NATIONAL TYPE EVALUATION PROGRAM

Certificate of Conformance

for Weighing and Measuring Devices

For:
Meter Indicating Volume
Digital Electronic Ultrasonic Water Meter
Model: UMeter -N(In-Line), -C(Clamp-on-Pipe)
Sizes: 3/4", 1"

Submitted By:
SunSonic LLC
4291 South Tamiami Trail, #1006
Venice, FL 34293
Tel: 941-841-1477
Contact: John Davey
Email: info@sunsonicllc.com
Website: www.sunsonicllc.com

Standard Features and Options

Standard Features:

- All Digital Display
- Certified for use in all possible register orientations, piping angles, and/or flow directions.
- Cold and Hot Water Certified UMeter-N (In Line) Temperature Range: 34F-140F
- Cold Water Certified UMeter-C (Clamp-on-Pipe) Temperature Range: 34F-90F
- Unit(s): U.S. Gallons
- Extended Low Flow 0.05gpm 3/4", 0.10gpm 1" for leak detection
- Flow Direction Arrow is Located on Meter Face
- Pulse Output, Encoded Output (Sensus Protocol), Proprietary Communication Output
- Maximum Operating Pressure: 175 psig (-N)
- Integrated Smart Alerts Icons/Output *(Back-flow detection, leak detection, no water, low battery, General Alerts)* Register Icons and Proprietary Communication Output.

Certified Options:

- UMeter -N (In-Line)
- UMeter -C (Clamp-on-Pipe) -CPVC/CU (CPVC/Copper), and -PEX (PEX)
- Size Options ¾ Inch and 1 Inch
- Cubic Feet Units

Note: Certified for use only when installed according to the manufacturer's instructions.

***Testing Notes:** **See Page 4 for Testing Requirements of UMeter-C, manufacturer will supply inlet/outlet connectors upon request.**

This device was evaluated under the National Type Evaluation Program and was found to comply with the applicable technical requirements of *Handbook 44: Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices*. Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages. *Editorial changes, not affecting the type or metrological content, corrected this certificate.

Gene Robertson
Chair, NCWM, Inc.

Mahesh Albuquerque
Chair, NTEP Committee
Issued: January 5, 2024

9011 South 83rd Street / Lincoln, Nebraska 68516

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Meter Indicating Volume / UMeter

Application: The UMeter-N (In-Line) ultrasonic water meter is certified for use as a domestic water meter in utility billing, commercial metering systems, and legal submetering applications. The UMeter-N (In-Line) ultrasonic water meter is certified for all possible register orientations, piping angles, and/or flow directions for hot (up to 140 degrees F) and cold water. The UMeter-C (Clamp-on-Pipe) ultrasonic water meter is certified for use as a domestic water meter in utility billing, commercial metering systems, and legal submetering applications. The UMeter-C (Clamp-on-Pipe) ultrasonic water meter is certified for all possible register orientations, piping angles, and/or flow directions for cold water only (up to 90 degrees F).

Identification: All required identification information is located on the face of the water meter. The Flow Direction is shown on the face of the meter.

Sealing: The meter is sealed by a seal wire through holes in both the enclosure and meter body and secured with a lead seal. The UMeter-C (Clamp-on-Pipe) is required to be sealed through the provided hole on the meter casing to the hole on the clamping mechanism after installation. **Seal wires and/or lead seals must not be removed or altered in any way otherwise the warranty will be voided.**

Operation: Ultrasonic flow meters measure the difference of the transit time of an ultrasonic sound wave beam propagating in and against the flow direction of time. This time difference is a measure for the average velocity of the fluid along the path of the ultrasonic beam. By using the absolute transit times, both the average fluid velocity and the speed of sound can be calculated. This meter is to be tested as "other than multi-jet" per the National Institute of Standards and Technology (NIST) Handbook 44 Specifications and Tolerances, Section 3.36. Water Meters, Table T.1. Accuracy Classes and Tolerances for Water Meters.

Test Conditions: Four 3/4-inch UMeter-N(In-Line) meters were tested concurrently with cold and hot water(140F). Two of the meters measured gallons, one measured in cubic feet, and one meter measured in cubic meters. The meters were installed in every register orientation horizontally and then every register orientation vertically. All tolerance and repeatability requirements were satisfied. Five 3/4-inch UMeter-C-CPVC/CU(Clamp-on-Pipe) meters were tested concurrently with cold water firstly on copper pipe and then tests repeated on CPVC pipe by clamping to the pipe in every register orientation horizontally and then every register orientation vertically. Three meters measured in gallons, one meter measured in cubic feet, and one measured in cubic meters. All tolerance and repeatability requirements were satisfied. Four 3/4-inch UMeter-C-PEX(Clamp-on-Pipe) meters were tested concurrently with cold water on PEX pipe by clamping to the pipe in every register orientation horizontally and then every register orientation vertically. Two meters measured in gallons, one meter measured in cubic feet, and one measured in cubic meters. All tolerance and repeatability requirements were satisfied. All the meters were then sealed for permanence testing.

