Town of Jerome Western Environmental Utility Co.

Proposal Document A – Proposal

To: Honorable Mayor & Council
600 Clark St.
Jerome, AZ 86331

In compliance with the Town of Jerome's Request for Proposals for an Advanced Metering Infrastructure System and the Notice to Respondents by the Town Manager, the undersigned respondent:

Having carefully examined the proposal documents and being familiar with the conditions to be met, hereby submits the following proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed and agrees to execute contract documents and furnish the required Bonds and Certificates of Insurance for the completion of said work, at the locations and for the prices set forth on the Fee Proposal.

Understands that procurement of this project shall be in accordance with all applicable Standard Specifications and as otherwise required by the General Provisions and Special Provisions.

Understands that this proposal shall be submitted with a proposal guarantee of cash, certified check, cashier's check, or surety bond (in accordance with Title 34, A.R.S.) for an amount not less than ten percent of the total amount proposal.

Agrees that upon receipt of Notice of Award from the Town of Jerome, they will enter into contract negotiations and execute the contract documents.

Work shall commence no later than 30 days, after the Notice to Proceed and shall be completed within 180 calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completing the work includes lead time for obtaining the necessary materials and/or equipment. Respondent agrees to pay, as liquidated damages, two times the sum as stated in the latest revision of the MAG Specifications. Liquidated Damages shall be based upon the final contract amount.

The respondent hereby acknowledges receipt of and agrees that this proposal is based on the following Addenda (if there are no addenda, write NONE below).

NONE

REQUIRED FOR SUBMITTAL

The Town of Jerome retains the right to reject any or all proposals and to waive minor defects and technicalities or withhold the award, as may be deemed best for the interest of the Town.

This proposal shall be valid for a period of 30 days after the proposal deadline.

THIS PROPOSAL is submitted by Western Environmental Utility Company

_____, a corporation organized under the laws of the State of Arizona, a partnership consisting of _____, or an individual trading as _____ _____ of the City of TEMPE, and holder of Arizona State Contractor's License(s):

Classification(s) _____

No.(s) _____

Respectfully Submitted,

_____
Respondent

8240 S. Kyrene Road Suite 111, Tempe AZ 85284
Address

Amy Gamache, President
By (Officer & Title)

11/24/25
Date

ATTEST:

_____, OWNER.
(Officer and Title)

_____Witness (if respondent is an individual)

REQUIRED FOR SUBMITTAL

Town of Jerome

Proposal Document B – Fee Proposal

Respondent Western Environmental Utility Company

Mailing Address 8240 S. Kyrene Road Suite 111

City Tempe State AZ Zip 85284

Telephone 480.607.2884

PURSUANT to, and in compliance with, the Town of Jerome's Request for Proposals for an Advanced Metering Infrastructure System, the Notice to Respondents, Instructions to Respondents, and the Proposal Documents relating to the:

TOWN OF JEROME
ADVANCED METERING INFRASTRUCTURE SYSTEM

This is to certify that the above documents, as well as the site upon which work is to be performed and any and all conditions affecting the work, have been carefully examined, that the amount and nature of work to be accomplished is thoroughly understood and that at no time will misunderstanding of the drawings, specifications or conditions to be overcome be alleged or pled as a basis for change orders, damages or non-performances.

I (We) acknowledge that the following Fee Proposal and table are for the convenience of the Town of Jerome to analyze the individual components of the proposal and to provide a means for partial payments during the project. The sum of the extended unit prices shall be the final price for the product procurement in accordance with the technical specifications. The total price listed on the Fee Proposal shall be the same as listed on the proposal to the Town of Jerome.

FEE PROPOSAL INSTRUCTIONS:

1. All items will be paid for as lump sums. The Fee Proposal's estimated quantity and unit price will be used as a means of computing progress payments and as a basis for any Change Orders incurred.

2. The owner reserves the right to recalculate the following Fee Proposal if they appear malapportioned.

3. The lump sum amounts indicated below are to include the respondent's cost of administration, mobilization, bonds, insurance, and any other miscellaneous items required for the project.

REQUIRED FOR SUBMITTAL

FEE PROPOSAL Town of Jerome Advanced Metering Infrastructure System					
		Est. Qty.	**Units**	**Unit Price**	**Total Price**
CIVIL BASE PROPOSAL					
1	¾ x 5/8" AMI Meter	299	Each	311.53	93,147.47
2	1" threaded AMI Meter	17	Each	418.63	7,116.71
3	1 ½" flanged AMI Meter	13	Each	731.00	9,503.00
4	2" AMI Meter	2	Each	964.75	1929.50
5	4" AMI Meter	1	Each	3145.43	3,145.43
6	AMI System Software/Billing Interface	1	Each	5739.00	5,739.00
7	AMI System Training	1	Each	3500.00	3,500.00
8	AMI Data Collection Hardware/Software	1	Each	10,150.00	10,150.00
9	Connectors, gaskets, lids, HLFX (20).	1	Set	25,880.00	25,880.00
SUBTOTAL COSTS – BASE PROPOSAL					160,110.64
GRAND TOTAL, BASE PROPOSAL – Including freight, taxes, installation (by others).				**$279,849.73**	

GRAND TOTAL – BASE PROPOSAL (in words): Two Hundred Seventy Nine Thousand Eight Hundred Forty Nine Dollars and Seventy Three Cents.

NOTE: All Quantities Shown are approximate and are furnished solely for the contractor's convenience. The quantities provided will be the lump sum that payment will be made on. The individual items are for use by the Town to analyze proposals, use as a basis for any supplemental agreements, and for partial progress payments.

Proposal Document C – Non-Collusion Certificate

ADVANCED METERING INFRASTRUCTURE SYSTEM

Respondent: Western Environmental Utility Company

The undersigned respondent hereby certifies as follows:

To the best of his/her knowledge, the person, vendor, association, partnership, or corporation herein has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive pricing in the preparation and submission of a proposal to the Town of Jerome for consideration in the award of this solicitation.

Dated this 24th day of November 2025.

Signature

480.607.2884
Phone Number

Amy Gamache
Written Name

argmache@weeci.com
Email Address

REQUIRED FOR SUBMITTAL

Proposal Document D – Certificate of Ownership

ADVANCED METERING INFRASTRUCTURE SYSTEM

Respondent: Western Environmental Utility Company

The undersigned respondent hereby certifies as follows:

To the best of his/her knowledge, the person, vendor, association, partnership, or corporation herein, are the only person, vendors, corporations, partnerships, or other associations having any direct or indirect financial interest in the respondent's business as legal or equitable owner, creditor (except current bills for operating expenses), or holder of any security or other evidence of indebtedness.

Dated this 24th day of November 2025.

Signature

480.607.2884
Phone Number

Amy Gamache
Written Name

argmache@weeci.com
Email Address

REQUIRED FOR SUBMITTAL

Proposal Document E – Respondent Qualifications, Representations, and Warranties

ADVANCED METERING INFRASTRUCTURE SYSTEM

Respondent: Western Environmental Utility Company

The undersigned respondent hereby certifies as follows:

X1 Taxes and Leins – Respondent has no unsatisfied tax or judgment lien on record.

X2 Respondent's Examination – Respondent has made its own examination, investigation, and research regarding the requirements of the solicitation, including but not limited to the work to be done, services to be performed, any conditions affecting the work and services, the type and quantity of labor, equipment, and facilities necessary to perform. Respondent fully understands the character of the work and services, the manner in which payment is to be made, and the terms and conditions of the solicitation. Respondent acknowledges and agrees that it has satisfied itself by its own examination, investigation, and research, and that it will make no claim against the Town because of erroneous estimates, statements, or interpretations made by the Town. Respondent hereby proposes to furnish all materials, equipment, and facilities and to perform all labor which may be required to do the work within the time required and upon the terms and conditions provided in the solicitation, and at the prices as proposed.

Dated this 24th day of November 2025.

Signature

Amy Gamache

Written Name

480.607.2884

Phone Number

argamache@weeci.com

Email Address

REQUIRED FOR SUBMITTAL

Please see enclosed cover letter, technical briefs, and warranties.

Western Environmental Utilities Co.
8240 S Kyrene Rd, Suite 111
Tempe, AZ 85284

November 24, 2025

Town of Jerome

Attention: Town Clerk

600 Clark Street

Jerome, AZ 86331

Dear Town Clerk:

Please find enclosed our response to the RFP for Advanced Metering Infrastructure System, due December 1, 2025.

You will see that we, Western Environmental Utility Company (WEUC), are quoting the Badger Meter water meters, both mechanical and electronic, and the Beacon Orion cellular AMI system. Tech briefs are enclosed along with warranty information. Please note that Badger Meter Inc. was founded in 1905 and is traded on the NYSE: symbol BMI.

Badger Meter cellular endpoints are compatible with the town's existing Sensus meters with encoders. Also, we have enclosed a quotation from Metering Services Inc. with whom we have partnered on many meter projects. They are an experienced and solid meter installation contractor and will contract directly with the town.

Our RFP quote meets all requirements outlined on Pages 3 and 4, except for item #7 – "provides real-time meter leak detection". Our Beacon Orion system reports to the cloud

every six hours, or four times daily, with the meter read and potential alarms including leaks. Data is provided in fifteen (15) minute increments. Alarm leak thresholds may be set by the town, and individually by the customer, that will notify both when those water volume levels are reached. We provide an app called Eye-On-Water for consumer use that is included in the monthly service fee*.

Interface billing work with Caselle software is included in our proposal.

