

Ultrasonic flowmeter



This series is a high-precision industrial grade time-difference ultrasonic flowmeter. It adopts the latest 700,000 gate array industrial grade PFGA chip, which greatly improves the signal sampling frequency and bubble tolerance rate, and the self-developed TGA technology makes it capable of handling more complex logic, as well as computing to achieve more precise and faster measurement. This allows the flowmeter to withstand discontinuous bubbles or impurities for 5 seconds. At the same time, it also has the characteristics of simple installation, convenient use and capable of completing the installation without breaking the pipe, stopping the water and suspending works of the ultrasonic flowmeter.

With the characteristics of simple installation, and high flexibility, a pair of sensors can be adopted for general pipe diameter.

High precision ($\pm 0.5\%$) high response speed (sampling speed can reach 300 times/sec) low flow Speed measurement (maximum Speed can reach 0.03 m/sec).

Single medium can be measured, which can be widely applied in water treatment, pure water, ultra-pure water, petroleum and chemical industry, air conditioning energy-saving and other fields.

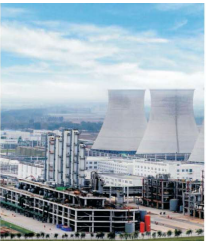
The upper temperature limit of ordinary standard plug-in sensor is 130 °C, and the upper temperature limit of high temperature sensor is 180 °C.

Being adopted with RTD model and temperature sensor, it becomes the energy meter to measure the heat and cold consumption of heating pipeline and air-conditioning refrigeration pipeline.

Application fields



Pure water ultrapure water



Petrochemical industry



Water treatment



Intelligent building

Product application example

Sensor



Transmitter



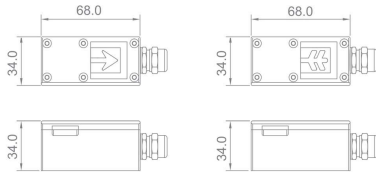
Basic performance parameter

Model	U901	U801
Measuring medium	Single medium sound-conducting liquid	
Measuring range	$\pm 0.01\text{m/s} \sim \pm 12\text{m/smm}$	$\pm 0.03\text{m/s} \sim \pm 5\text{m/s}$
Accuracy	0.5%	1%
Repeated accuracy	0.1%	0.2%
Pipe diameter range	25mm~5000mm (Under 25mm are customized products, please contact us)	25mm~1200mm (Under 25mm are customized products, please contact us)
output	Analog output: 4~20mA, Maximum load750Ω Pulse output: 0~9999Hz, OCT, (min.and max. frequency is adjustable) Relay output: SPST, Maximum1Hz, (1A@125VAC or2A@30VDC)	Analog output: 4~20mA, Maximum load750Ω Pulse output: 0~10KHz
Communication	RS232 & RS485 Modbus	
Storage	TF card (expandable to 8G, note: it can be used for 12 years for the mode of sending data every 60S)	
Power	90~245VAC, 48~63Hz or 10~36VDC	10~36VDC/1A
Display screen	240*128LCD	240*128LCD
Working temperature	Transmitter: -40 ℃~140 ℃ (-40 ℃~80 ℃) Sensor: -40 ℃~176 ℃ (-40 ℃~80 ℃ , Standard type) 32 ℃~356 ℃ (0 ℃~180 ℃ , high temperature type)	Transmitter: -20 ℃~60 ℃ Sensor: -40 ℃~80 ℃ , Standard type
Measurement environment	Relative humidity:0~99%	Up to 99% RH, Non-condensing
Leve of protection	Transmitter IP65, Sensor IP68	Transmitte PC/ABS IP65, Sensor IP68r
Cable	The standard length of cable twisted paired shielded cable is 9m, which can be extended to 274 meters.	The standard length of cable twisted paired shielded cable is 9m, which can be extended to 274 meters.

