



Ultrasonic Flow Meter

153 - UFM

INTRODUCTION:

Ultrasonic flow meter utilizes advanced transit time technology to measure liquid flow accurately and reliably. It allows users to conveniently measure flow rate and totalized flow for a variety of applications, pipe materials and pipe sizes. With the use of Clamp-On transducer technology, there is no need to interrupt the process or empty the pipe in order to install the flow meter. In addition, there are no moving parts to break or wear away, thus minimizing the need for regular maintenance and repair.

Ultrasonic Flow Meter of 153-UFM series are available in three types- Insertion, Portable Clamp On and Field Mounting Clamp On. These flow meters are intended for process applications & measurement of flow rates independent of conductivity, viscosity, temperature, density & pressure. It utilizes two transducers, functions as both ultrasonic transmitter & receiver.

PRINCIPLE OF OPERATION:

The two transducers, transmit & receive ultrasonic signals which travels firstly downstream & then upstream. As ultrasonic waves travels faster in downstream than upstream, & hence difference in time of flight.

By knowing both downstream & upstream time, volume of flow is calculated by following formula:

$$Q = V \cdot S$$

Where V = Liquid velocity
S = Pipe cross-sectional Area

$$V = K \cdot D \cdot dt$$

Where K = Constant
D = Distance between Two Transducers
dt = Distance in Time of Flight

INSERTION TYPE



CLAMP ON

FIELD MOUNTING TYPE



PORTABLE TYPE



FEATURES:

- ▶ Advanced DSP improves performance.
- ▶ 40 hours battery (rechargeable) operation
- ▶ Non-Invasive Nature
- ▶ No pressure drop
- ▶ No moving parts
- ▶ No Leakage
- ▶ No risk of contamination & corrosion
- ▶ Wide operating Temperature Range : - 40°C to 250°C
- ▶ Transducer size available from 12-4500mm
- ▶ Bidirectional Flow Measurement
- ▶ Measurement of conductive & non-conductive medium
- ▶ Data logger up to 8 GB to memorize flow rate, total flow, velocity, time
- ▶ Unaffected by process parameters
- ▶ Highly Accurate
- ▶ Net Heat Metering
- ▶ Pipe Thickness Measurement

SPECIFICATIONS:

- ▶ Measurement Functionality : Actual Flow Rate & Totalized Flow
- ▶ Measuring Range : - 16 m/s to + 16 m/s, Bidirectional
- ▶ Power Supply
 - For Clamp on Portable : Internal 7.2 AH charging battery provides 42 hours of continuous Operation
 - For Insertion & Field Mounting : 10-28 VDC, 115/230VAC 50/60 Hz
- ▶ Display : 4 Line x 16 Backlit LCD characters
- ▶ Display Parameters : Flow, Totalized Flow & Velocity
- ▶ Output : 4-20mA, OC Pulse, Relay, RS 232 / RS 485 MODBUS Protocol etc.
- ▶ Accuracy : $\pm 1.0\%$ of Reading
- ▶ Repeatability : 0.2% of Reading
- ▶ Pipe Size : 12 - 4500 mm - For Clamp on type
: 65 - 4500 mm - For Insertion type
- ▶ Cable : 4 meters (std.), 300 meters (optional)
- ▶ Data Loggers & Software : Optional 512MB to 8GB Window - based Software utility, Data Logging, Data Report, Data Curve & Analysis
- ▶ Pipe thickness measurement : Available on request

ORDER CODE:

153 UFM- L=

Type	Output 1	Output 2	Communication Interface	Power Supply	Transducer Type	Transducer temperature	Sensor Cable (mm)
P: Portable(Clamp-on) I : Insertion M: Field Mounting (Clamp-on)	For Types: I/M 1: 4-20mA + OC Pulse+ Relay 2: 4-20mA + OC Pulse+ Relay+ Heat Flow For Type: P 3: 4-20mA + OC Pulse+ 4: 4-20mA + OC Pulse+ Heat Flow	0: None 1: Data Logger	1: RS 232 MODBUS Protocol 2: RS 485 MODBUS Protocol	For Types: I/M 1: 220 VAC 2: 110 VAC 3: 24 VDC For Type: P 4: Battery operated (Powering with 220 VAC)	For Types: P/M S: 12-50 mm M: 40-1000 mm L: 1000-4500 mm For Type: I D: 65 - 4500 mm	For Types: P/M N: - 40°C to 120°C H: - 40°C to 250°C For Type: I N: - 40°C to 120°C H: - 40°C to 150°C	4000 Accessories 0: None 1: Pipe thickness measuring device

Notes:

1. Data logger and RS232 output cannot be used at the same time.
2. Mounting with magnetic coupling available. Please consult H.O.
3. For Sensor cable length > 4000 mm, Please consult H.O.

Ordering Code Example:

Ordering Code: 153 UFM M 1 0 1 1 S H 0 L=4000 mm

Description: Model 153 UFM Field Mounting Clamp On Type with 4-20 mA + OC Pulse + Relay output, without Data Logger, with RS 232 O/P, Power Supply - 220 VAC, Size of Transducer = 12 - 50 mm, with -40° C to 250° C transducer temperature, without Pipe thickness measuring device, Sensor cable = 4000 mm

***Continuous changes may necessitate changes without notice

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LF_UltFlowMeter_153UFM



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