Pricing is good for six months. Badger Meter has occasional price increases, primarily based upon the PPI, at least once per year.

Batteries for the cellular endpoint are warranted for 20 years. They are potted within the housing and are non-replaceable. Electronic meter batteries likewise are potted and non-replaceable.

Beacon Orion system customers may be added at any time by simply installing a cellular endpoint, plus the monthly service unit fee ($1.03**). No other charges apply.** The town will own the Beacon website and all the data which is stored on AWS. Badger Meter covers three years of data storage, also included in the monthly service fee. There are NO annual software fees or licenses.

References:

1. Town of Clarkdale – Virginia Smith O: 928.639.2550
2. Les Springs HOA (Sedona AZ) – Russ Colbath C: 704.226.6080
3. City of Prescott – Nathan Graham O: 928.777.1617

Western Environmental Utility Company has been in business since 1994, with vast experience in water quality, wastewater treatment, industrial process control, and electronic communication equipment including cellular. WEUC has two technical support employees, in addition to Badger Meter's three in-state technical advisors. Helpdesk support, 24/7, is also included through Badger Meter.

WEUC's SAM.gov UEI # VH3GLXA5SWE5/3ZHD9

Propagation Study (attached) shows excellent cell coverage. Beacon Orion system is 100% cellular based. No collectors or repeaters required. Maintaining the cellular system is provided by Verizon and included in the monthly service fee.

Customer facing portal is also included, plus the Eye-On-Water app. This portal and related Beacon products and software are developed and produced by Badger Meter Inc. The

customer portal is also visible to the utility's customer service reps, enabling for quick and efficient problem resolution. All data is available in CSV format for emailing purposes.

Beacon Orion website will accommodate thousands of users, as there are over 10 million cellular customers in the USA right now. We have very small utilities to very large (Chicago) installing Orion cellular endpoints at this time.

Once the town's website is created and the billing interface work completed, there are no ongoing fees or licenses. **Only the monthly service user fee of $1.03 per meter.**

Endpoints can be installed in pit environments or remotely, up to 75' from the meter. The units operate in a two-way mode, enabling software updates and interrogation to be handled by cellular communications. Product is designed to handle submersion in meter pits for long periods of time. It may affect communication, but the endpoint will remain intact and operational. As a backup for the endpoints, the units can be read with a drive-by meter reading device, which is included in our quotation should the cellular system be unavailable.

Two days of onsite training are included in the proposal by a factory-certified trainer. In addition, there are web-based FAQ's on the Beacon homepage and software updates are announced by banner.

Should a customer "opt out" of the AMI system, a meter without the endpoint will be made available.

Amy Gamache

Owner

Western Environmental Utility Company

Metering Services, Inc.

Metering Services Inc.

Quote for Meter Replacement Project

Submitted to: Western Environmental Utilities

Project Location: Town of Jerome, Arizona

Date: 11/22/2025

Project Overview

Metering Services Inc. (MSI) is pleased to present this quote for water meter replacement services for the Town of Jerome. This proposal includes a full pre-installation survey for each meter, lid drilling for endpoint installation, and labor-only replacement of all identified meters. All labor is assuming normal business hours (7 am – 3 pm).

1. Pre-Installation Survey – Includes:

- Locating the meter and verifying the meter number and size and material of the lid.
- Cleaning the meter box
- Inspecting pipe integrity
- Verifying meter size

Cost: $80.00 per meter

Total Meters: 332

Survey Total: $26,560.00

2. Lid Drilling for Endpoint Installation

Cost: $40.00 per lid drilled

Total Lids: 332

Lid Drilling Total: $13,280.00

3. Meter Replacement – Labor Only

5/8" × 3/4" & 3/4": 299 @ $150.00 = $44,850.00

1": 17 @ $175.00 = $2,975.00

1 ½" & 2": 15 @ $650.00 = $9,750.00

4": 1 @ $6,500.00 = $6,500.00

Meter Replacement Labor Total: $64,075.00

Combined Project Cost Summary

Pre-Installation Surveys: $26,560.00

Lid Drilling: $13,280.00

Meter Replacement Labor: $64,075.00

Grand Total Project Cost: $103,915.00

Responsibilities & Exclusions

Town of Jerome: MSI is not responsible for upstream/downstream line breaks. Town of Jerome can repair line breaks or hire an outside contractor.

Western Environmental Utilities: Must supply all gaskets, fittings, lids, and materials.

Data Management

MSI will utilize its work order management system. A final Excel data export is required.

This quote is valid for 60 days from the date of issuance.

We appreciate the opportunity to support Western Environmental Utilities and the Town of Jerome.

Thank you,

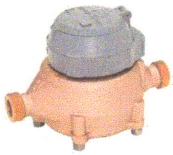
Chase Frampton

Recordall®
RCDL | Mechanical Flow Meters

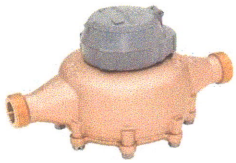
Recordall® Disc Meters

Lead-Free Bronze Alloy, Sizes 5/8, 5/8 x 3/4, 3/4 & 1 inch
NSF/ANSI/CAN Standards 61 and 372 Certified

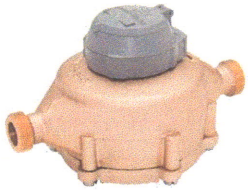
Model 25—5/8 in., 5/8 × 3/4 in.



Model 35—3/4 in.



Model 55—1 in.



Model 70—1 in.

DESCRIPTION

The Recordall Disc Series meters meet or exceed the most recent revision of AWWA Standard C700 and are available in a lead-free bronze alloy. The meters comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI/CAN Standards 61 and 372 (Trade Designations: M25-LL, M35-LL, M55-LL, M70-LL) and carry the NSF-61 mark on the housing. All components of the lead-free bronze alloy meter (housing, measuring element, seals, and so on) comprise the certified system.

Applications: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

Operation: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register or encoder face.

Operating Performance: The Recordall Disc Series meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ±1.5%), and maximum continuous operation flow rates as specifically stated in AWWA Standard C700.

Tamper-Proof Features: Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

Maintenance: Badger Meter Recordall Disc Series meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters and meter models also minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

Connections: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Meter Spud and Connection Sizes

Model	Size Designation ×	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread

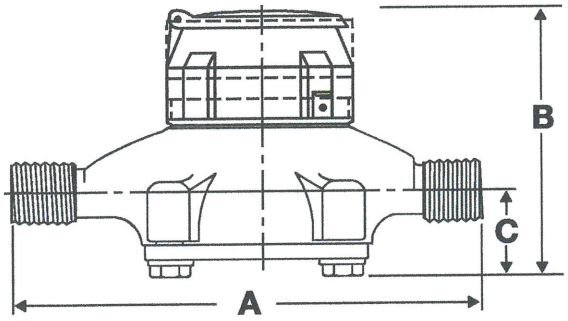
SPECIFICATIONS

	Model 25 (5/8 in. & 5/8 × 3/4 in.)	Model 35 (3/4 in.)	Model 55 (1 in.)	Model 70 (1 in.)
Typical Operating Range (100% ±1.5%)	0.5…25 gpm (0.11…5.7 m^3/hr)	0.75…35 gpm (0.17…7.9 m^3/hr)	1…55 gpm (0.23…12.5 m^3/hr)	1.25…70 gpm (0.28…16 m^3/hr)
Low Flow	0.25 gpm (0.057 m^3/hr) Min. 98.5%	0.375 gpm (0.085 m^3/hr) Min. 97%	0.5 gpm (0.11 m^3/hr) Min. 95%	0.75 gpm (0.17 m^3/hr) Min. 95%
Maximum Continuous Operation	15 gpm (3.4 m^3/hr)	25 gpm (5.7 m^3/hr)	40 gpm (9.1 m^3/hr)	50 gpm (11.3 m^3/hr)
Pressure Loss at Maximum Continuous Operation	**5/8 in. size:** 3.5 psi @ 15 gpm (0.24 bar @ 3.4 m^3/hr) **5/8 × 3/4 in. size:** 2.8 psi @ 15 gpm (0.19 bar @ 3.4 m^3/hr)	5 psi @ 25 gpm (0.37 bar @ 5.7 m^3/hr)	3.4 psi @ 40 gpm (0.23 bar @ 9.1 m^3/hr)	6.5 psi @ 50 gpm (0.45 bar @ 11.3 m^3/hr)
Maximum Operating Temperature	80° F (26° C)			
Maximum Operating Pressure	150 psi (10 bar)			
Measuring Element	Nutating disc, positive displacement			
Meter Connections	*Available in NL bronze and engineered polymer to fit spud thread bore diameter sizes:*			
	5/8 in. size: 5/8 in. (DN 15 mm) **5/8 × 3/4 in. size:** 3/4 in. (DN 15 mm)	3/4 in. (DN 20 mm)	1 in. (DN 25 mm)	1 in. (DN 25 mm)

MATERIALS

	Model 25 (5/8 in. & 5/8 × 3/4 in.)	Model 35 (3/4 in.)	Model 55 (1 in.)	Model 70 (1 in.)
Meter Housing	Lead-free bronze alloy			
Housing Bottom Plates	Cast iron, lead-free bronze alloy, engineered polymer	Cast iron, lead-free bronze alloy		
Measuring Chamber	Engineered polymer			
Disc	Engineered polymer			
Trim	Stainless steel			
Strainer	Engineered polymer			
Disc Spindle	Stainless steel	Stainless steel	Engineered polymer	Stainless steel
Magnet	Ceramic	Ceramic	Ceramic	Ceramic
Magnet Spindle	Engineered polymer	Engineered polymer	Engineered polymer	Stainless steel
Register Lid and Shroud	Engineered polymer, bronze			

