



# U500w Ultrasonic Meter

Lead-Free Bronze Alloy, 3 and 4 inch  
NSF/ANSI Standard 61 Certified

## DESCRIPTION

The U500w Ultrasonic meter uses solid-state technology in a compact, tamper-protected, weatherproof and UV-resistant housing, suitable for commercial applications. Electronic metering provides information—such as rate of flow, status and alarm indication—and data not typically available through traditional, mechanical meters and registers. Electronic metering minimizes measurement errors due to sand, suspended particles and pressure fluctuations.

### U500w Ultrasonic 3 and 4 inch Meter Features

- Open flow tube design prevents flow obstruction to reduce pressure loss
- Greater turn-down ratio for extended flow ranges and increased revenue
- Easy-to-read, 9-digit LCD display, which presents consumption, rate of flow, unit of measure, pressure, temperature, alarm conditions and firmware version
- Pressure alarm and pressure and temperature data reported through ORION Cellular LTE-M/LTE endpoints and AquaCUE® Flow Measurement Manager
- Field programmable registration and reporting features
- Meter designed for replaceable electronics
- Single and dual outputs include high resolution industry standard ASCII encoder protocol, scaled/unscaled and 4-20 mA

The meter is available with an in-line connector for easy connection and installation to AquaCUE connectors. It is also available with a flying lead for field splice connection.

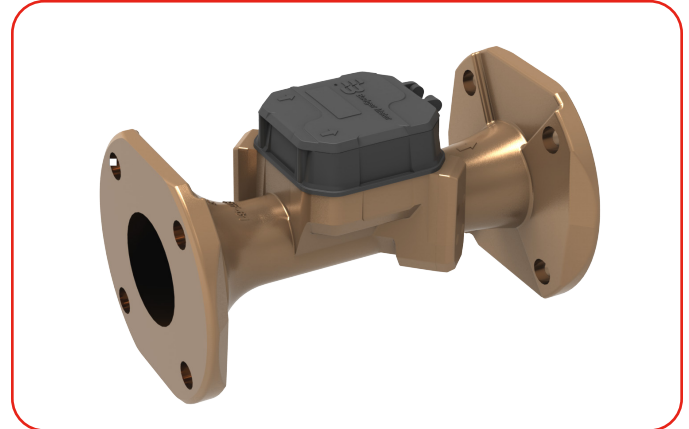
## APPLICATIONS

Use the U500w Ultrasonic meter for measuring potable cold water in commercial and industrial services. The meter is also ideal for non-potable, reclaimed irrigation water applications or less than optimum water conditions where small particles exist.

U500w Ultrasonic meters meet and exceed AWWA C715 and the most recent revision of AWWA C750 Standards. The lead-free bronze alloy meters comply with the lead-free provisions of the Safe Drinking Water Act and NSF/ANSI Standards 61 and 372. U500w Ultrasonic meters also conform to UL 327B and FM 1044 for fire service applications.

## OPERATION AND PERFORMANCE

As water flows into the measuring tube, ultrasonic signals are sent consecutively in forward and reverse directions of flow. Velocity is then determined by measuring the time difference between the measurement in the forward and reverse directions. Total volume is calculated from the measured flow velocity using water



temperature and pipe diameter. The LCD shows total volume, unit of measure, rate of flow, pressure, temperature, firmware and alarm conditions (reverse-flow, no usage, empty pipe, exceeding max flow, suspected leak, pressure, temperature, end of life and measurement error).

In the normal temperature range of 45...105° F (7...41° C), the “new meter” consumption measurement is accurate to:

- $\pm 1.5\%$  over the normal flow range
- $\pm 3.0\%$  from the extended low flow range to the minimum flow value

## CONSTRUCTION

The U500w Ultrasonic meter features lead-free bronze alloy meter housing, ultrasonic transducers, a meter-control circuit board with associated wiring, LCD and battery. Wetted elements are limited to the pressure vessel and transducers. The electronic components are housed and fully potted within a molded, engineered polymer enclosure, which is attached to the meter housing. The transducers extend through the housing and are sealed by O-rings, enabling turbulence-free water flow through the tube. The open flow tube design prevents obstruction of flow to reduce pressure loss and provide long-term accuracy.

## METER INSTALLATION

For long-term performance the meter is weatherproof, UV-resistant, fully submersible, and can be installed using horizontal or vertical piping. The registration electronics and battery are encapsulated to withstand harsh environments and protect the electronics in flooded or submerged pit applications. The meter will not measure flow when an “empty pipe” condition is experienced. An empty pipe is defined as a condition that occurs when the flow sensors are not fully submerged.



