

UFM-40 Universal ultrasonic clamp-on flowmeter

The **UFM-40** is designed using FPGA chip and low-voltage broadband pulse transmission. It delivers highly accurate and repeatable flow measurement at low power consumption.

The design of this instrument is focused on those features optimizing the measurement of water flows in HVAC, irrigation, water treatment and other water applications.

An easy to read display and clear, user-friendly menu selections make this an accessible and convenient flowmeter.



UFM-40 transmitter

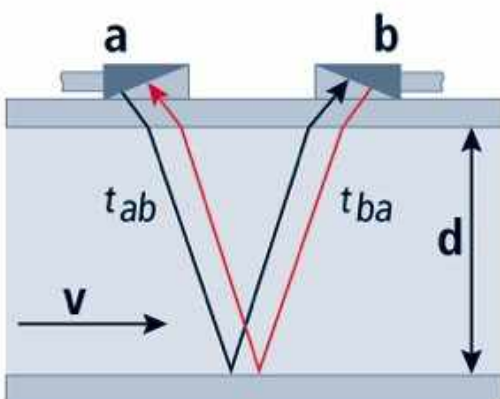
Features

- **Compact wall mount design, in a lightweight polycarbonate housing**
- **Incl. clamp-on encapsulated IP68 sensors:** Non-invasive measuring, no cutting needed
- **User friendly, easy to install, easy to operate**
- **Highly accurate with both low and high flows:** $\pm 1\%$ of measured value
- **Bi-directional**
- **Cost-effective solution:** Reduces installation and labour costs

The technology behind the measurement

The UFM-40 non-invasive flowmeter works on the transit time ultrasonic principle. This involves sending and receiving ultrasonic pulses from a pair of sensors and examining the time difference in the signal.

U-F-M uses clamp-sensors that are mounted externally on the surface of the pipe and which generate pulses that pass through the pipe wall.



Sensors a and b work alternately to send and receive ultrasonic pulses. The sound waves ab travelling with the flow move faster than those travelling against it ba.

The flowing liquid within causes time differences in the ultrasonic signals, which are then evaluated by the flowmeter to produce an accurate flow measurement. The key principle of the method applied is that sound waves travelling with the flow will move faster than those travelling against it.

The difference in the transit time of these signals is proportional to the flow velocity of the liquid and consequently the flow rate. Since elements such as flow profile, type of liquid and pipe material will have an effect on the measurement, the flowmeter compensates for and adapts to changes in the medium in order to provide reliable results.

The instruments can be used in a variety of locations and the flowmeters will operate on various pipe materials and diameters over a range of 25 mm to 1200 mm.

Introduction



- The UFM-40 is a wall-mount, clamp-on type ultrasonic flowmeter which uses the transit-time technology. TVT designed using FPGA chip and low-voltage broadband pulse transmission.
- 20×2 lattice back-lit LCD with 4 line alphanumeric menu display. The clear, user-friendly menu selections make this flowmeter simple and convenient to use.
- Daily, monthly and yearly totalized flow.
- Parallel operation of positive, negative and net flow totalizes with scale factor (span) and 7 digit display, while the output of totalize pulse and frequency output are transmitted via relay and open collector.

Clamp-on sensors

External clamp-on flowmeter sensors: simple and convenient installation, high flexibility.



IP68 sensors

Fluids

Water and liquids : the UFM-40 has a tolerance of liquids with small amounts of air bubbles or suspended solids.

Pipes

Materials: carbon steel, stainless steel, PVC.

Pipe sizes: from 25 to 1200 mm.

Technical specifications

Performance

Flow range :	$\pm 0,01$ m/s ~ ± 5 m/s
Accuracy :	± 1 % of measured value
Repeatability :	0,3 % of measured value
Pipe size :	25 mm to 1200 mm
Pipe material :	carbon steel, stainless steel, PVC
Fluid :	water