DIMENSIONS



Meter Size	Model	A Laying Length	B Height Reg.	C Centerline Base	Width	Approx. Shipping Weight
5/8 in. (15 mm)	25	7-1/2 in. (190 mm)	4-15/16 in. (125 mm)	1-11/16 in. (42 mm)	4-1/4 in. (108 mm)	4-1/2 lb (2 kg)
5/8 in. × 3/4 in. (15 mm)		7-1/2 in. (190 mm)	4-15/16 in. (125 mm)	1-11/16 in. (42 mm)	4-1/4 in. (108 mm)	4-1/2 lb (2 kg)
3/4 in. (20 mm)	35	7-1/2 in. (190 mm)	5-1/4 in. (133 mm)	1-5/8 in. (41 mm)	5 in. (127 mm)	5-1/2 lb (2.5 kg)
3/4 in. (20 mm)		9 in. (229 mm)	5-1/4 in. (133 mm)	1-5/8 in. (41 mm)	5 in. (127 mm)	5-3/4 lb (2.6 kg)
3/4 in. × 1 in. (20 mm)		9 in. (229 mm)	5-1/4 in. (133 mm)	1-5/8 in. (41 mm)	5 in. (127 mm)	6 lb (2.7 kg)
1 in. (25 mm)	55	10-3/4 in. (273 mm)	6 in. (152 mm)	2-1/32 in. (52 mm)	6-1/4 in. (159 mm)	8-3/4 lb (3.9 kg)
1 in. (25 mm)	70	10-3/4 in. (273 mm)	6-1/2 in. (165 mm)	2-5/16 in. (59 mm)	7-3/4 in. (197 mm)	11-1/2 lb (5.2 kg)

ENCODER / REGISTER

High Resolution Encoders (HR-E®, HR-E® LCD) for AMR/AMI Reading Solutions

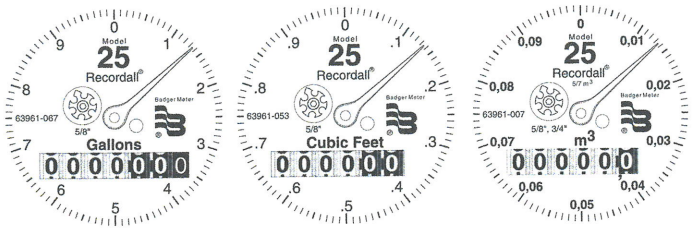
High resolution encoder solutions are available for all Recordall Disc Series meters. Badger Meter high resolution encoders provide years of reliable, accurate readings for a variety of applications. See details at ***badgermeter.com***.

Local Register—Mechanical Sweep-Hand Registration

The local register is a straight-reading, permanently sealed magnetic drive register. The register is permanently sealed to eliminate the intrusion of moisture, dirt or other contaminants. The register achieves true water resistance due the unique adhesive technology used to seal the glass dome to the corrosion-resistant metal bottom. Due to this sealing process, the register exceeds all applicable requirements of AWWA Standard C707 and is suitable for installation in all environments, including meter pits subject to continuous submergence.

The local register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 10,000,000 gallons (1,000,000 ft^3, 100,000 m^3).

A Model 25 register is used in the following example:

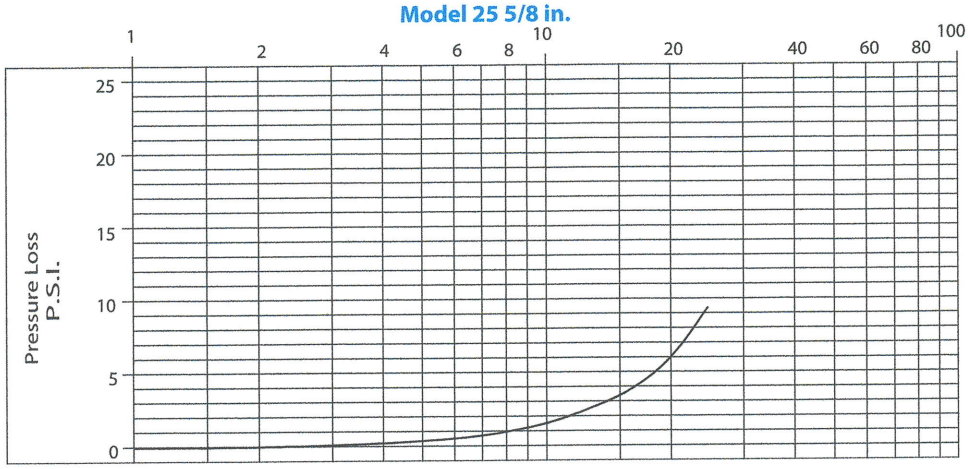


Model	Gallon	Cubic Feet	Cubic Meter
25 (5/8 in.)	10	1	0.1/0.01
25 (5/8 × 3/4 in.)	10	1	0.1/0.01
35	10	1	0.1
55	10	1	0.1
70	10	1	0.1

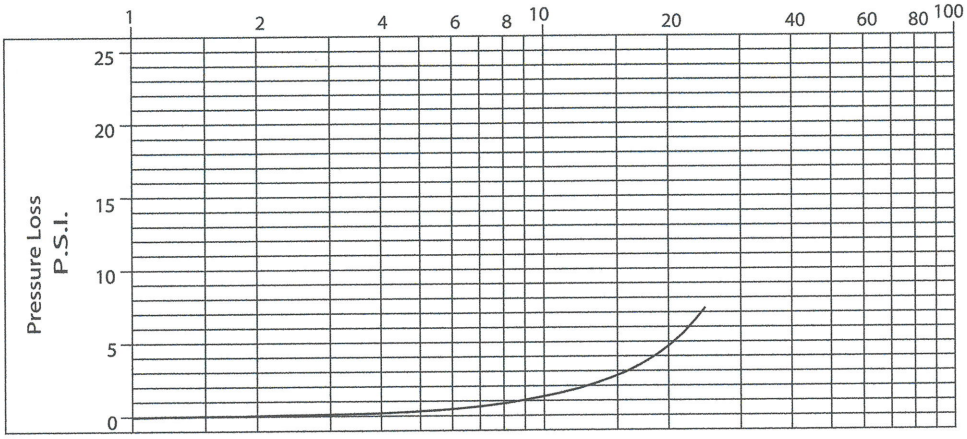
PRESSURE LOSS CHARTS

ate of Flow in Gallons per Minute

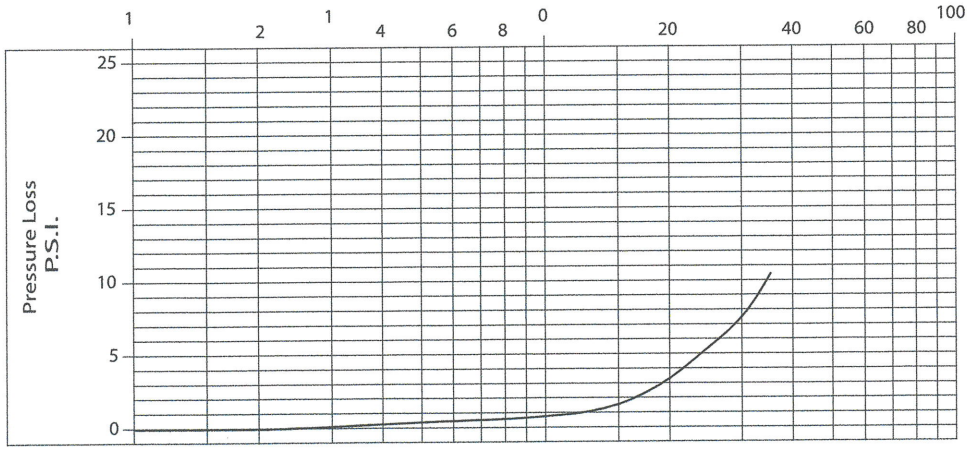
Model 25 5/8 in.



Model 25 5/8 × 3/4 in.



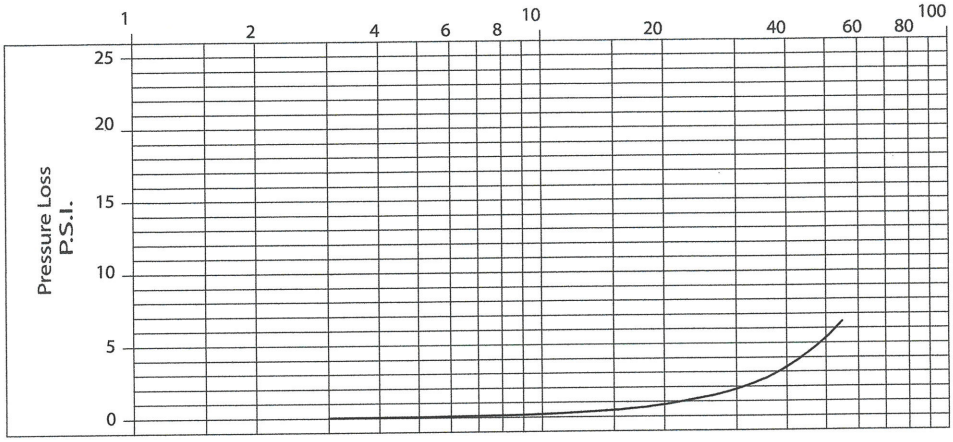
Model 35 3/4 in.