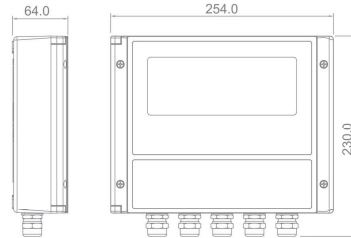
Machine dimension

U901

Sensor dimension



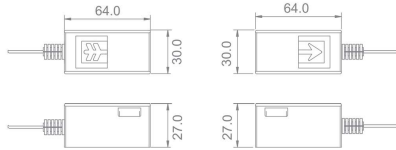
Transmitter dimension



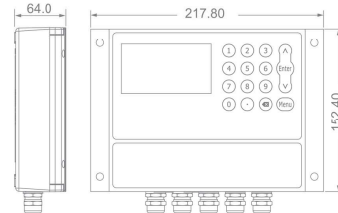
Unit: mm

U801

Sensor dimension



Transmitter dimension

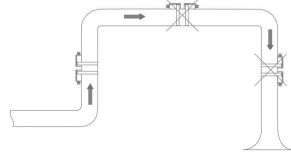


Method of installation

Installation position

The measuring pipeline is full, which is the premise for the flowmeter to measure correctly. The error will increase if there is gas accumulation or numerous gas bubbles in the measuring tube. Therefore, please avoid the following installation locations:

- The highest point of the pipeline, which is easy to accumulate bubbles.
- Install directly at the top of the downward emptying pipeline.



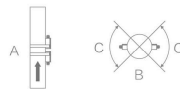
Down pipe

When installing flowmeter on downward, it is recommended to install a throttling orifice plate or a reducing pipe to prevent the pipe being empty.

Installation direction

Vertical pipeline

If a sensor is required to be installed on a vertical pipeline, it is recommended to select a pipeline in which the fluid direction is flowing from bottom to top (View A). Select this installation position, when the fluid in the pipeline is still, the solid medium in it will sink and gas will rise, away from the sensor. Such pipe can completely self-exhaust the gas bubble, and will not produce solid attachments.



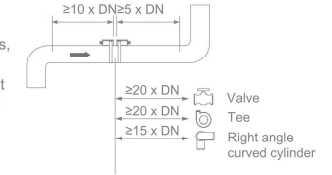
- A Recommended installation direction, in which the fluid flows upward
- B Recommended installation range in horizontal pipeline
- C Recommended installation angle is maximum 120 degrees

Horizontal pipeline

If it is necessary to install sensor on horizontal pipes, it is recommended to install them in Area C (as shown in view B) to avoid gas and air accumulation at the top of the pipeline and the effect of sediment at the bottom of the pipeline on measurement.

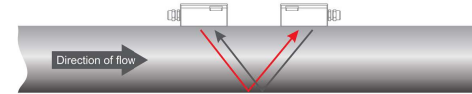
Front and rear straight pipe section

When conditions permit, the installation position of the sensor shall avoid valves, tee, elbow and other pipe fittings. When there are two or more disturbance sources, it shall obey the strongest disturbance source the length of the straight pipe in front and rear is recommended. It is recommended to ensure the length of the front and rear straight pipe sections recommended in right figure to guarantee to meet the measurement precision specification.



Principle of measurement

The ultrasonic time difference measurement method refers to the determination of the time difference between the propagation of two ultrasonic signals that propagate upstream and downstream in the same stroke in a flowing fluid method for measuring the flow rate of a fluid along its average velocity.



Product type selection

U	Type	Sensor	Signal output	Temperature sensor	Connection mode	Cable length
901:Accuracy±0.5% 801:Accuracy±1.0%		CD01:External clamp sensor(IP68, -40℃ ~ +80℃) C1:External clamp sensor(IP68, -40℃ ~ +80℃) C1U:External clamp sensor(IP68, -40℃ ~ +130℃) CH1:External clamp sensor(IP68, 0℃ ~ +180℃) W1:Plug-in sensor(IP68, -40℃ ~ +130℃) WH1:Plug-in sensor(IP68, 0℃ ~ +180℃)	1:OCT, Relay output, RS232/485, 4-20mA 2:OCT, Relay output, RS232/485, 4-20mA, RTD	Default: No T:PT1000	D Connector P Cable M Display Meter with digital display	Unit: m Standard length 9m Customized length The longest is 274m

Model selection example 1: U901-C1-1-P9 external clamp sensor, OCT, relay output, RS485, 4-20mA, cable length is 9m.

Model selection example 2: U801-CD01-1-P9 external clamp sensor, OCT, relayoutput, RS232/485, 4-20 mA, cable length is 9m.