Ultrasonic Flow Meter Solutions

Dynasonics®
Ultrasonic Flow Meters

Time-Saving Installation. Easy Flow Measurement.

Badger Meter

Ultrasonic Flow Meters

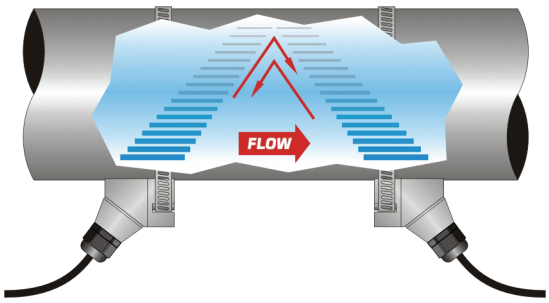
Badger Meter ultrasonic meters measure flow rate by propagating ultrasound waves into liquid-filled pipes and measuring the reflections. There are two technologies to choose from based on the fluid properties: transit time and Doppler. With clamp-on technology, the Badger Meter ultrasonic meters reside outside the pipe and bring you flow measurement with:

- Reduced installation costs
- Uninterrupted production
- Installation flexibility across a wide range of pipe sizes
- No pressure head loss
- No contact with internal liquid
- No moving parts to maintain

Transit Time

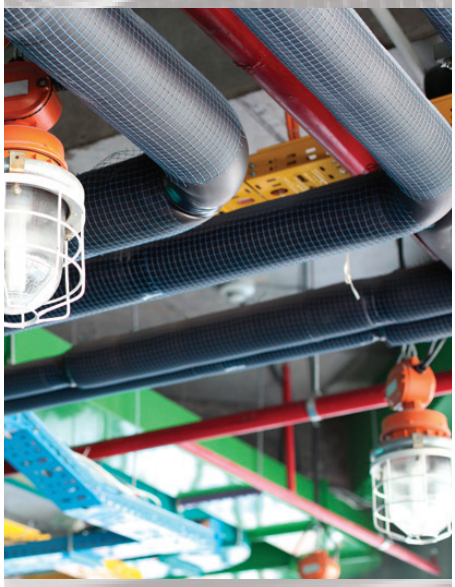
Clean fluids with small amounts of suspended solids or aeration

For clean fluids with small amounts of suspended solids or aeration, transit time ultrasonic meters provide the best performance and can be used in a wide range of applications for pipes 1/2 inch and larger.



Transit time flow meters have two transducers, which function as both ultrasonic transmitters and receivers. The flow meters operate by alternately transmitting and receiving a frequency modulated burst of ultrasound energy between the two transducers. The burst is first transmitted in the direction of fluid flow and then against fluid flow. Since ultrasound energy in a moving liquid is carried faster when it travels in the direction of fluid flow (downstream) than it does when it travels against fluid flow (upstream), a differential in the times of flight will occur. The ultrasound's time of flight is accurately measured in both directions, and the difference in time of flight is used to determine the velocity of the fluid.

- Ideally suited for permanent, temporary or portable flow verification
- Energy and network connectivity options available



Dynasonics®
Ultrasonic Flow Meters

Transit Time Flow Meters

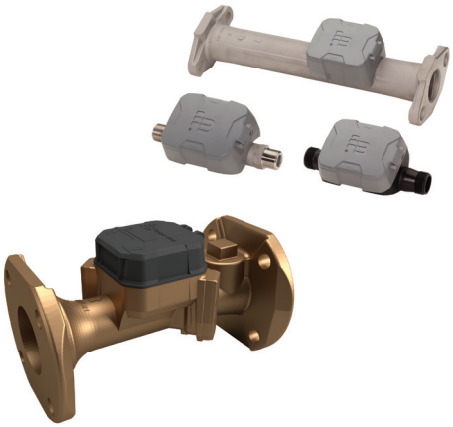
Transit time flow meters consist of electronics with remote or integral transducer options to measure bidirectional flow of clean liquids.

TFX-5000 Clamp-on Flow Meter
Supporting the widest range of pipe sizes and network and data logging options, TFX-5000 is our most versatile ultrasonic flow meter.
Pipe sizes: 1/2…48 inch (15…1200 mm)
Accuracy: up to ± 0.5% of reading

TFX-5000 Clamp-on Energy Meter
TFX-5000 meter with dual RTDs can calculate energy usage from the flow and temperature measurements across heating and cooling equipment and zones.
Pipe sizes: 1/2…48 inch (15…1200 mm)
Accuracy: up to ± 0.5% of reading

TFX-500w Clamp-on Flow Meter
TFX-500w flow meters are a cost-effective meter for measuring water flow in a variety of applications.
Pipe sizes: 1/2…10 inch (15…250 mm) or larger
Accuracy: ± 1% of reading

U500w In-Line Flow Meter
One-piece electronic meter with display integral to the meter body eliminates tampering, and, with no moving parts, also eliminates mechanical wear.
Pipe Sizes: 5/8...4 inch or larger
Accuracy: ± 1.5% of reading



Applications

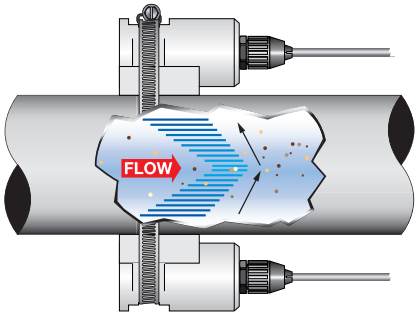
- Water
- Water intake
- Pathogen control
- Corrosion control
- Pump stations
- Lift stations
- Boiler feed water
- Makeup water
- Heating/cooling water (glycol)
- Cooling towers
- Power generation
- Semiconductor
- Food and beverage

Dynasonics®
Ultrasonic Flow Meters

Doppler Flow Meters

- Ideal for most slurries or aerated liquids
- Low installation cost
- No moving parts to maintain

Fluids with suspended solids
For fluids with significant amount of particles or air bubbles, such as slurries, sewage and plastics, Doppler ultrasonic meters provide the best performance.