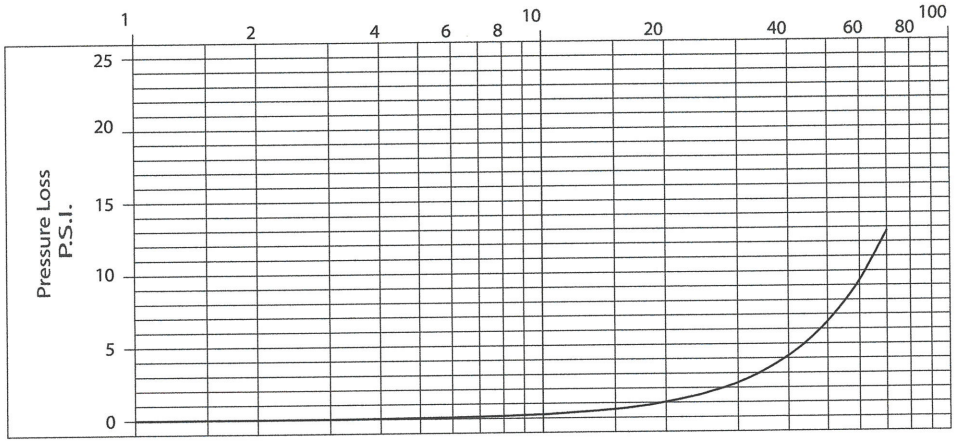
PRESSURE LOSS CHARTS (CONTINUED)

Rate of Flow in Gallons per Minute

Model 55 1 in.

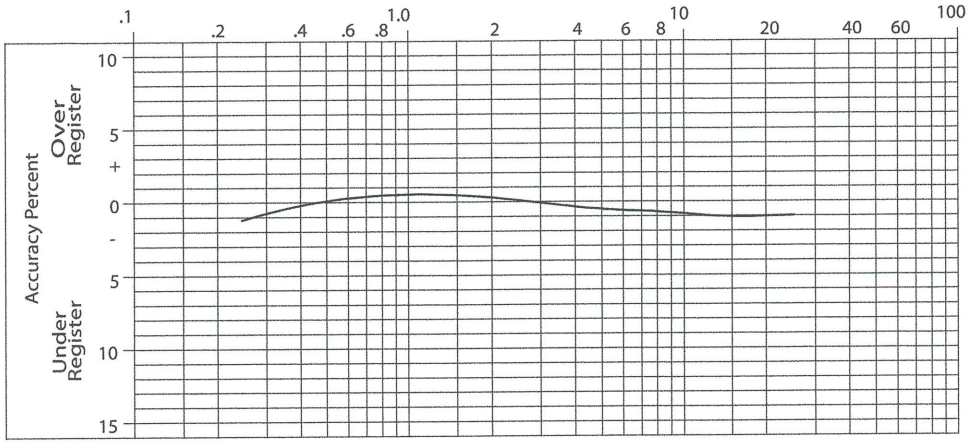


Model 70 1 in.

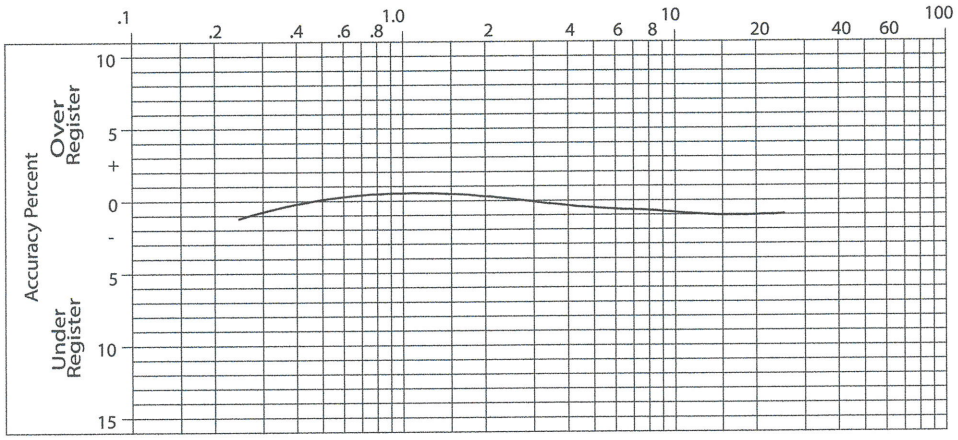


ACCURACY CHARTS

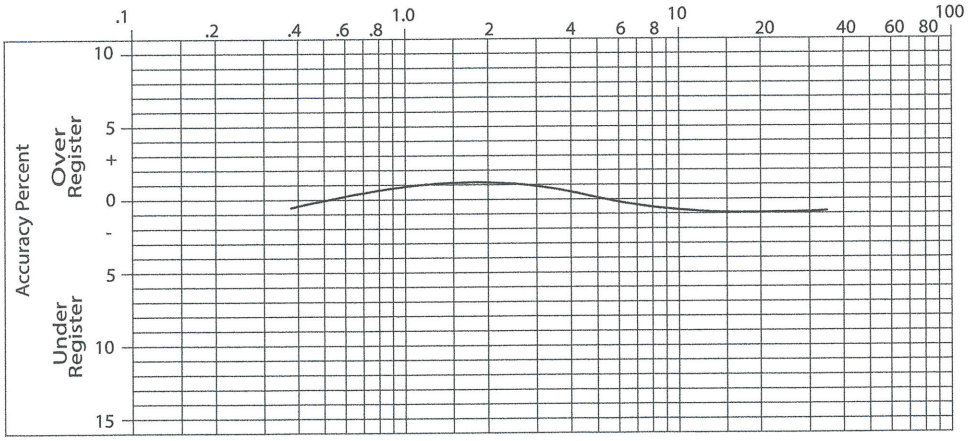
Model 25 5/8 in.



Model 25 5/8 x 3/4 in.

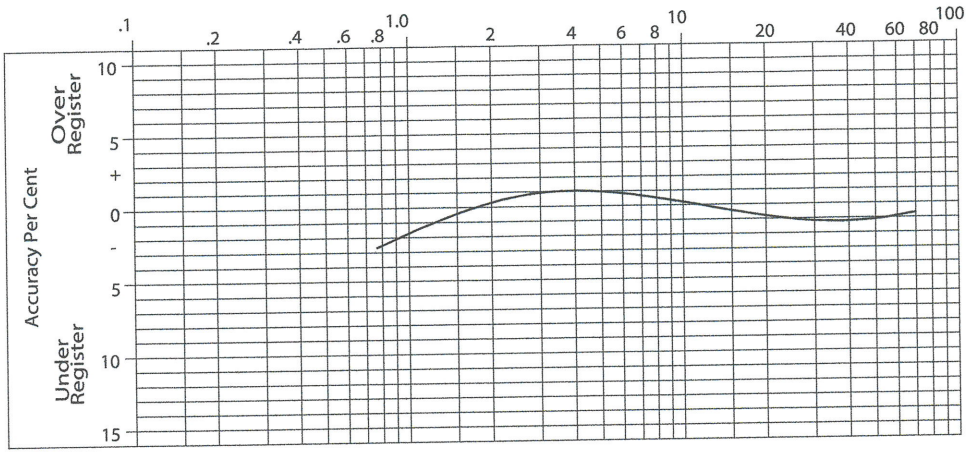


Model 35 3/4 in.

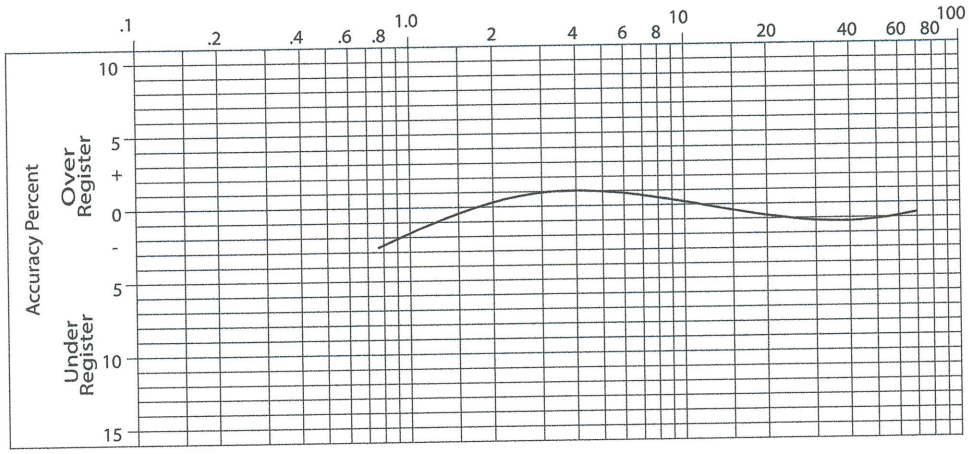


ACCURACY CHARTS (CONTINUED)

Model 55 1 in.



Model 70 1 in.



