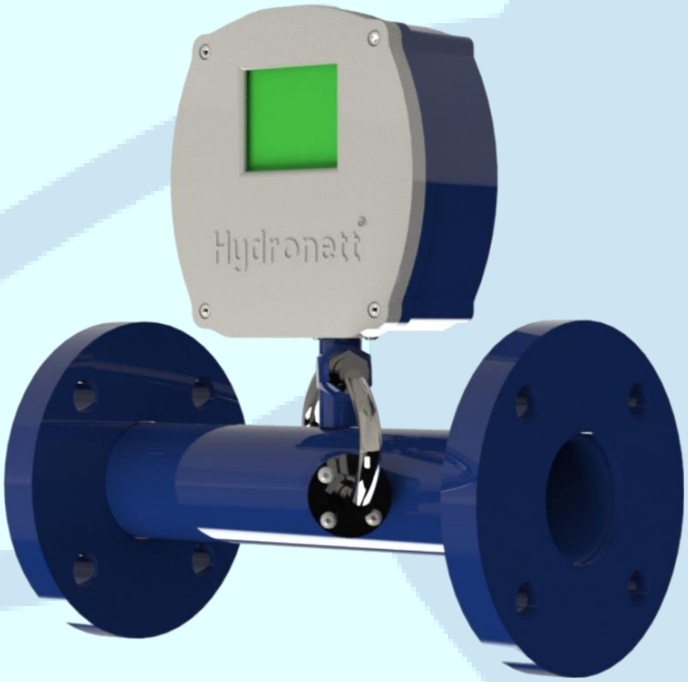
Hydronett
Saving water, Enriching lives

Product Data Sheet

Hydrosonic B Series

Bulk Ultrasonic Flow Meters



- 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, Bluetooth , M-Bus, LoRa, GSM, NBIOT communication 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

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➢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.

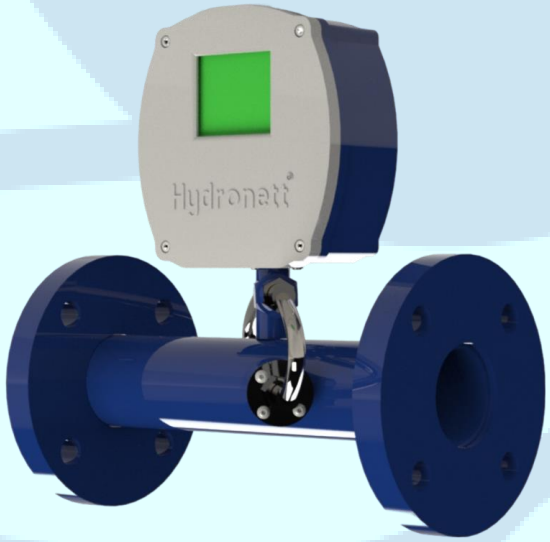
Move away from mechanical water meters to the new smart static ultrasonic water meters. These meters give improved accuracy, long term battery life, smart communication features, no recording of air and more advantages compared to mechanical MultiJet meters. These meters also give higher accuracy for 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.

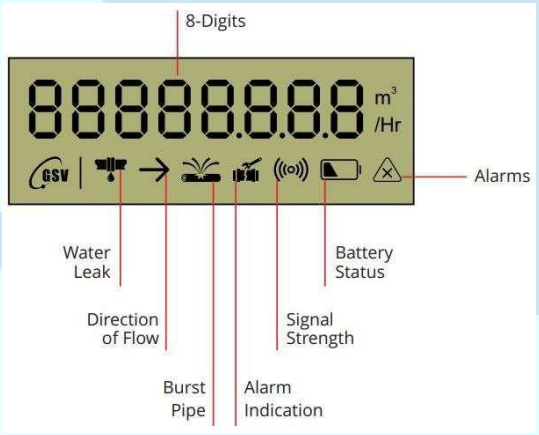
➢Specifications

Temperature conditions	
Ambient temperature	-5°C to 80°C
Water temperature	0 to 60 °C
Storage temperature	-20 to 65 °C
Operating Conditions	
Relative humidity	0 to 100 %
Mean ambient temperatures over 24h	55 °C
Mean ambient temperatures over year	40 °C
Maximum pressure	16 bar
Battery Life	10 years
Power supply	
Lithium Battery	



