

## U500w Ultrasonic Meter

Cold Water Stainless Steel Meter, 1-1/2 and 2 inch  
NSF/ANSI Standard 61 Certified, Annex G

### DESCRIPTION

The U500w Ultrasonic meter uses solid-state technology in a compact, totally encapsulated, weatherproof, and UV-resistant housing, suitable for building and property management submetering applications. Electronic metering provides information—such as rate of flow and reverse flow indication—and data not typically available through traditional, mechanical meters and registers. Electronic metering eliminates measurement errors due to sand, suspended particles and pressure fluctuations.

#### The U500w 1-1/2 and 2 inch meters feature:

- Minimum extended low-flow rate lower than typical positive displacement meters.
- Simplified one-piece electronic meter and register that are integral to the meter body and virtually maintenance free.
- Sealed, non-removable, tamper-protected meter and register.
- Easy-to-read, 9-digit LCD display presents consumption, rate of flow, reverse-flow indication, and alarms.
- Battery powered—eliminates wiring.
- Compatible with AquaCUE<sup>®</sup> Flow Measurement Manager.

The U500w meter is available with an in-line connector for easy connection and installation to AquaCUE connectors.

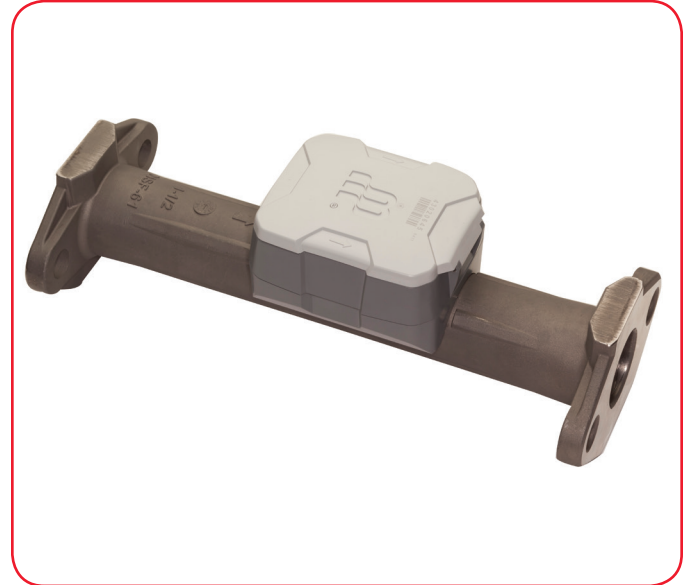
### APPLICATIONS

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

The U500w meter complies with applicable portions of ANSI/AWWA Standard C700 and NSF/ANSI Standard 61, Annex G. There is currently no AWWA standard that specifically addresses ultrasonic meters for residential applications.

### OPERATION & 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 display shows total volume and alarm conditions and can toggle to display rate of flow.



In the normal temperature range of 45...85° F (7...29° C), the U500w “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 meters feature a stainless steel, lead-free meter housing, an engineered polymer and stainless steel metering insert, a meter-control circuit board with associated wiring, LCD, and battery. Wetted elements are limited to the pressure vessel, the polymer/stainless steel metering insert and the transducers. The electronic components are housed and fully potted within a molded, engineered polymer enclosure, which is permanently attached to the meter housing. The transducers extend through the stainless steel housing and are sealed by O-rings.

The metering insert holds the stainless steel ultrasonic reflectors in the center of the flow area, enabling turbulence-free water flow through the tube and around the ultrasonic signal reflectors. The metering insert's patented design virtually eliminates chemical buildup on the reflectors, ensuring long-term metering accuracy.

### METER INSTALLATION

The meter is completely submersible and can be installed using horizontal or vertical piping, with flow in the up direction. 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 pipe is partially full.

## SPECIFICATIONS

U500w Ultrasonic Meter Size	1.5 in. (40 mm)	2 in. (50 mm)
<b>Operating Range</b>	1.25...100 gpm (4.7...378 lpm)	1.5...160 gpm (5.7...606 lpm)
<b>Extended Low-Flow Rate</b>	0.40 gpm (1.5 lpm)	0.50 gpm (1.9 lpm)
<b>Maximum Continuous Operation</b>	100 gpm (378 lpm)	160 gpm (606 lpm)
<b>Pressure Loss at Maximum Flow</b>	3.8 psi (0.26 bar)	5.2 psi (0.36 bar)
<b>Reverse Flow – Maximum Rate</b>	12 gpm (45 lpm)	18 gpm (68 lpm)
<b>Operating Performance</b>	In the normal temperature range of 45...85° F (7...29° C), new meter consumption measurement is accurate to: <ul style="list-style-type: none"> <li>• ±1.5% over the normal flow range</li> <li>• ±3.0% from the extended low flow range to the minimum flow value</li> </ul>	
<b>Storage Temperature</b>	– 40...140° F (– 40...60° C)	
<b>Maximum Ambient Storage (Storage for One Hour)</b>	150° F (72° C)	
<b>Measured-Fluid Temperature Range</b>	34...140° F (1...60° C)	
<b>Humidity</b>	0...100% condensing; meter is capable of operating in fully submerged environments	
<b>Maximum Operating Pressure of Meter Housing</b>	175 psi (12 bar)	
<b>Register Type</b>	Straight reading, permanently sealed electronic LCD; digits are 0.28 in. (7 mm) high	
<b>Register Display</b>	<ul style="list-style-type: none"> <li>• Consumption (up to nine digits)</li> <li>• Rate of flow (US gallons per minute or cubic meters per hour)</li> <li>• Alarms</li> <li>• Unit of measure factory programmed for gallons, cubic feet and cubic meters</li> </ul>	
<b>Register Capacity</b>	<ul style="list-style-type: none"> <li>• 100,000,000 gallons</li> <li>• 10,000,000 cubic feet</li> <li>• 1,000,000 cubic meters</li> </ul>	
<b>Totalization Display Resolution</b>	<ul style="list-style-type: none"> <li>• Gallons: 0.X</li> <li>• Cubic feet: 0.XX</li> <li>• Cubic meters: 0.XXX</li> </ul>	
<b>Battery</b>	3.6-volt lithium thionyl chloride; battery is fully encapsulated within the register housing and is not replaceable; 20-year battery life	