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Legacy Document Numbers: RDM-DS-00062, 63, 64, 65, 66, and 74

Recordall®
RCDL | Mechanical Flow Meters

Recordall® Disc Meters

Lead-Free Bronze Alloy 120 & 170, Sizes 1-1/2 in. (40 mm) & 2 in. (50 mm), NSF/ANSI/CAN Standards 61 and 372 Certified

DESCRIPTION

Recordall Models 120 and 170 Disc Series meters meet or exceed the most recent revision of AWWA Standard C700 and are available in a lead-free bronze alloy. Both meters comply with the lead-free provisions of the Safe Drinking Water Act, are certified to NSF/ANSI/CAN Standards 61 and 372 (Trade Designations: M120-LL and M170LL) and carry the NSF-61 mark on the housing. All components of the lead-free bronze alloy meter (housing, measuring element, seals, and so on) comprise the certified system.

Applications: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

Operation: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register or encoder face.

Operating Performance: The Recordall Disc Series meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated in AWWA Standard C700.

Construction: Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register or encoder. The water meter is available in a lead-free bronze alloy. A corrosion-resistant engineered polymer material is used for the measuring chamber.

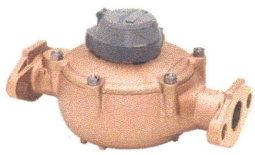
Magnetic Drive: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading or AMR/AMI meter reading options.

Tamper-Proof Features: Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

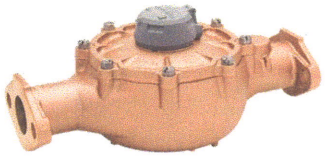
Maintenance: Badger Meter Recordall Disc Series meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

Connections: Companion flanges in cast iron or NL bronze are available as options. Straight connection sets are available in NL bronze.



M120



M170

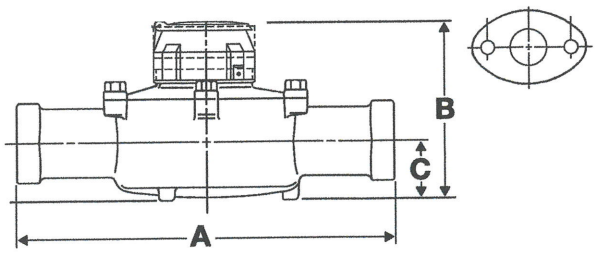
SPECIFICATIONS

Meter Model	M120	M170
Typical Operating Range (100% ± 1.5%)	2.5…120 gpm (0.57…27 m³/hr)	2.5…170 gpm (0.57…39 m³/hr)
Low Flow (Min. 95%)	1.25 gpm (0.28 m³/hr)	1.5 gpm (0.34 m³/hr)
Maximum Continuous Operation	80 gpm (18 m³/hr)	100 gpm (23 m³/hr)
Pressure Loss at Maximum Continuous Operation	4.8 psi at 80 gpm (0.33 bar at 18 m³/hr)	3.3 psi at 100 gpm (0.23 bar at 23 m³/hr)
Maximum Operating Temperature	80° F (26° C)	80° F (26° C)
Maximum Operating Pressure	150 psi (10 bar)	150 psi (10 bar)
Measuring Element	Nutating disc, positive displacement	Nutating disc, positive displacement
Meter Connections	1-1/2 in. AWWA two-bolt elliptical flange, drilled or 1-1/2…11-1/2 NPT internal pipe threads	2 in. AWWA two-bolt elliptical flange, drilled or 2…11-1/2 NPT internal pipe threads
Test Plugs	Optional 1 in. NPT test plug (TP)	Optional 1 in. NPT test plug (TP)

Materials

Meter Housing	Lead-free bronze alloy
Housing Top Plates	Lead-free bronze alloy
Measuring Chamber	Engineered polymer
Disc	Engineered polymer
Trim	Stainless steel
Strainer	Engineered polymer
Disc Spindle	Stainless steel
Magnet	Ceramic
Magnet Spindle	Stainless steel
Register Lid and Shroud	Engineered polymer, bronze

DIMENSIONS



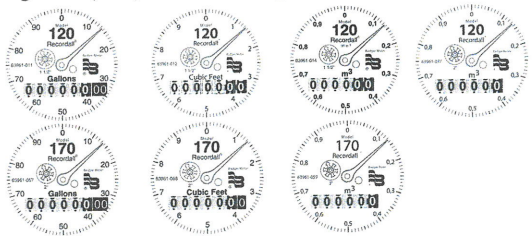
Meter Size	Meter Model	A Laying Length	B Height Reg./RTR	C Centerline Base	Width	Approx. Shipping Weight
1-1/2 in. (40 mm)	120 EL, Hex 120 EL, TP	12-5/8 in. (321 mm)	7 in. (178 mm)	2-3/8 in. (60 mm)	8-3/4 in. (222 mm)	19 lb (8.6 kg)
1-1/2 in. (40 mm)	120 ELL 120 ELL, TP	13 in. (330 mm)	7 in. (178 mm)	2-3/8 in. (60 mm)	8-3/4 in. (222 mm)	19 lb (8.6 kg)
2 in. (50 mm)	170 EL, Hex 170 EL, TP	15-1/4 in. (387 mm)	8 in. (203 mm)	2-7/8 in. (73 mm)	9-1/2 in. (241 mm)	30 lb (13.6 kg)
2 in. (50 mm)	170 ELL 170 ELL, TP	17 in. (432 mm)	8 in. (203 mm)	2-7/8 in. (73 mm)	9-1/2 in. (241 mm)	30 lb (13.6 kg)

EL = Elliptical ELL = Elliptical Long Hex = Hexagon, 1-1/2…11-1/2 in. NPT Thread TP=Test Plug 1 in.

REGISTERS / ENCODERS

Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The register capacity is 100,000,000 gallons (10,000,000 ft^3, 1,000,000 m^3).



Meter Model	Gallon	Cubic Feet	Cubic Meter
120	100	10	1/0.1
170	100	10	1

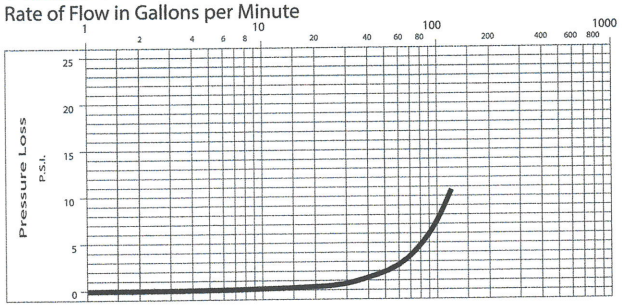
Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Disc Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at *badgermeter.com*.

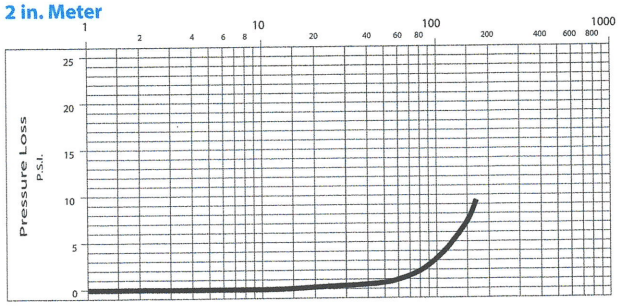
PRESSURE LOSS CHARTS

1-1/2 in. Meter

Rate of Flow in Gallons per Minute



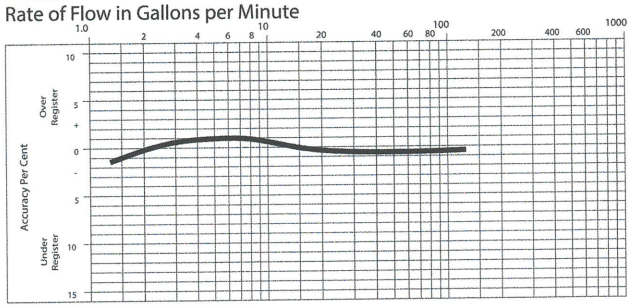
2 in. Meter



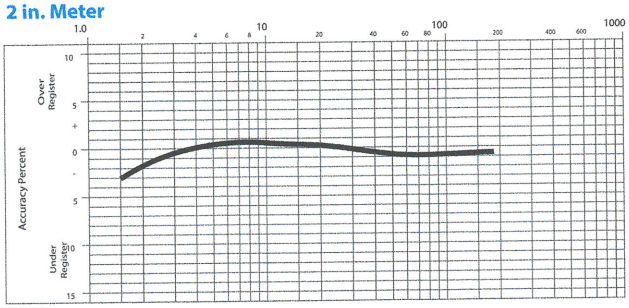
ACCURACY CHARTS

1-1/2 in. Meter

Rate of Flow in Gallons per Minute



2 in. Meter



SMART WATER IS *BADGER METER*

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Legacy Document Numbers: RDM-DS-00071-EN and RDM-DS-00072-EN

Badger Meter | Lead-Free Bronze Disc Meters

PRODUCTS COVERED

This warranty shall apply to all Recordall® Lead-Free Bronze Disc Meters, models 25 through 170, when used to measure potable water, including the registers used with these meters (collectively "Product") sold on or after January 25, 2019. This warranty is extended only to utilities, municipalities, other commercial users and authorized Badger Meter, Inc. distributors, hereafter referred to as "Customer" and does NOT apply to consumers or any person or entity who is not an original customer of Badger Meter or its authorized distributors.

MATERIALS AND WORKMANSHIP

Badger Meter warrants Product to be free from defects in materials and workmanship appearing within the following time frames and those listed in the table below:

Housings
Twenty-five (25) years and six (6) months after shipment from Badger Meter.

Local Registers Supplied with the Meters Listed Herein
Twenty-five (25) years and six (6) months after shipment from Badger Meter.