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# Product Data Sheet

## SPECIFICATIONS

U500w Ultrasonic Meter Size	3 in.	4 in.
Normal Test Flow Limits	0.75...560 gpm	1.5...1100 gpm
Minimum Test Flow Limits	0.37 gpm	0.75 gpm
Safe Maximum Operating Condition (SMOC)	560 gpm	1100 gpm
Typical Pressure Loss	2.6 psi @ 350 gpm	2.1 psi @ 630 gpm
Operating Performance	In the normal temperature range of 45...105° F (7...41° C), new meter consumption measurement is accurate to: <ul style="list-style-type: none"> <li>• 100% ±1.5% over the normal test flow limits</li> <li>• 100% ±3.0% for the minimum test flow limits</li> </ul>	
Storage Temperature	-40...140° F (-40...60° C)	
Maximum Ambient Storage (Storage for One Hour)	150° F (66° C)	
Measured Fluid Temperature Range	34...140° F (1...60° C)	
Humidity	0...100% condensing; meter is capable of operating in fully submerged environments	
Maximum Working Pressure of Meter Housing	175 psi (12 bar) AWWA Class D	
Maximum Operating Pressure of Pressure Sensor	150 psi (10 bar)	
Pressure Sensor Accuracy	±2% of full scale pressure, up to 150 psi (10 bar)	
Register Type	Straight reading, permanently sealed electronic LCD; digits are 0.28 in. (7 mm) high	
Register Display	<ul style="list-style-type: none"> <li>• Consumption (up to nine digits)</li> <li>• Rate of flow</li> <li>• Alarms</li> <li>• Pressure</li> <li>• Temperature</li> <li>• Firmware version</li> <li>• Unit of measure factory programmed for gallons, cubic feet and cubic meters</li> </ul>	
Totalization Display Resolution	<ul style="list-style-type: none"> <li>• Gallons: 0.1</li> <li>• Cubic feet: 0.01</li> <li>• Cubic meters: 0.001</li> </ul>	
Scaled/Unscaled Output*	Solid-state relay with 4-20 mA output option; open drain MOSFET with AquaCUE output option	
Max. Voltage	30V DC	
Current	100 mA	
Pulse Width	50 ms (programmable 30...100 ms)	
Analog 4-20 mA Output*	Two-wire/passive	
Input Voltage Range	9...50V DC supply	
Current	4...20 mA	
Max. Load Resistance (Ohms)	50 Ohms + 50 Ohms (supply voltage - 9V)	
Battery	3.6-volt lithium thionyl chloride; battery is fully encapsulated within the register housing and is not replaceable; 10-year battery life	

**NOTE:** See Pressure Loss Chart on [page 3](#) for typical pressure loss over complete UL 327B flow range.

\* Applicable to meters with dual output options

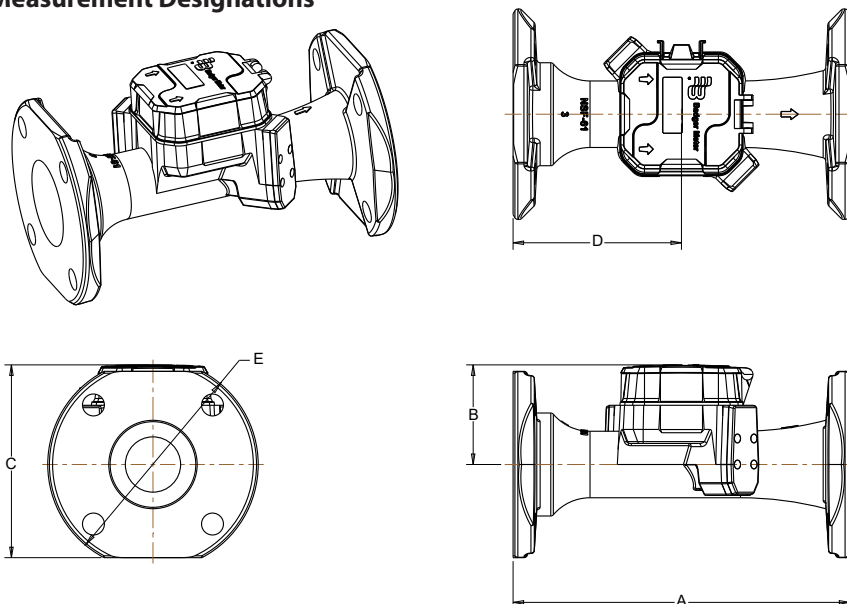
## MATERIALS

Meter Housing	Lead-free bronze alloy
Measuring Section	Ultrasonic sensors located in the flow tube
Register Housing and Lid	Engineered polymer