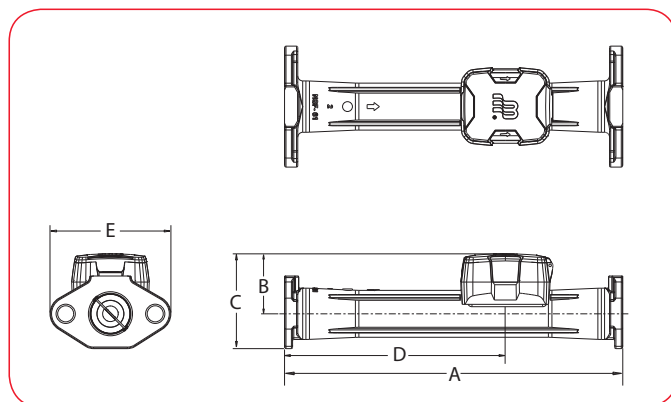
## MATERIALS

<b>Meter Housing</b>	316 stainless steel
<b>Measuring Element</b>	Pair of ultrasonic sensors located in the flow tube
<b>Register Housing &amp; Lid</b>	Engineered polymer
<b>Metering Insert</b>	Engineered polymer & stainless steel
<b>Transducers</b>	Piezo-ceramic device with wetted surface of stainless CrNiMo

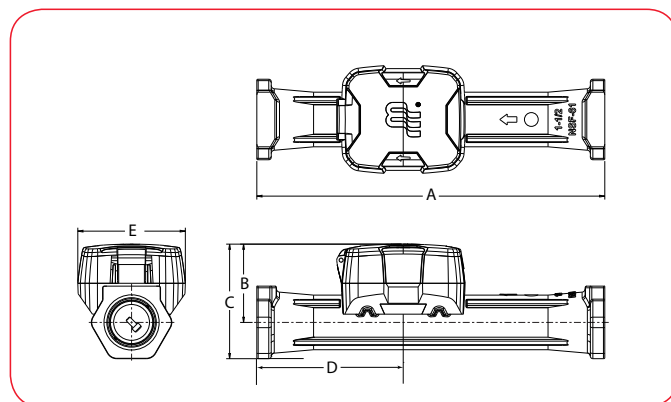
## PHYSICAL DIMENSIONS

U500w Ultrasonic Meter Size	1.5 in. (40 mm)	1.5 in. (40 mm)	2 in. (50 mm)	2 in. (50 mm)
Housing	Elliptical	HEX	Elliptical	HEX
Size Designation X Lay Length	1.5 × 13 in. (40 × 330 mm)	1.5 × 12.62 in. (40 × 320 mm)	2 × 17 in. (50 × 431 mm)	2 × 15.25 in. (50 × 387 mm)
Weight (without AMR)	8.2 lb (3.7 kg)	6.5 lb (2.9 kg)	11.9 lb (5.4 kg)	8.9 lb (4 kg)
See illustration below for Measurement Designations.				
Length (A)	13 in. (330 mm)	12.62 in. (320 mm)	17 in. (431 mm)	15.25 in. (387 mm)
Height (B)	2.80 in. (71 mm)	2.84 in. (72 mm)	3.01 in. (76 mm)	3.06 in. (78 mm)
Height (C)	4.55 in. (116 mm)	4.15 in. (105 mm)	4.76 in. (121 mm)	4.68 in. (119 mm)
Length (D)	7.10 in. (180 mm)	5.31 in. (135 mm)	11.10 in. (282 mm)	5.05 in. (128 mm)
Width (E)	5.50 in. (140 mm)	3.90 in. (99 mm)	6.08 in. (154 mm)	3.90 in. (99 mm)
Bore Size	1.5 in. (40 mm)	1.5 in. (40 mm)	2 in. (51 mm)	2 in. (51 mm)
Two-Bolt Elliptical Flange (AWWA)	1.5 in. (40 mm)	—	2 in. (51 mm)	—
Companion Flange	1.5 in. (40 mm)	—	2 in. (51 mm)	—
Internal Thread Size	—	1.5 in. NPT	—	2 in. NPT