	AWWA New Meter Accuracy	AWWA Repaired Meter Accuracy (AWWA M6 Manual)	Badger Meter Extended Low Flow Meter Accuracy
Recordall Meter Model, Size	*The meter product will meet or exceed new meter accuracy standards set forth in AWWA Standard C700 for the following periods:*	*The meter product will meet or exceed repaired meter accuracy standards set forth in AWWA Manual M-6, Chapter 5, Table 5.3 for the following periods:*	*Badger Meter further warrants the meter product to meet or exceed the following extended low flow accuracies in excess of AWWA standard:*
Model 25, 5/8 in. and 5/8 x 3/4 in.	Five (5) years from date of shipment or registration of 750,000 gallons, whichever occurs first.	Fifteen (15) years from date of shipment or registration of 2,500,000 gallons, whichever occurs first, with a 25 gpm safe maximum operating capacity and a 15 gpm maximum rate for continuous operation.	Badger Meter warrants Product low flow accuracy of 98.5% at a rate of 1/4 gpm and low flow accuracy of 95.0% at a rate of 1/8 gpm for five (5) years from date of shipment or registration of 675,000 gallons, whichever occurs first.
Model 35, 3/4 in.	Five (5) years from date of shipment or registration of 750,000 gallons, whichever occurs first.	Fifteen (15) years from date of shipment or registration of 2,500,000 gallons, whichever occurs first, with a 35 gpm safe maximum operating capacity and a 25 gpm maximum rate for continuous operation.	Badger Meter warrants Product low flow accuracy of 97% at a rate of 3/8 gpm for five (5) years from date of shipment or registration of 675,000 gallons, whichever occurs first.
Model 55, 1 in.	Five (5) years from date of shipment or registration of 1,000,000 gallons, whichever occurs first.	Fifteen (15) years from date of shipment or registration of 3,000,000 gallons, whichever occurs first, with a 55 gpm safe maximum operating capacity and a 40 gpm maximum rate for continuous operation.	Badger Meter warrants Product low flow accuracy of 95% at a rate of 1/2 gpm for three (3) years from date of shipment or registration of 575,000 gallons, whichever occurs first.
Model 70, 1 in.	Five (5) years from date of shipment or registration of 1,100,000 gallons, whichever occurs first.	Fifteen (15) years from date of shipment or registration of 3,250,000 gallons, whichever occurs first, with a 70 gpm safe maximum operating capacity and a 50 gpm maximum rate for continuous operation.	Badger Meter warrants Product low flow accuracy of 95% at a rate of 3/4 gpm for three (3) years from date of shipment or registration of 1,100,000 gallons, whichever occurs first.
Model 120, 1-1/2 in.	Two (2) years from date of shipment or registration of 1,600,000 gallons, whichever occurs first.	Fifteen (15) years from date of shipment or registration of 5,600,000 gallons, whichever occurs first, with a 120 gpm safe maximum operating capacity and a 80 gpm maximum rate for continuous operation.	Badger Meter warrants Product low flow accuracy of 95% at a rate of 1-1/4 gpm for two (2) years from date of shipment or registration of 1,440,000 gallons, whichever occurs first.
Model 170, 2 in.	Two (2) years from date of shipment or registration of 2,100,000 gallons, whichever occurs first.	Fifteen (15) years from date of shipment or registration of 10,400,000 gallons, whichever occurs first, with a 170 gpm safe maximum operating capacity and a 100 gpm maximum rate for continuous operation.	Badger Meter warrants Product low flow accuracy of 95% at a rate of 1-1/2 gpm for two (2) years from date of shipment or registration of 1,890,000 gallons, whichever occurs first.

PRODUCT RETURNS

Any Product proved to the satisfaction of Badger Meter to have failed the foregoing warranties will, at the option of Badger Meter, be repaired or replaced without charge to the Customer. Any eligible Product repaired or replaced by Badger Meter will retain the original Product's warranty based on the original Product purchase date, at Badger Meter's sole discretion. The Badger Meter obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Badger Meter receiving written notice of any alleged defect within ten (10) days after its discovery. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Badger Meter is willing and able to replace defective products or issue a credit to purchaser within a reasonable time of proof to Badger Meter that a defect is involved. Product returns must be shipped by the Customer prepaid F.O.B. to the nearest Badger Meter factory or distribution center. The Customer shall be responsible for all direct and indirect costs associated with removing the original Product and reinstalling the repaired or replacement Product.

LIMITS OF LIABILITY

This warranty shall not apply to Product repaired or altered by parties other than Badger Meter. The foregoing warranty applies only to the extent that the Product is installed, serviced and operated strictly in accordance with AWWA Standard C700 and AWWA M6 Manual, as applicable. The warranty shall not apply and shall be void with respect to Product exposed to conditions other than those detailed in the Badger Meter Product technical and/or operational literature, or which have been exposed to adverse installation conditions, damaged by any water conditions and/or water quality, including but not limited to foreign matter in the water such as dirt, sand, minerals, debris, deposits, biofilms, extreme corrosivity, or other impurities, or which have been subject to passage of high-speed air slugs, vandalism, negligence, accident, acts of God, alteration, improper installation, operation or repair, or other circumstances which are beyond the reasonable control of Badger Meter. With respect to Product not manufactured by Badger Meter, the warranty obligations of Badger Meter shall in all respects conform and be limited to the warranty extended to Badger Meter by the supplier.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (except warranties of Title).

Any description of Product, whether in writing or made orally by Badger Meter or its agents, specifications, samples, models, bulletins, drawings, diagrams, engineering sheets, or similar materials used in connection with any Customer's order are for the sole purpose of identifying Product and shall not be construed as an express warranty. Any suggestions by Badger Meter or its agents regarding use, application or suitability of Product shall not be construed as an express warranty unless confirmed to be such in writing by Badger Meter.

Exclusion of Consequential Damages and Disclaimer of Other Liability

Badger Meter liability with respect to breaches of the foregoing warranty shall be limited as stated therein. Badger Meter liability shall in no event exceed the contract price.
BADGER METER SHALL NOT BE SUBJECT TO AND DISCLAIMS: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY BADGER METER, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL AND CONTINGENT DAMAGES WHATSOEVER.

Making Water Visible®

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Legacy Document Number: RD-W-4-AWWA-EN

E-Series®
Ultrasonic Flow Meters

E-Series G2® Ultrasonic Meter

Lead-Free Bronze Alloy, 3, 4, 6 and 8 inch

DESCRIPTION

The next generation E-Series G2® 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 and 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.

Ultrasonic 3, 4, 6 and 8 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 endpoints and BEACON®
- Field programmable registration and maintains an hourly internal logging capacity of 160 days of data
- Single and dual outputs include high resolution industry standard ASCII encoder protocol, scaled/unscaled and 4-20 mA

The meter is available with an inline connector for easy connection and installation to ORION endpoints. It is also available with a flying lead for field splice connection.

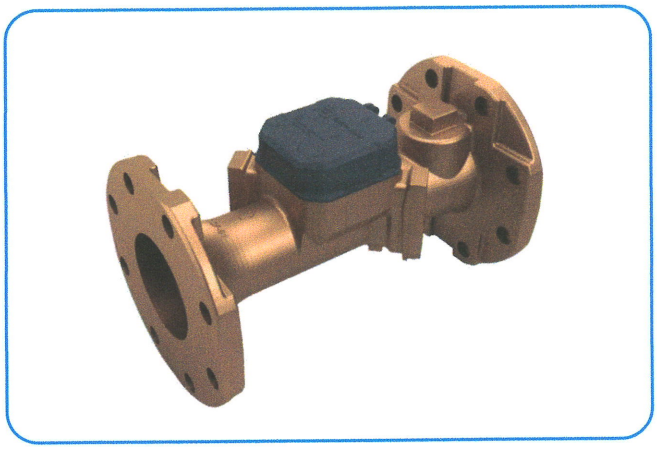
APPLICATIONS

Use the E-Series 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. Additionally, the meters are available for commercial fire-service applications. The intended water application must be specified at time of order.

E-Series Ultrasonic meters meet and exceed the most recent version of AWWA C715 Standards. The lead-free bronze alloy meters comply with the lead-free provisions of the Safe Drinking Water Act and NSF/ANSI/CAN Standards 61 and 372. E-Series Ultrasonic meters also conform to UL 327B and FM 1044 for fire service 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 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 normal temperature range of 45…122° F (7…50° C), the Ultrasonic "new meter" consumption measurement is accurate to:

- ±1.5% over the normal flow range
- ±3.0% from the extended low flow range to the minimum flow value

CONSTRUCTION

The E-Series 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.

