Hydrosonic Series
Ultrasonic Flow Meter

- High accuracy time of flight measurement
- Does not measure air
- Measures water temperature and compensates in measurement
- Burst pipe, Leak detection
- Battery life up to 10 years
- Wireless M-Bus, LoRa, GSM, NBIOT communication options available
- Very low pressure drops
- Ignores sand and other small particles
- IP68 ingress protection
- Ideal for smart water metering in smart cities
- Ideal for leakage calculation in DMA's
- Tamper proof. No interference from magnetic fields
- Automatic multipoint factory calibration for maximum accuracy

Table of Contents

Working Principle

An ultrasonic flow meter measures the flow of a liquid or gas by sending ultrasonic waves across a pipe, containing the flow in the direction of the flow and in the opposite direction of the flow. The ultrasonic waves and the velocity of the flow of the liquid or gas can be combined to determine the flow rate. An ultrasonic flow meter has two transmitters, and two receivers, with one of each mounted on either side of the pipe at a calculated distance to provide accurate readings.

Move away from mechanical water meters to the new smart static ultrasonic water meters. These meters give improved accuracy, long term battery life, smart communication features, no recording of air and more advantages compared to mechanical multijet meters. These meters also give higher accuracy for precise water meter measurement warranted for smart city leakage measurement. These instruments are calibrated at different flow patterns to give the maximum accuracy possible at different operating flow conditions.

UFLO provides a number of intelligent alarms like no flow, burst pipe, leakage, water freezing, reverse flow, tampering and more.

A number of communication options are available including Wireless M-Bus, LoRa, GSM and NBIOT technologies. Advanced battery management techniques ensure long life of battery from these instruments.

Features

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- Very low pressure drop
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Specifications

Operating Conditions	
Temperature	0 to 50 °C
Storage temperature	0 to 70 °C
Maximum pressure	16 bar
Power supply	Lithium battery
Battery life	10 years
Data storage Features	
Real time clock	Built in

|	
Internal storage	3 months daily data
Water audit features	When enabled can store every 5-minute data for the past 15 days
Stored Parameters	Flow rate, Total Flow reading, Water temperature along with time of reading
Display Features	
LCD Display	8-digit totalizer with separate alarm indication
	Has a Display with ABS Material and Reinforced Plastic
Display parameters	Forward Rate Flow, Forward Total Flow, Reverse Rate Flow,Reverse Total Flow, Date/Time,Communication Parameters,Leak Detect, Empty Pipe, Burst Pipe, Tamper, Internal Errors, Communication signal strength, Battery Level Indication
Accuracy	
Below Transition flow rate	+/- 5%
Above Transition flow rate	+/- 2%
Communication Options	
Wireless Options	Wireless M-Bus / LoRa / GSM / NBIOT
Resistance	
Protection Class	IP68
Display protection	Sliding Display Concept Provided by GSV Which makes the Meter Tamper Proof
Construction	
Construction	Molded high strength plastic
	High Quality Construction with Individual Dies for Enclosure
	Housing Material is RF Friendly and will not interfere with Antenna (Signal Strength)
*Note: Battery life dependent on communication option and frequency of reading	

Multi-Function Display
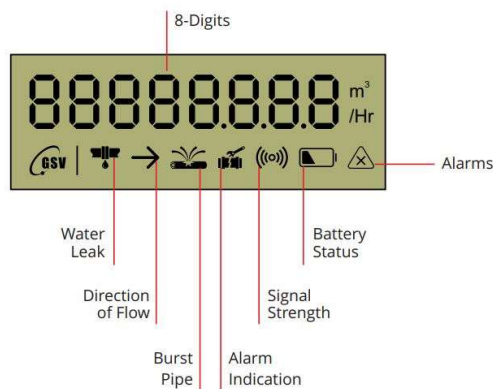
- 8-digit LCD display
- Easy to read display
- Visual alarms
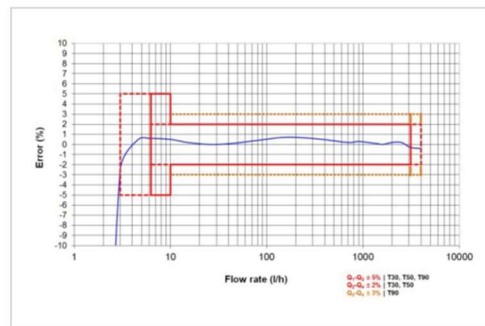- Flow rate (m3/hr)
- Alarms will be transmitted to the web.