<table>
<tr>
<td colspan="2"><u>Data storage features</u></td>
<td rowspan="2"><u>Pressure Drop</u>
Our meter pressure drop lies between 0.35 to 0.40 bar in the range from Q1 toQ4</td>
</tr>
<tr>
<td>Real time clock</td>
<td>Built in</td>
</tr>
<tr>
<td>Internal storage</td>
<td>3 months daily data</td>
<td rowspan="2">Physical manipulation protection Features
Tamper proofs in casing
Tamper sensors</td>
</tr>
<tr>
<td>Water audit features</td>
<td>When enabled can store every 5-minute data for the past 15 days</td>
</tr>
<tr>
<td colspan="2">Stored Parameters</td>
<td rowspan="2">Inbuilt Temperature sensor
Our meter has inbuilt temperature sensor for the accurate measurement of water temperature</td>
</tr>
<tr>
<td colspan="2">flow rate, Total Flow reading, Water temperature along with time of reading</td>
</tr>
<tr>
<td colspan="2">Display Features</td>
<td rowspan="2">Inbuilt Pressure sensor
Our meter has inbuilt Pressure sensor for the accurate measurement of water inlet & outlet pressure
Inbuilt non return valve
Our meter has inbuilt control valve for the accurate movement control of water
Control valve
Our meter has externally fitted control valve for the accurate movement of water</td>
</tr>
<tr>
<td colspan="2">LCD display : Has a Display with ABS material & Reinforced plastic
8 Digit totalizer with separate alarm indication

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</td>
</tr>
<tr>
<td colspan="2">Accuracy</td>
<td rowspan="11">Communication& navigation Modules
GPS : Our meter has inbuilt GPS for tracking

Communication Display
 

8 digit LCD display
Easy to read display
Readings in m3/hr/ltr/hr & volume in m3/ltr
Battery low alarm, empty pipe alarm</td>
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<tr>
<td colspan="2">Q1 to Q2 : +/-5%</td>
</tr>
<tr>
<td colspan="2">Q2 to Q4 : +/-2%</td>
</tr>
<tr>
<td colspan="2">Communication Options</td>
</tr>
<tr>
<td colspan="2">Wireless Options : Wireless Bluetooth, M-Bus / LoRa / GSM / NBIOT</td>
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<tr>
<td colspan="2">Resistance</td>
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<tr>
<td colspan="2">Ingress Protection: IP68</td>
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<tr>
<td colspan="2">Display Protection : Sliding Display Concept Provided by Hydronett Which makes the Meter Tamper Proof</td>
</tr>
<tr>
<td colspan="2">Construction : Housing material is RF friendly & will not interfere with Antenna (signal strength)

Molded High strength Plastic & High Quality Construction with Individual Dies for Enclosure</td>
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<tr>
<td colspan="2">Magnetic field Protection</td>
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<tr>
<td colspan="2">The meter have the immunity to externally applied static magnetic field up to a magnetic field strength of 600 k/A</td>
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</table>

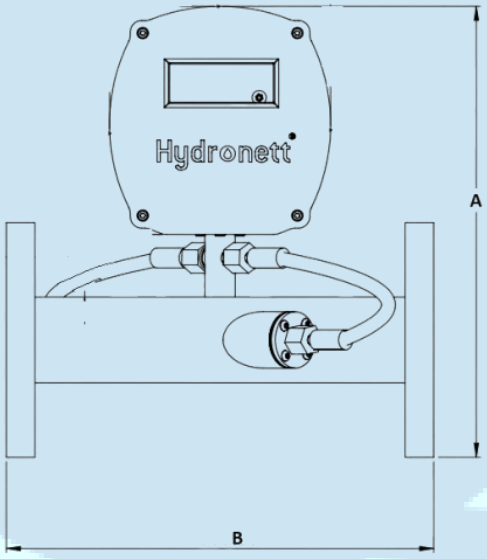
Flow Data

R value 40

Line Size	Q3 (Permanent Nominal flow rate m3/hr)	Q4/Overload flow rate m3/hr	Q2 Transitional flow rate m3/hr	Q1 (Min. Flow Rate) m3/hr
50 mm	40	50	1.6	1.0
80 mm	100	125	4.0	2.5
100 mm	160	200	6.4	4