Each Doppler flow meter utilizes two separate transducer heads. Ultrasonic waves are transmitted from one transducer and reflected by reflectors suspended within the liquid and then recorded by a receiving transducer. If the reflectors are moving within the ultrasound transmission path, ultrasound waves will be reflected at a frequency shifted (Doppler shift) from the transmitted frequency. The difference between the transmitted frequencies and reflected frequencies is directly proportional to the speed of the ultrasonic reflectors.

DFX Doppler Flow Meter
Designed for semi-clean liquids with suspended sonic reflectors on pipe sizes 1/4 inch (6 mm) and larger.
Accuracy: ± 2% full-scale over calibrated span

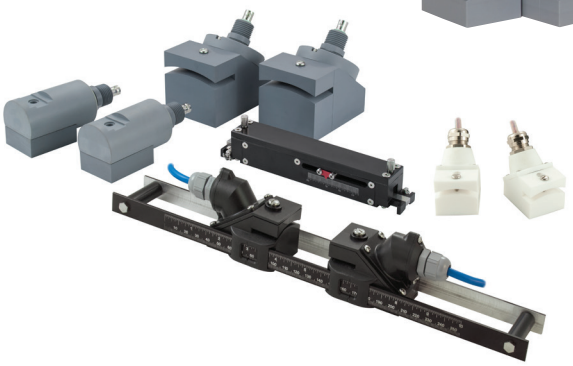
Clamp-on Transducers
Cable and flexible armored conduit selections are offered to reduce installation time.

Dynasonics®
Ultrasonic Flow Meters

Portable Flow Meters

Portable Flow Troubleshooting Kits
Designed for quick troubleshooting and verifying system performance during commissioning, portable ultrasonic kits are ideal tools throughout the process.

DXN Hybrid Flow and Energy Meter Kit
Our most versatile flow meter, the DXN measures flow with transit time and Doppler technology. The large, easy-to-read color display and intuitive touch-screen interface makes setup quick and easy.
Measurements from external devices, such as RTDs and pressure transmitters, can be logged along with flow data.
Accuracy: ± 1% of reading



- Flow system commissioning and troubleshooting

Dynasonics®
Ultrasonic Flow Meters

Open Channel Flow Meter

Measuring Open Flow
Badger Meter open channel flow meters use non-contact or submerged sensors to measure water level and flow in flumes, weirs, partial pipes or other channels. For weirs and flumes, a common method it to measure water level and use standard empirical equations or tables to calculates the flow based on the dimensions and characteristics of the channel. For partial pipes and channels without a primary element, an area-velocity flow measurement, which directly reads the velocity along with water level, gives more accurate volumetric values.

IS-4000 for Weirs and Flumes
Simple to install and setup, IS-4000 meters use a non-contact ultrasonic level sensor to measure the water level in flumes, weirs or other channels. Level, flow rate and total volume values are available over Modbus communication. IS-6000 includes connectivity with BEACON®/AquaCUE®. Data is logged to provide a backup of readings.
Level sensor range: up to 19 ft (6 m)

IS-6000 Area-Velocity
Well suited for flow measurement in raw sewage and stormwater applications, IS-6000 flow meters directly measure velocity for the best accuracy in these demanding applications. Level, flow rate, total volume and other sensors are available over Modbus communication. Data is logged to provide a backup of readings.
Velocity range: up to 16.5 ft/s (5 m/s)
Level sensor range: up to 32 ft (10 m)

Applications

- Wastewater effluent
- Storm water
- Agriculture irrigation
- Industrial discharge

Dynasonics®
Ultrasonic Flow Meters

About Badger Meter

Badger Meter Flow Instrumentation understands that companies cannot manage what they do not measure—and leverages more than a century of flow measurement expertise and a technology-rich portfolio to optimize customer applications worldwide.

An industry leader in both mechanical and electronic flow metering technologies, Badger Meter offers one of the broadest flow control and measurement portfolios in the industry—a portfolio that includes eight of the ten major flow meter technologies. Simply put, Badger Meter Flow Instrumentation provides technology to measure and control whatever moves through a pipe or pipeline—including water, air, steam, oil, other liquids and gases.

Variety of Flow Instrumentation Solutions

ModMAG® Electromagnetic
Flow Meters

Industrial Oval Gear
Flow Meters

Dynasonics® Ultrasonic
Flow Meters

Research Control®
Valves and Positioners

Hedland® Variable Area
Flow Meters

Recordall® Disc
Flow Meters

Impeller Flow Meters

Cox & Blancett®
Turbine Flow Meters

Vortex
Flow Meters

Dynasonics®
Ultrasonic Flow Meters

Control. Manage. Optimize.

www.badgermeter.com | 877-243-1010

Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400

TTM-BR-01388-EN-09 (October 2021)