FM APPROVED

UL LISTED

Badger Meter

ESM-DS-02781-EN-21 (September 2025)

Product Data Sheet

SPECIFICATIONS

E-Series G2 Ultrasonic Meter Size	3 in.		4 in.		6 in.		8 in.
	3 × 12 in. (76 × 305 mm)	3 × 17 in. (76 × 432 mm)	4 × 14 in. (102 × 356 mm)	4 × 20 in. (102 × 508 mm)	6 × 18 in. (152 × 457 mm)	6 × 24 in. (152 × 610 mm)	8 × 20 in. (203 × 508 mm)
Normal Test Flow Limits	0.75…560 gpm		1.5…1100 gpm		2.2…2000 gpm		4…3500 gpm
Minimum Test Flow Limits	0.37 gpm		0.75 gpm		1.1 gpm		2.0 gpm
Safe Maximum Operating Condition (SMOC)	560 gpm		1100 gpm		2000 gpm		3500 gpm
Typical Pressure Loss	2.6 psi @ 350 gpm		2.1 psi @ 630 gpm		1.5 psi @ 1400 gpm	1.8 psi @ 1400 gpm	2.4 psi @ 2800 gpm
Totalization Display Resolution	*3 inch and 4 inch meters* • Gallons: 0.1 • Cubic feet: 0.01 • Cubic meters: 0.001				*6 inch and 8 inch meters* • Gallons: 1.0 • Cubic feet: 0.1 • Cubic meters: 0.01		
Operating Performance	In normal temperature range of 45…122° F (7…50° C), new meter consumption measurement is accurate to: • 100% ±1.5% over the normal test flow limits • 100% ±3.0% for the minimum test flow limits						
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)						
Maximum Operating Pressure of Pressure Sensor	175 psi (12 bar)						
Pressure Sensor Accuracy	±2% of full scale pressure, up to 175 psi (12 bar)						
Register Type	Straight reading, permanently sealed electronic LCD; digits are 0.28 in. (7 mm) high						
Register Display	• Consumption (up to nine digits) • Rate of flow • Alarms • Pressure				• Temperature • Firmware version • Unit of measure factory programmed for gallons, cubic feet and cubic meters		
Scaled/Unscaled Output*	Solid-state relay with 4-20mA output; open drain MOSFET with encoder output						
Max. Voltage	30V DC						
Current	100 mA						
Pulse Width	50 ms (programmable 25…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. 20-year battery life; 15-year battery life for dual output meters						

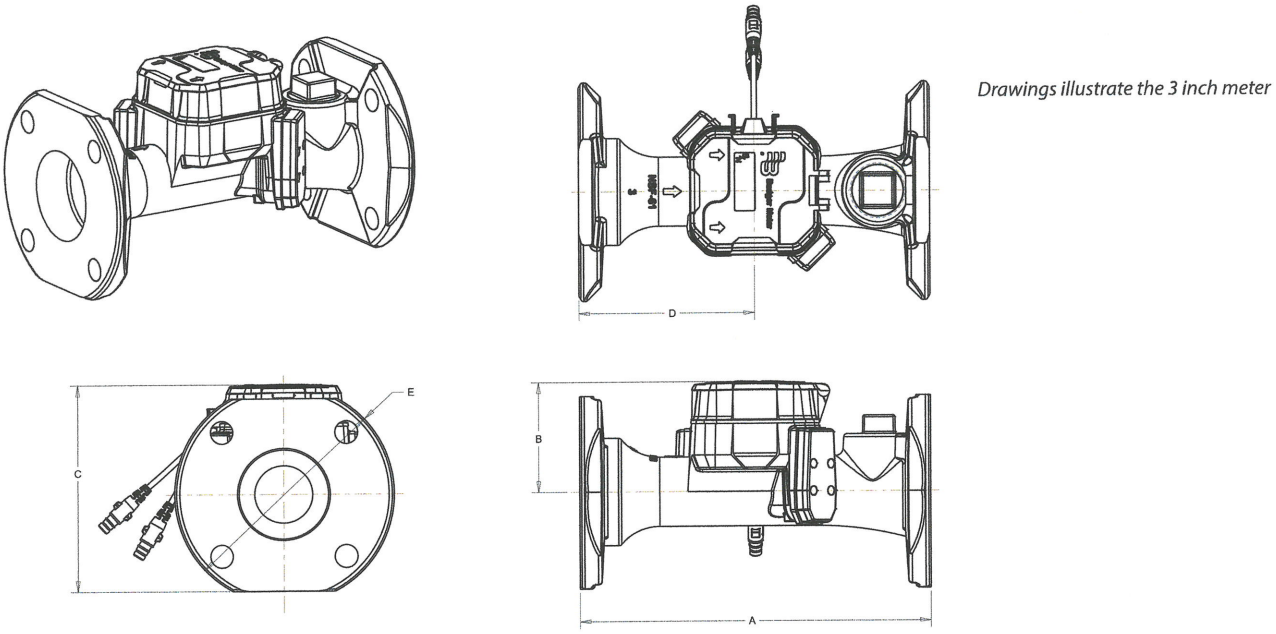
NOTE: See Pressure Loss Chart on *page 4* for typical pressure loss over complete UL 327B flow range.

* Applicable to meters with dual output options

PHYSICAL DIMENSIONS

E-Series G2 Ultrasonic Meter Size	3 in.		4 in.		6 in.		8 in.
Housing	Round	Round	Round	Round	Round	Round	Round
Size Designation X Lay Length	3 × 12 in. (76 × 305 mm)	3 × 17 in. (76 × 432 mm)	4 × 14 in. (102 × 356 mm)	4 × 20 in. (102 × 508 mm)	6 × 18 in. (152 × 457 mm)	6 × 24 in. (152 × 610 mm)	8 × 20 in. (203 × 508 mm)
Weight (without AMR)	26 lb (11.8 kg)	28.5 lb (12.9 kg)	38 lb (17.2 kg)	42 lb (19.1 kg)	59 lb (26.8 kg)	66 lb (29.9 kg)	96 lb (43.5 kg)
See illustration below for Measurement Designations							
Length (A)	12 in. (305 mm)	17 in. (432 mm)	14 in. (356 mm)	20 in. (508 mm)	18 in. (457 mm)	24 in. (610 mm)	20 in. (508 mm)
Height (B)	3.76 in. (95 mm)	3.76 in. (95 mm)	3.99 in. (101 mm)	3.99 in. (101 mm)	5.15 in. (131 mm)	5.15 in. (131 mm)	6.49 in. (165 mm)
Height (C)	7.08 in. (180 mm)	7.08 in. (180 mm)	8.5 in. (216 mm)	8.5 in. (216 mm)	10.36 in. (263 mm)	10.36 in. (263 mm)	13.05 in. (331 mm)
Height with Lifting Ring	NA	NA	NA	NA	12.96 in. (329 mm)	12.96 in. (329 mm)	15.65 in. (398 mm)
Length (D)	6 in. (152 mm)	8.5 in. (216 mm)	7 in. (178 mm)	10 in. (254 mm)	8 in. (203 mm)	8 in. (203 mm)	9 in. (229 mm)
Width (E)	7.5 in. (191 mm)	7.5 in. (191 mm)	9 in. (229 mm)	9 in. (229 mm)	11 in. (279 mm)	11 in. (279 mm)	13.50 in. (343 mm)
Number of Bolts	4	4	8	8	8	8	8
Bolt Hole Diameter	0.781 in. (19.84 mm)						
Companion Flange	3 in. (76 mm)	3 in. (76 mm)	4 in. (102 mm)	4 in. (102 mm)	6 in. (152 mm)	6 in. (152 mm)	8 in. (203 mm)
NPT Test Port	1.5 in. (38 mm)	1.5 in. (38 mm)	2 in. (51 mm)	2 in. (51 mm)	2 in. (51 mm)	2 in. (51 mm)	2 in. (51 mm)

Measurement Designations



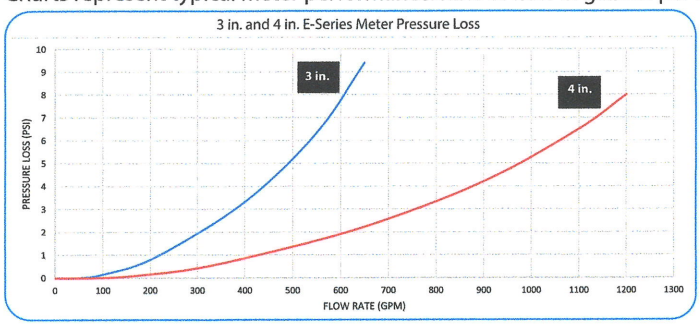
Drawings illustrate the 3 inch meter

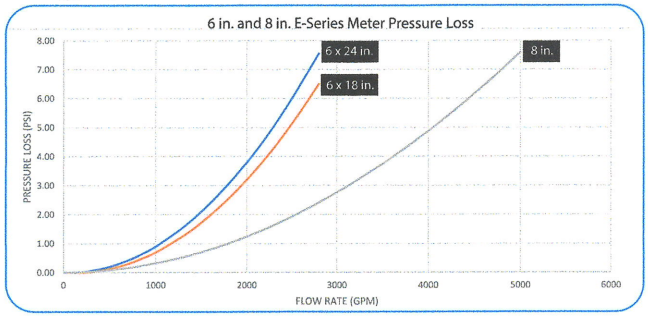
MATERIALS

Meter Housing	Lead-free bronze alloy
Measuring Section	Ultrasonic sensors located in the flow tube
Register Housing & Lid	Engineered polymer
Transducer Port Covers 3 in., 4 in.	Lead-free bronze alloy
Transducer Port Covers 6 in., 8 in.	Engineered polymer

PRESSURE LOSS CHARTS

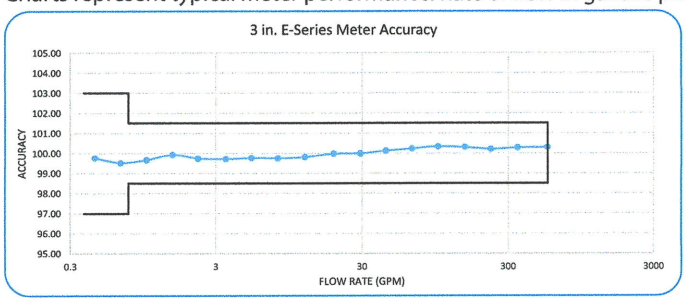
Charts represent typical meter performance. Rate of flow in gallons per minute (gpm).

