

USFM 600 F Ultrasonic flow meter



Very competitively priced
High accuracy, better than $\pm 1\%$
Clamp-on Transducers: Non-intrusive ,no pipe disturbance. No moving parts. No pressure drop.
Insertion transducer option: for better accuracy.
Wide measurement range, (0.01~32m/s)
Wide pipe size range, DN15mm~DN6,000mm
Suitable for all commonly used pipe materials
Highly efficient ultrasonic transmission and high sensitive ultrasonic receiving
Positive, negative totalizers,
RS232/RS485 interface for networking, Support MODBUS and Extended Water Meter protocols
Optional two Pt100 temp. sensor inputs for Energy metering (Pl. contact for details)
Two OCT digital outputs for frequency counters or valve relays
Rugged 230X200X110 enclosure
Low power consumption, less than 1.2W

PREFACE

This versatile ultrasonic flow meter is the latest innovation employing cutting-edge technology in ultrasonic transit-time measurement, digital signal processing and surface mounting electronics. It provides abundant capabilities for accurate liquid flow measurement from outside of a pipe. The proprietary signal quality tracking and self-adapting techniques allow the system to optimally adapt to different pipe materials automatically.

The ultrasonic flow meter is equipped with an LCD display /key board module. The users can either use the RS-485 interface or the display /keyboard interface to program the flow meter for easy connectivity to PLC's and SCADA.

The transducer installation is also simple and no special skills or tools are required. Due to the non-intrusive nature of the clamp-on technology, there is no pressure drop, no moving parts, no leaks, no risk of contamination, no risk of corrosion, no pressure dependency. Where as Insertion sensors, if opted for, can be fitted on line by Hot-Tapping.

Its unique features, moderate cost, very high performance and compact size, makes it an Ideal choice for industrial automation, processing control, water source management, flow meter networking, Hygienic liquid Flow metering and OEM applications.

APPLICATIONS

These OEM low cost ultrasonic flow meter are designed for large quantity, low cost applications.. Benefited from our innovate network interface technique, the flow meter is the ideal choice for industrial automation, process monitoring, water source management, flow meter networking, Hygienic liquid Flow metering and OEM applications. It provides reliable measurement in both clean and opaque liquid flow examples of applicable liquids are:

- ⊗ Water, including hot water, chilled water, city water, sea water, Ultra-Pure water etc.
- ⊗ Sewage, waster treatment, etc.
- ⊗ Oil, including crude oil, diesel oil, fuel oil, lubricating oil, etc
- ⊗ Solvents
- ⊗ Beverage, food and pharmaceutical processors where non-contact is a must
- ⊗ HVAC, energy measurement system, etc.

APPLICATION Specifications

Flow Medium	Types Virtually all commonly used liquids (full pipe)
Liquid Temp	0°C~100°C
Liquid Suspensions	<20.000ppm, or , <2%, particle size smaller than 100um.
Pipe Size	DN25~DN6,000mm (1"~240")
Pipe Material	All metals, most plastics, fiber glass, etc. ; With or Without pipe liner

SPECIFICATIONS:

Accuracy	Better than $\pm 1\%$ for velocity above 0.2 m/s
Repeatability	Better than 0.2%
Response Time	Programmable from 0.5 sec to 99 sec
Velocity	0-32m/s
Display /Keyboard	LCD with backlight. 2 line \times 16 character 9 mm , 6 key Intreface
Displays:	Instantaneous flow rate, accumulated flow (positive, negative and net tantalizers) velocity, time, analog inputs, etc.
External Signal Input	Current input: 4-20mA.,0.1% accuracy. Can be used for signals such as temperature, pressure, liquid level, etc.
Signal Output Current output	4-20mA . Impedance 0-1k ohms, Accuracy 0.1%
OCT output	Two channels: Can be programmed as pulse signal for accumulated flow (positive, negative and net); Frequency signal for instantaneous flow rate; ON/OFF signal for relay drive or alarm drive; batch control
Communication Interface (Optional)	Isolated RS-485 with MODBUS protocol(RTU or ASCII)
Printer (optional)	24 hrX365 days data logging and 80 col. Dot matrix printer interface
Power	24Vac/dc or 230Vac +/- 10% ; < 5VA with display Can be supplied with Battery back up, Solar or Mains battery charger.
Dimension	230X200X110 Die Cast Aluminum. Weather proof enclosure
Weight	2.5 kg (Aluminum)

Notes:

1) **Straight Pipe Section requirement** : > 15D, where D is pipe diameter.

If a pump is near, the straight pipe section following the pump should be >30D

2) **Sensor to Display Cable**: Shielded transducer cable. Standard length 5m (15'), Can be extended to (500m) 1640'. Contact the manufacturer for longer cable requirement.

Measurement Principle:

The flow meter is based on transit-time measurement principle, as shown in the figure. A typical transit-time flow measurement system utilizes two transducers (A and B) that function as both ultrasonic transmitter & receiver. The transducers are clamped on the outside of a closed pipe at a specific distance from each other size pipe. The two transducers are on the same side, thus, the sound transverses the flow twice. W-method is usually used for small pipe. The sound transverses across the flow four times



Z-method



V-method



W-method

Transducer Options:

Standard S Sensor ; Apply to DN15-DN100mm

Standard M Sensor :Apply to DN50-DN1000mm

Standard L Sensor :Apply to DN300-DN6000mm

On-line Insertion Transducers for DN 80 to DN3000mm p



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