Function

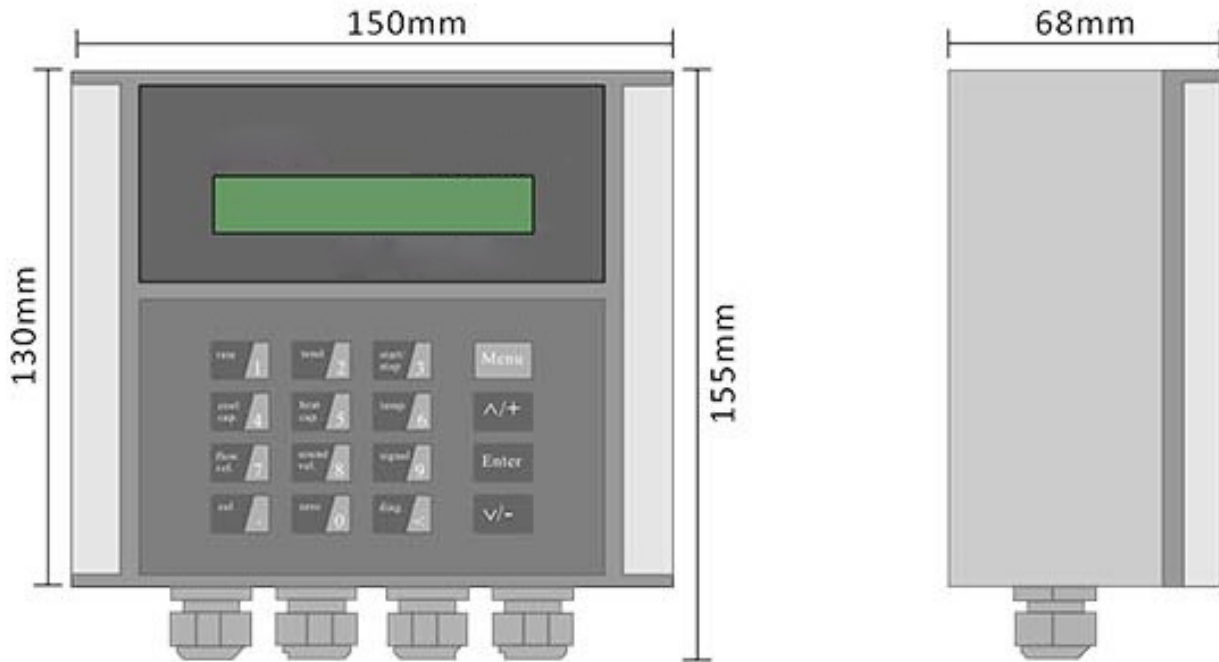
Outputs :	OCT Pulse output:0~5000Hz Analog output:4~20mA,max load 750 Ω
Power Supply :	10 ~ 36VDC / 1A
Communication :	RS485 Modbus
Keypad:	16 (4x4) keys with tactile action
Display :	20 x 2 lattice alphanumeric, backlit LCD
Temperature :	Transmitter : -10 $^{\circ}$ C ~ +50 $^{\circ}$ C Sensors : 0 $^{\circ}$ C~ +80 $^{\circ}$ C
Humidity :	Up to 99% RH, non-condensing

Physical

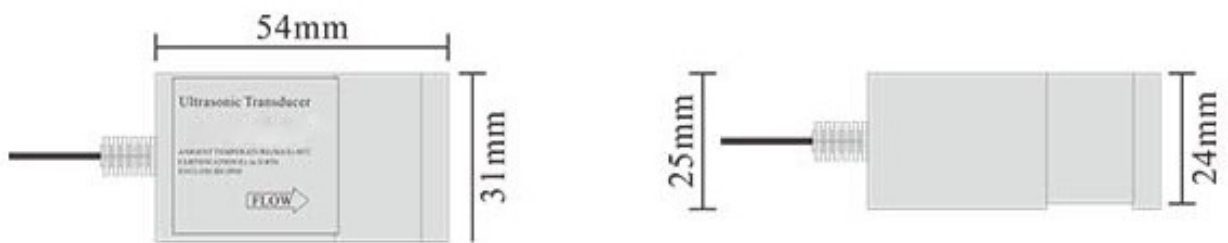
Transmitter :	PC/ABS, IP65
Sensors :	IP68 (encapsulated design)
Sensors cable length :	standard : 9 m
Weight :	Transmitter: $\pm 0,7$ kg Sensors: $\pm 0,4$ kg

Dimensions

Transmitter



Sensors



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