

UFM100

ULTRASONIC FLOW METER



OVERVIEW

The 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.

APPLICATION

- Replace traditional wheel flow meter
- Flow measurement control and monitor
- Calculate flow volume
- Pump protection
- Proportion control
- Water allocation
- Leakage detection



SPECIFICATIONS

Accuracy	1.0%
Repeatability	0.2%
Max velocity	32m/s
Measuring cycle	500mS (two times per second, each cycle collecting 128 unit datas.)
Measurement principle	Ultrasonic transit-time principle,4 byte IEEE754 floating-point calculation
Display	2*10 backlit
Operation	16 keys tactile keyboard
Input	3 channel 4-20mA input optional, accuracy 0.1%, Input signals of pressure, liquid, level, temperature, etc. 2 channel three wires PT100 platinum resistance input loop, realize the function of heat meter(enthalpy potential method)
Output	1 channel isolation RS-485 output 1 channel 4-20mA output 1 channel isolation OCT output(pulse wide: 6-1000ms adjustable, default :200ms) 1 channel relay output pulse wide: 200ms)
Communication protocol	MODBUS protocol (RTU , ASCII protocol)
Other functions	Last 512 days, last 128 months, last 10 years positive & negative, net & total flow/heat automatic memory function; last 30 times power on/off time, flow management function, realize automatic, manual replenishing & read them by MODBUS protocol



SPECIFICATIONS (cont.)

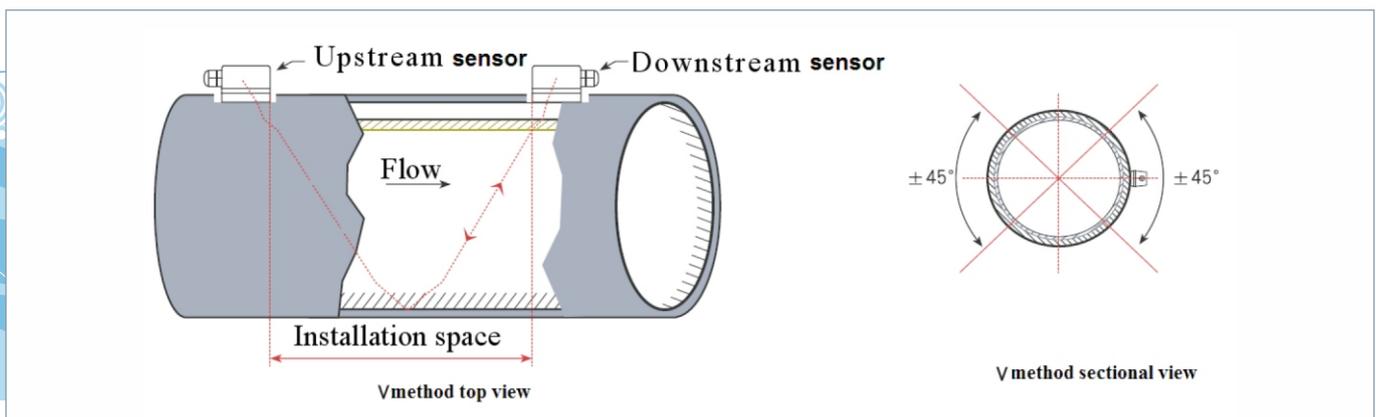
Working Current	50mA (without connecting keyboard display and no alarm or beeper)
Protection Grade	IP65
Explosion Proof	Exd II B T 4
Environment Temperature	-10° C~70° C (If Out of the temperature range, pls contact manufacturer.)
Power Supply	85 ~ 264V AC / 24 V DC
Main board Size	192mm x 270 mm
Sensor	Clamp-on type Standard S1 type, suitable to pipe diameter:DN15-100 Standard M1 type, suitable to pipe diameter:DN50-700 Standard L1 type, suitable to pipe diameter:DN300-6000 High temperature SH1 type, suitable to pipe diameter:DN15-100 High temperature MH2 type, suitable to pipe diameter:DN50-700 Insertion type Standard IS1 type, cement pipe IM1 type, suitable to pipe diameter: DN>80
Signal Cable	Special shielded twisted-pair cable, with 5 meters when leaving factory, single cable can be lengthened to 500m in special spot.(not recommended)
Protection Level	IP68
Measurable pipe and medium	
Pipe material	The entire dense texture pipe such as steel, stainless steel, pvc, copper, aluminum, cement pipe, etc, liner allowed
Liner	Epoxy asphalt, rubber, grout, pp, ps, polyester, pe, hard rubber, PTEF
Liner Diameter	15mm~6000mm
Length of Straight Pipe	Upstream≥10D, downstream≥5D, distance to pump≥30D
Kinds of Fluids	The entire evenly liquid which can transmit ultrasonic such as water, sea water, acid & alkali liquor, food oil, rude oil, alcohol, beer etc
Turbidity	≤20000 ppm, Better stable measurement results for dirty water
Temperature Common	0-70 °C, High Temperature 0-160 °C
Flow Direction	Positive & Negative flow, Net flow

INSTALLATION METHOD

There are 4 different methods of installation: V method, Z method, N method and W method.