### Elliptical Measurement Designations

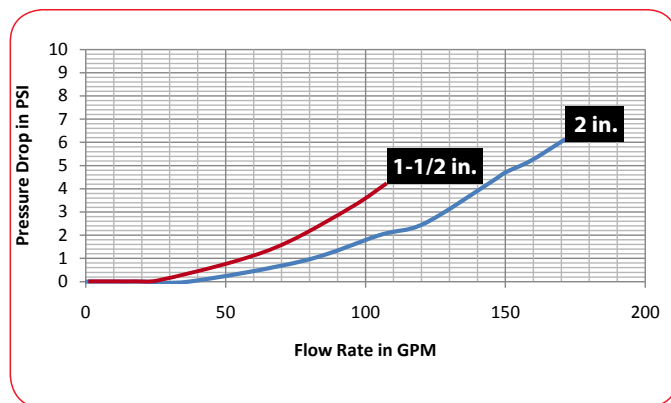


### HEX Measurement Designations



## PRESSURE LOSS CHART

Rate of Flow in Gallons Per Minute (GPM)



**PART NUMBERS**

<b>Dynasonics</b>		UB	-		-		-	X	-	E5	-	CA	-	1	-		-		-	Y3	-	XX	-	TF	-	XX	-	B0A
<b>U500w Ultrasonic Meters</b>																												
<b>PRODUCT TYPE</b>		Stainless Steel Meter																										
<b>METER TYPE</b>		1-1/2 in. Elliptical (1-1/2 x 13)																										
		1-1/2 in. Hex (1-1/2 x 12-5/8)																										
		2 in. Elliptical (2 x 17 in.)																										
		2 in. Hex (2 x 15-1/4 in.)																										
<b>WATER APPLICATION</b>		Potable Water																										
		Reclaimed Water																										
<b>CONNECTIONS / GASKETS</b>		NL Elliptical 316 SS HW - Drop In Gasket (Elliptical Meter Type)																										
		NL Straight - Thick Washers (Hex Meter Type)																										
		None - Thick Washers																										
<b>ACCESSORIES</b>		None																										
<b>REGISTRATION</b>		Encoder																										
<b>TECHNOLOGY</b>		Meter with Cable (No Endpoint)																										
<b>REGISTRATION FACE</b>		Standard																										
<b>UNIT OF MEASURE / DIAL RESOLUTION OUTPUT / VISUAL BILLING UNITS</b>		9 Dial - 0.1 Gallon, GPM, 1000																										
		9 Dial - 0.01 ft3, GPM, 100																										
		9 Dial - 0.001 M3, GPM, 10																										
<b>TESTING</b>		BADGER STD 1-1/2 in. (TS-423)																										
		BADGER STD 2 in. (TS-424)																										
<b>SERIALIZATION</b>		Year of Mfg   9 Digit S/N   Barcoded   Primary and Lid Outside																										
<b>APPLICATION (See Note)</b>		None																										
<b>WIRING METHOD (See Note)</b>		Twist Tight - 5 ft (MTR, ASSY)																										
<b>ENDPOINT SHIPMENT MODE</b>		N/A																										
<b>RESERVED</b>		Standard																										

**NOTE:** For connectivity to AquaCUE, contact your Sales Representative.

**Control. Manage. Optimize.**

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**www.badgermeter.com**

The Americas | Badger Meter | 4545 West Brown Deer Rd | PO Box 245036 | Milwaukee, WI 53224-9536 | 800-876-3837 | 414-355-0400  
 México | Badger Meter de las Americas, S.A. de C.V. | Pedro Luis Ogazón N°32 | Esq. Angelina N°24 | Colonia Guadalupe Inn | CP 01050 | México, DF | México | +52-55-5662-0882  
 Europe, Eastern Europe Branch Office (for Poland, Latvia, Lithuania, Estonia, Ukraine, Belarus) | Badger Meter Europe | ul. Korfantego 6 | 44-193 Knurów | Poland | +48-32-236-8787  
 Europe, Middle East and Africa | Badger Meter Europa GmbH | Nürtinger Str 76 | 72639 Neuffen | Germany | +49-7025-9208-0  
 Europe, Middle East Branch Office | Badger Meter Europe | PO Box 341442 | Dubai Silicon Oasis, Head Quarter Building, Wing C, Office #C209 | Dubai / UAE | +971-4-371 2503  
 Slovakia | Badger Meter Slovakia s.r.o. | Racianska 109/B | 831 02 Bratislava, Slovakia | +421-2-44 63 83 01  
 Asia Pacific | Badger Meter | 80 Marine Parade Rd | 21-06 Parkway Parade | Singapore 449269 | +65-63464836  
 Switzerland | Badger Meter Swiss AG | Mittelholzerstrasse 8 | 3006 Bern | Switzerland | +41-31-932 01 11