After a throughput of more than 200 000 gallons of water, all meters were retested in the same scenarios as initial test conditions. Every meter satisfied all tolerance and repeatability requirements per the National Institute of Standards and Technology (NIST) Handbook 44 Specifications and Tolerances, Section 3.36. Water Meters 2023 Edition.

Evaluated By: A. Katalinic (NCWM/NTEP), 24-003 (CN 10833)

Type Evaluation Criteria Used: *Handbook 44 Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, 2023 Edition. *NCWM Publication 14: Measuring Devices*, 2023 Edition.

Conclusion: The results of the evaluation and information provided by the manufacturer indicate the device complies with applicable requirements.

Information Reviewed By: D. Flocken (NCWM), 24-003

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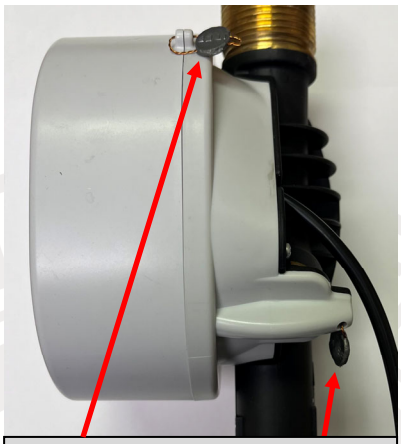
Meter Indicating Volume / UMeter

Example(s) of Device:

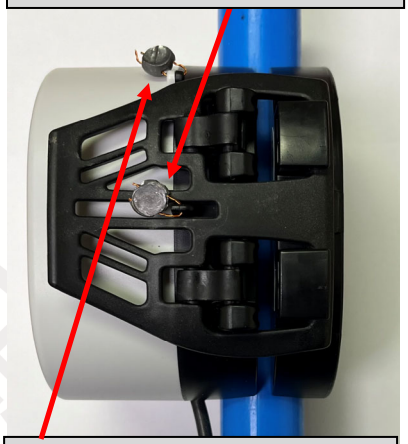


UMeter Enclosure



Sealing Locations UMeter-N

Sealed after Installed onto PEX/CPVC/Copper Pipe.

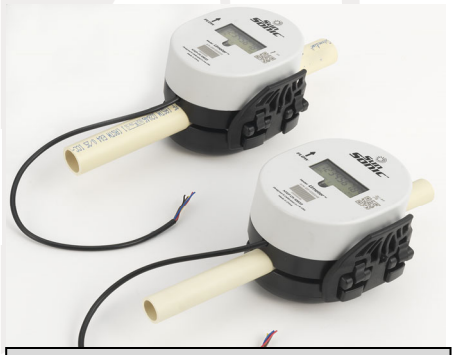


Sealing Locations UMeter-C



UMeter-C-PEX 3/4" & 1"

**UMeter-C shown with PEX & CPVC piping for reference only.*



UMeter-C-CPVC/CU 3/4" & 1"



UMeter-N 3/4" & 1"

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Meter Indicating Volume / UMeter

***Testing Requirements**: Upon testing of the UMeter-C version of Ultrasonic Water meter, the following is required. The manufacturer will supply the Inlet & Outlet test bench adapters to properly allow for the meters to be tested. PEX pipe segments are to be used for testing the -PEX and CPVC pipe segments are to be used for testing the -CPVC/CU. Support stands or equivalent must be used to ensure the pipe segments are level for proper testing. The test bench water flow MUST be diverted to the pipe segments of either PEX or CPVC and water meters clamped to the segments as shown. This also allows for the most efficient means of testing multiple water meters.

For testing support please contact SunSonic Exclusive supplier at 844-366-7427

Procedure:

1. Install supplied Inlet/Outlet adapters in test bench as shown.
    a. Inlet/Outlet adapters can be installed in appropriate positions to allow for most efficient space for testing meters.
2. Install spacer tubes or equivalent in the test bench meter positions between the valves.
3. Install the pipe segment into the SharkBites in both the Inlet/Outlet adapters.
    a. PEX segment to be used for UMeter-C-PEX.
    b. CPVC segment to be used for UMeter-C-CPVC/CU. Pipe segments can vary in length for best fit.
4. Ensure the pipe segments are level and supported as shown.
5. Open both the Inlet and Outlet valves to prepare for watering(air bubble removal).
6. Water the test bench to remove any entrained air in the piping, ensure the Inlet/Outlet adapter valves are OPEN initially then CLOSE the Inlet/Outlet adapter valves and continue watering. This process ensures the air is removed from the valve area and pipe segments.
7. Install UMeter-C (-PEX or -CPVC/CU) on the pipe segment ensuring the flow arrow is with flow direction. **Install a minimum of 14" from each elbow.** Multiple meters can be clamped next to each other to allow for the most meters possible on the segments.
8. TEST METERS. Simply unclamp and remove when finished, then clamp next meters for testing.

