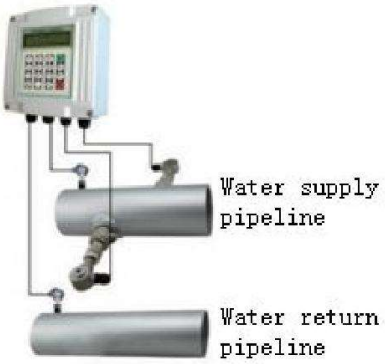
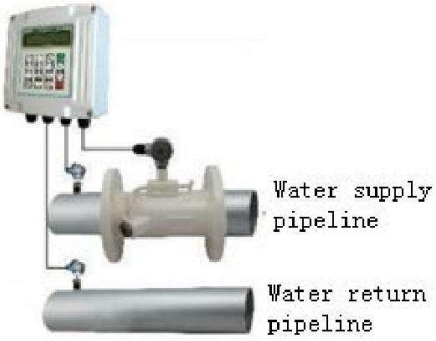
Wall mounted Ultrasonic Flow meter

Type: HGLS-2000S series

Application diagram

Sensor type	Flow measure	Flow measure and Heat measure	Features
Clamp-on type			1. Not need stop process when installation 2. Easy installation and maintenance 3. Can be equipped with clamp type temperature sensor to measure heat
Insertion type			1. Not need stop process when installation 2. Stable and reliable 3. Can be equipped with insertion type temperature sensor to measure heat
On-line type			1. Not need stop process when installation 2. High accuracy 3. Can be equipped with insertion type temperature sensor to measure heat

Introduction

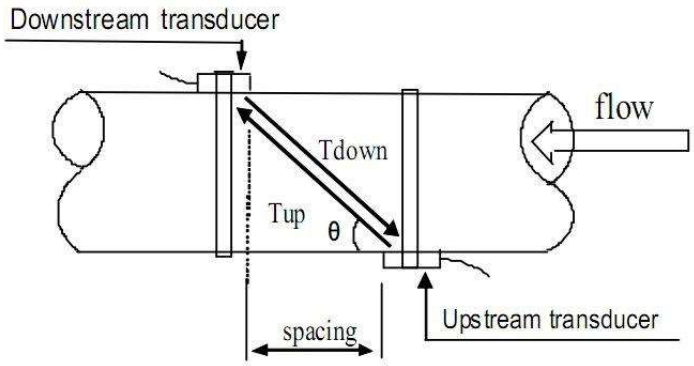
Welcome to use new generation transit-time ultrasonic flow meter, please read the user manual carefully before using. The wall-mount ultrasonic flow meter is designed to be installed in a fixed location for long-term flow measuring.

Wall-mount ultrasonic flow meter includes Main unit and Sensor.

Flow measurement principle

The HGLS -2000S 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. The HGLS -2000S 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:

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



Where

Where hereθis 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=Tup – Tdown

Features

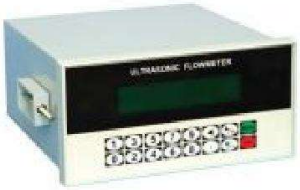
- Linearity: 0.5%, Repeatability: 0.2%, Accuracy: ± 1%
- Easy to operate.
- Several type transducer s for selection, measuring pipe size is from DN15mm to DN6000mm
- Adopt low voltage, multi-pulse technology to improve accuracy, useful life and reliability.
- Powerful Recording Function, record the totalizer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

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

Optional Main unit:

		
Wall mount meter (HGLS-2000SW) Size: 178×165×55mm	Panel-mount meter (HGLS-2000SS) Panel size: 152mm×76mm	Explosion-proof meter (HGLS-2000SD) Explosive-proof Grade: DⅡBT4， Size: 298×298×110mm

Optional Sensor:

Transducer	Code	Description	Temperature	Accuracy
	TS-2	Small size clamp-on type (Magnetic) for DN15～DN100mm	-30℃～90℃	±1%FS
	TM-1	Middle size clamp-on type (Magnetic) for DN50～DN700mm	-30℃～90℃	±1%FS
	TL-1	Large size clamp-on type (Magnetic) for DN300～DN6000mm	-30℃～90℃	±1%FS

	TS-2-HT	Small size High-temperature clamp-on type for DN15～DN100mm	-30℃～160℃	±1%FS
	TM-1-HT	Middle size High-temperature clamp-on type for DN50～DN700mm	-30℃～160℃	±1%FS
	TL-1-HT	Large size High-temperature clamp-on type for DN300～DN6000mm	-30℃～160℃	±1%FS
	TC-1 (Standard) TLC-2 (Lengthen)	Insertion type Transducer for DN80-6000mm	-30℃～160℃	±1%FS
	G3	'π' shape tube transducer for DN15～DN25mm	-30℃～160℃	±0.5%FS
	G2	Standard tube transducer for DN32 / DN40mm	-30℃～160℃	±0.5%FS
	G1	Standard tube transducer for DN50～DN6000mm	-30℃～160℃	±0.5%FS

Optional temperature sensor(for measure heat)

Picture	Description	Model	Temperature range	Mounting requirement	Accuracy
	PT100, 3-wire, Clamp type, for pipe≥DN50	CT-1	-40 – 160℃	Not need stop process	100℃±0.8℃ Error≤0.1℃ under exactly matching
	PT100, 3-wire, Insertion type, for pipe≥DN50	TCT-1	-40 – 160℃	Need stop process	
	PT100, 3-wire, Insertion type with ball valve, for pipe≥DN50	PCT-1	-40 – 160℃	Not need stop process	
	PT100, 3-wire, Insertion type, for pipe＜DN50	SCT-1	-40 – 160℃	Need stop process	

AET controls

Specifications:

CATALOG

Item		description
Main unit	Accuracy	Better than ± 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 Ω. 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 totalizer 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	DN 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)
Fluid	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 ℃-160 ℃, 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 10m, can be extended to 500m (but such length is not recommended); contact the manufacturer for longer cable if 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