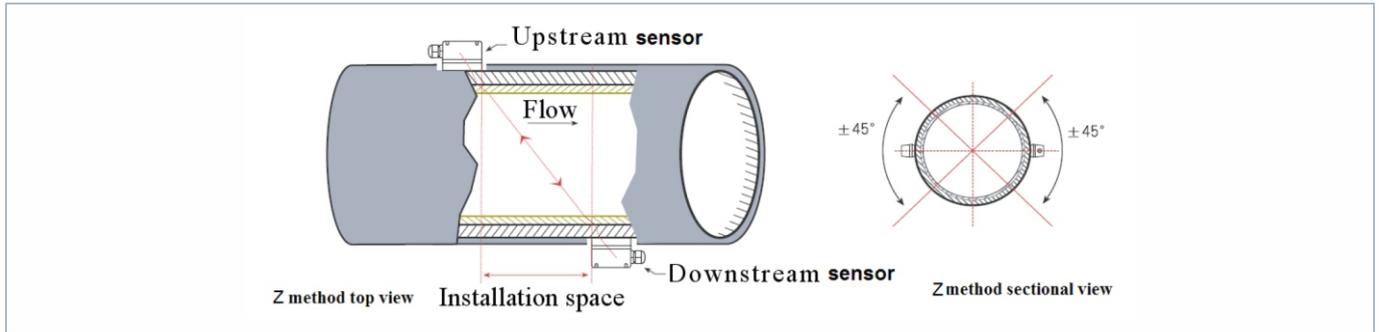
V METHOD

The V method of installation is the most commonly used method and is convenient to use and has high precision. When horizontal alignment of the 2 sensors along the pipe axis is possible, V method works well. Suitable pipe diameter range for this type of installation is DN15mm-DN400mm.



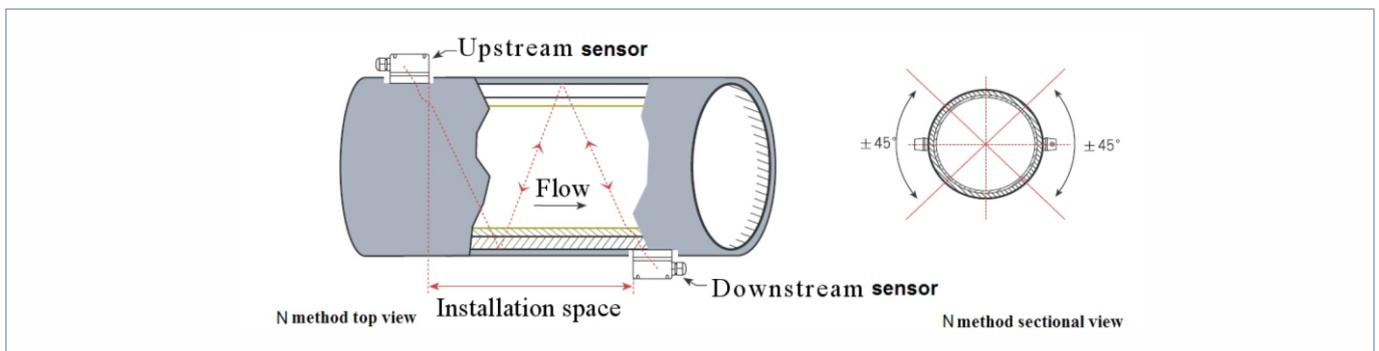
Z METHOD

In instances where the pipe diameter is too large, or there are suspended matter in the fluid flowing through the pipe, or if there is thick scaling inside the liner or pipe inner wall resulting in poor signal strength or no signal, using the Z method is ideal. Z method is a direct transfer method without reflection (single sound path). This method is commonly used when the V method fails due to the above mentioned circumstances.



N METHOD

The N method of installation is rarely used. This method uses the principle of extending the ultrasonic transmit distance to increase the accuracy of measurement. The ultrasonic beam is reflected twice and passes through the fluid three times (known as three sound paths). This method is suitable for small pipe sizes.



W METHOD

This method is the same as the N method using the same principle of extending the ultrasonic transmit distance to improve accuracy. This method is suitable to measuring pipe sizes $DN < 50$. The ultrasonic beam is reflected 3 times and passes through the fluid 4 times (known as 4 sound paths) in this type of installation.