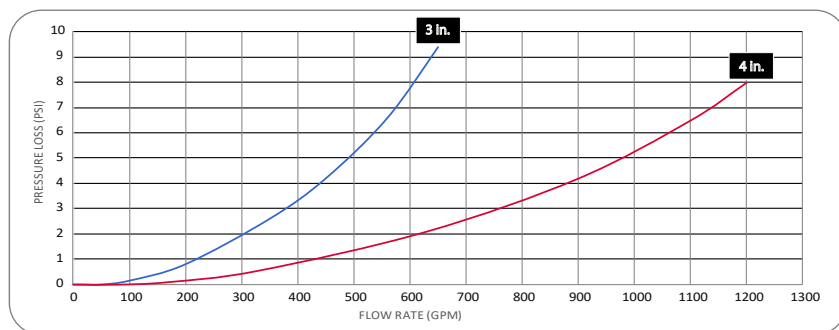
### PHYSICAL DIMENSIONS

U500w Ultrasonic Meter Size	3 in.	3 in.	4 in.	4 in.
<b>Housing</b>	<b>Round</b>	<b>Round</b>	<b>Round</b>	<b>Round</b>
<b>Size Designation × Lay Length</b>	3 × 12 in. (76 × 305 mm)	3 × 17 in. (76 × 432 mm)	4 × 14 in. (102 × 356 mm)	4 × 20 in. (102 × 508 mm)
<b>Weight (without AMR)</b>	26 lb (11.8 kg)	28.5 lb (12.9 kg)	38 lb (17.2 kg)	42 lb (19.1 kg)
<i>See illustration below for Measurement Designations</i>				
<b>Length (A)</b>	12 in. (305 mm)	17 in. (432 mm)	14 in. (356 mm)	20 in. (508 mm)
<b>Height (B)</b>	3.55 in. (90 mm)	3.55 in. (90 mm)	3.69 in. (94 mm)	3.69 in. (94 mm)
<b>Height (C)</b>	6.87 in. (175 mm)	6.87 in. (175 mm)	8.5 in. (216 mm)	8.5 in. (216 mm)
<b>Length (D)</b>	6 in. (152 mm)	8.5 in. (216 mm)	7 in. (178 mm)	10 in. (254 mm)
<b>Width (E)</b>	7.5 in. (191 mm)	7.5 in. (191 mm)	9 in. (229 mm)	9 in. (229 mm)
<b>Number of Bolts</b>	4	4	8	8
<b>Companion Flange</b>	3 in. (76 mm)	3 in. (76 mm)	4 in. (102 mm)	4 in. (102 mm)

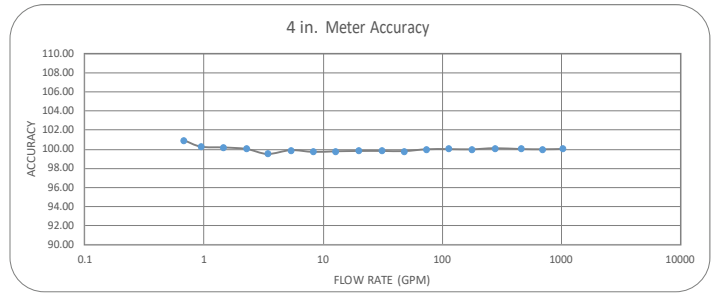
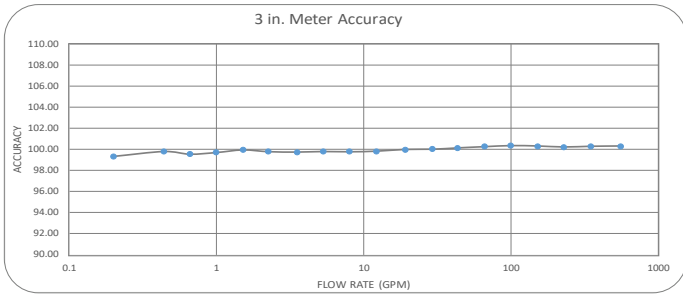
### Measurement Designations



### PRESSURE LOSS CHART



## ACCURACY CHARTS



## PART NUMBERS

### Dynasonics

### U500w Ultrasonic Meters

	UC				P		ET		XX		1			Y2		XX	C2		XX		B0A
<b>PRODUCT TYPE</b>	Lead Free Bronze																				
<b>METER TYPE</b>	3 in. Round (3 x 12 in.) EFA 3 in. Round (3 x 17 in.) EFB 4 in. Round (4 x 14 in.) EGA 4 in. Round (4 x 20 in.) EGB																				
<b>WATER APPLICATION</b>	Potable Water P Reclaimed Water R																				
<b>CONNECTIONS / GASKETS</b>	None - Standard Gaskets XS None XX No Lead Bronze Flange, 316L SS HW - Std Gaskets SB																				
<b>ACCESSORIES</b>	Pressure Sensor P																				
<b>REGISTRATION</b>	Scaled/Unscaled Pulse & 4-20 mA ET																				
<b>TECHNOLOGY</b>	None XX																				
<b>REGISTRATION FACE</b>	Standard 1																				
<b>UNIT OF MEASURE / DIAL RESOLUTION OUTPUT / VISUAL BILLING UNITS</b>	9 Dial - 0.1 Gallon, GPM, 1000 9BE 9 Dial - 0.01 ft3, GPM, 100 9GD 9 Dial - 0.001 M3, GPM, 10 9NB																				
<b>TESTING</b>	BADGER STD 3 in. E3 BADGER STD 4 in. E4																				
<b>SERIALIZATION</b>	Year of Mfg   9 Digit S/N Y2																				
<b>APPLICATION (See Note)</b>	None XX																				
<b>WIRING METHOD (See Note)</b>	Pigtale 25 ft (7.6 m) C2																				
<b>ENDPOINT SHIPMENT MODE</b>	N/A XX																				
<b>RESERVED</b>	Standard B0A																				

**NOTE:** Consult your sales representative for AquaCUE connection options.

## Control. Manage. Optimize.

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