Dimensions chart

Size DN mm	Length (B) mm	Height (A) mm
50 mm	300	317
80 mm	305	325
100 mm	350	360



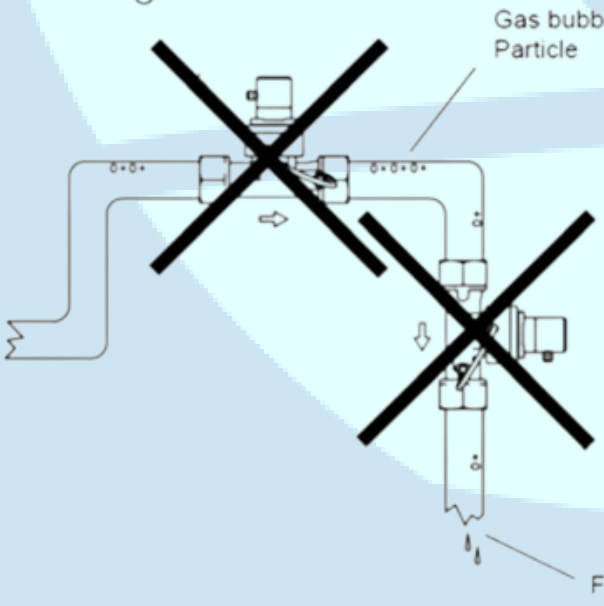
- Product is manufactured against iso4064
- Ingress Protection IP68 rated

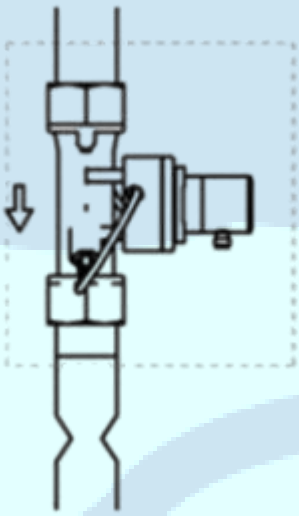
ISO 4064

IP 68

- Installation Conditions

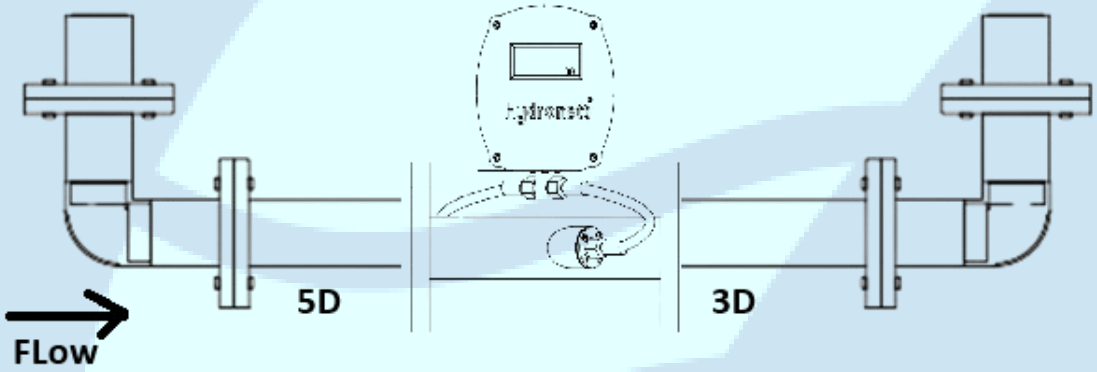
• Minimize gas bubbles





Vertical mounting is also available

Recommended U type Installation



Applications

1) Ultrasonic Bulk meters can be fitted in commercial/industrial utilities
2) With the integration of smart meter into the metering infrastructure, utilities can precisely calculate monthly bills based on daily water consumption. This automated billing system significantly simplifies operations for utility providers and reduces the expenses associated with manual billing methods.
3) The data collected through the sensors suite can be further monitored, and both utilities and users can understand their consumption habits and know where they are using excess water. This reduces instances of over-consumption of water and the resulting wastage.
4) Hydrosonic Smart meters are generally more precise compared to their traditional counterparts, which help minimize discrepancies in water usage and guarantee that customers pay only for the water they consume—no more or less.

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