FLOW DATA

Line Size	Q3 (Permanent Flow Rate) m3/hr	Q4 (Overload Flow Rate) m3/h	Q2 (Transitional Flow Rate) m3/hr	Q1 (Min. Flow Rate) m3/hr
15 mm	2.5	3.125	0.016	0.01
20 mm	4	5	0.03	0.016
25 mm	6.3	7.875	0.04	0.025
40 mm	16	20	0.103	0.064

Pressure Loss Graph
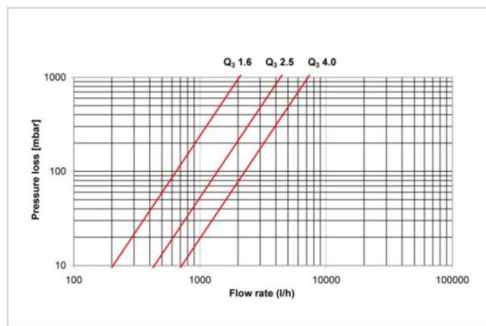
Typical Error Graph

Dimensions chart

Size DN	Length (mm)
15	165
20	190
25	260
32	260
40	300

Top & bottom: matte grey metallic
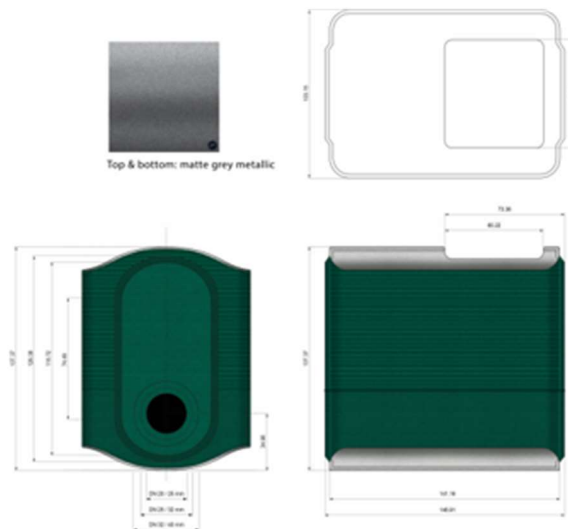
Advantages

No reflectors
a) In our Hydro Sonic 1000 there are no reflectors required for the water sensing application
b) Reflectors are prone to corrosion and deposits which can hinder the reflection and stop flow sensing or result in wrong values.

Temperature Sensing
a) The speed of Ultrasonic waves travelling in water is dependent on temperature of water. Without temperature sensing there is no possibility of calculating the time of flight.
b) Inbuilt temperature sensing is done by the same sensors that are responsible for calculating the time of flight.
c) The design of the flow tube is experimentally qualified for temperature and viscosity sensing.
d) Both temperature and viscosity are calculated every 0.5 seconds for the flow calculation algorithm.

Pressure Sensing
a) Pressure sensors are inbuilt optionally based on customer requirements
b) This will measure the pressure and transmit this information to the server along with flow information

Handling Bubbles
a) Bubbles due to Undissolved gases cause attenuation of the signal as well as unwanted scattering of the signal leading to wrong flow values.
b) Our algorithm is tuned to detect such abnormal values and correct them on the fly.
c) Also, the amplitude of the waves is monitored to make sure that the resultant waves are distorted due to bubbles and compensation is applied to regularize these waves.
d) In cases where the internal algorithm is not able to identify the actual wave the previous rate of flow is substituted for continuous flow calculation.
e) Since our algorithm calculates flow at 8 times a second errors are minimized, and true flow calculations are performed.

Long operational life
a) The amplitude of the ultrasonic waves is monitored periodically and compared with factory calibrated values. This can change due to multiple reasons, mainly aging, deposits and corrosion in the sensors.
b) Temporary changes are caused by bubbles and impurities in water which can now be discriminated against compared to long term variations.
c) The Hydronett flow calculation algorithm is tuned to discriminate these values and compensate for these values automatically.
d) This gives long term stability and accuracy over the life of the meter

Artificial intelligence
a) Leak Detection of Water in Pipes using sound
b) Smart Alarm System which can detect presence of People in the House
c) Automatic Push updates to the cloud based on changes in water pressure

Product Certifications
➢ Our ultrasonic meters are calibrated at Inhouse NABL approved Laboratory
➢ OIML –R49
➢ ISO 4064