry
	Humidity	Main Unit: 85% RH Transducer: water-immersible, water depth less than 3m
Cable	Twisted Pair Line, standard length of 20m, can be extended to 500m (not recommended); Contact the manufacturer for longer cable requirement. RS-485 interface, transmission distance up to 1000m	
Power Supply	AC220V or DC24V	
Power Consumption	Less than 1.5W	
Protocols	MODBUS, M-BUS, Fuji extended protocol and other factory protocol	