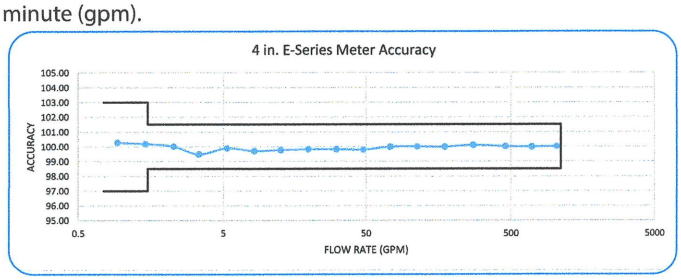


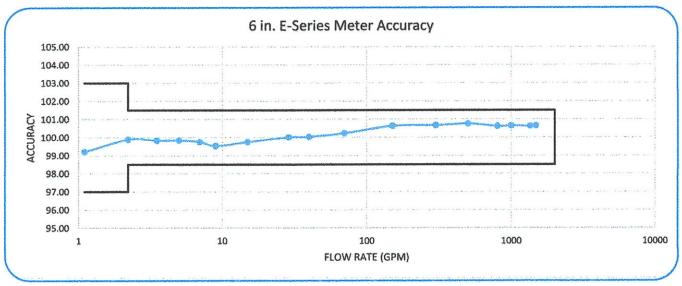


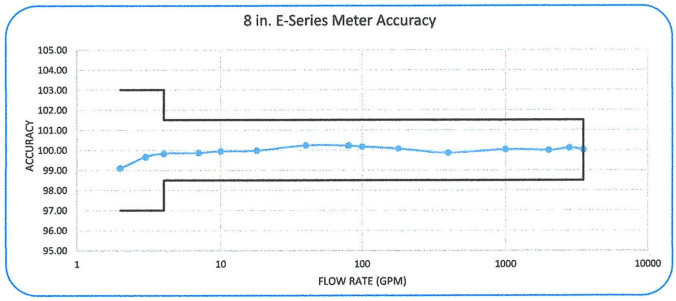
ACCURACY CHARTS

Charts represent typical meter performance. Rate of flow in gallons per minute (gpm).









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Badger Meter

E-Series® Ultrasonic Meter

Cold Water Meters in Raw and Reclaimed Water Applications

PRODUCTS

This warranty shall apply to all Badger Meter E-Series® Ultrasonic lead-free meters (bronze or stainless steel) and meter components when used to measure raw water (sizes 3/4 and 1 inch) and reclaimed water (sizes 5/8, 5/8 x 3/4, 3/4, 1, 1-1/2, 2, 3, 4, 6, 8 inch), and the internal register/encoder and battery used with these meters (collectively "Product"), sold on or after September 9, 2024.

This warranty is not transferable and is extended only to utilities, municipalities, other commercial users and authorized distributors, hereafter referred to as "Customer," and does NOT apply to consumers or any person or entity who is not an original customer of Badger Meter or its authorized distributors.

MATERIALS AND WORKMANSHIP

Badger Meter warrants Product to be free from defects in materials and workmanship appearing within one (1) year and six (6) months after shipment from Badger Meter.

PRODUCT RETURNS

Any Product proved to the satisfaction of Badger Meter to have failed the foregoing warranties will, at the option of Badger Meter, be repaired or replaced without charge to the Customer. Any eligible Product repaired or replaced by Badger Meter will retain the original Product's warranty based on the original Product purchase date, at Badger Meter's sole discretion. The Badger Meter obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Badger Meter receiving written notice of any alleged defect within ten (10) days after its discovery. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Badger Meter is willing and able to replace defective products or issue a credit to purchaser within a reasonable time of proof to Badger Meter that a defect is involved. Product returns must be shipped by the Customer prepaid F.O.B. to the nearest Badger Meter factory or distribution center. The Customer shall be responsible for all direct and indirect costs associated with removing the original Product and reinstalling the repaired or replacement Product.

LIMITS OF LIABILITY

This warranty shall not apply to Product repaired or altered by parties other than Badger Meter, or read by equipment not explicitly approved or licensed by Badger Meter. The foregoing warranty applies only to the extent that the Product is installed, serviced and operated strictly in accordance with AWWA Standard C715 and AWWA M6 Manual, as applicable. The warranty shall not apply and shall be void with respect to Product exposed to conditions other than those detailed in the Badger Meter Product technical and/or operational literature, or which, as determined at Badger Meter's sole discretion, have affected the ability of the Product to perform, including, but not limited to: exposure to adverse installation conditions; misuse; vandalism; negligence; accident; acts of God; alteration; improper installation, operation or repair; damage from passage of high-speed air slugs; damage by water quality conditions, including but not limited to: aggressive water, foreign matter, biofilms, or extreme corrosivity; damage caused by actions not in accordance with the intended use; or other circumstances which are beyond the reasonable control of Badger Meter, as determined at Badger Meter's sole discretion. Additionally, for raw water applications, these quality conditions must be met: the meters shall be used for raw water as source from ground or surface bodies of water not to exceed the following limits: Average Total Suspended Solids, 30 mg/L but not to exceed 45 mg/L; Average Iron, 0.5 mg/L; Average Manganese, 0.055 mg/L; Langelier Index, +/–1.0; Synthetic Organic Chemicals and Volatile Organic Compounds, MCL limits as defined by national primary drinking water standards. Water to be tested and from a representative number of samples with respect to the sources on a monthly basis. Badger Meter reserves the right to conduct sampling of its own when a meter is returned under a warranty claim. In the event the above conditions are not met or prior water tests or other documentation show improper conditions, the warranty is voided and Badger Meter is not responsible for replacement. With respect to product not manufactured by Badger Meter, the warranty obligations of Badger Meter shall in all respects conform and be limited to the warranty extended to Badger Meter by the supplier of product.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (except warranties of Title).

Any description of Product, whether in writing or made orally by Badger Meter or its agents, specifications, samples, models, bulletins, drawings, diagrams, engineering sheets, or similar materials used in connection with any Customer's order are for the sole purpose of identifying Product and shall not be construed as an express warranty. Any suggestions by Badger Meter or its agents regarding use, application or suitability of Product shall not be construed as an express warranty unless confirmed to be such in writing by Badger Meter.

Exclusion of Consequential Damages and Disclaimer of Other Liability

Badger Meter liability with respect to breaches of the foregoing warranty shall be limited as stated therein. Badger Meter liability shall in no event exceed the contract price. BADGER METER SHALL NOT BE SUBJECT TO AND DISCLAIMS: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY BADGER METER, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL AND CONTINGENT DAMAGES WHATSOEVER.

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ORION® Cellular Water Endpoints

DESCRIPTION

ORION® Cellular water endpoints are innovative, two-way endpoints for smart water applications. The endpoints utilize existing IoT (Internet of Things) cellular infrastructure to efficiently and securely deliver meter reading data to the utility in a Network as a Service (NaaS) approach. Leveraging existing cellular infrastructure, the NaaS solution offers all the performance benefits of AMI, while eliminating network-related maintenance and technology concerns and enhancing deployment flexibility.

Cellular endpoints are members of the time-tested ORION family of products from Badger Meter, designed for maximum flexibility. Since 2002, the ORION product family has provided comprehensive Advanced Metering Analytics (AMA) for interval meter reading and data capture using both one-way and two-way communications.

FUNCTIONALITY

Operation: ORION Cellular water endpoints communicate with the encoder and capture 15-minute interval read data and meter status information. The endpoints then automatically broadcast the information, including endpoint status information, via the cellular network to BEACON® Software as a Service (SaaS). ORION NaaS is powered by the proven ORION system for interval data capture and two-way communication. The solution employs cellular endpoints which, as they leverage the public cellular network and require no proprietary gateways to operate, dramatically reduce infrastructure requirements compared to a traditional fixed network. This speeds installations and simplifies expansion as a system evolves.

The endpoints are designed to call in four times each workday and feature a configurable schedule that enables utility customers to select call-in times that best support their processes.

Activation: ORION Cellular water endpoints are shipped in an inactive, non-transmitting state. The Badger Meter IR Communication Device can be used to activate the endpoints and verify the encoder connection. Successful endpoint function can be confirmed through a web app demonstrating that communication has been verified to both the encoder and the network.

Alternatively, the endpoints offer a Smart Activation feature. After installation, the endpoints begin broadcasting data when the encoder senses the first usage of water. No field programming or special tools are required.

Broadcast Mode: ORION Cellular water endpoints broadcast fixed network reading data through the secure cellular network within the service area.

Specific configurations also transmit a radio frequency (RF) message to facilitate troubleshooting in the field. See *"Configurations" on page 2.*

Data Storage: The endpoints store 42 days of 15-minute data.

ORION Cellular HLD endpoint (pictured)

Output Message: ORION Cellular water endpoints broadcast a unique serial number, meter reading data, and applicable status indicators. As an advanced data security measure, each message is securely transported to BEACON SaaS only via private network and never over the public internet.

APPLICATION

Configurations: ORION Cellular water endpoints are multi-purpose endpoints that can be deployed in indoor, outdoor and pit (non-metal pit lid) applications. The electronics and battery assembly are fully encapsulated in epoxy for environmental integrity. The endpoint is available with a connector assembly for ease of installation.

Meter Compatibility: When attached to a Badger Meter High Resolution Encoder, the ORION Cellular water endpoint is compatible with all current Badger Meter Recordall® Disc, Turbo Series, Compound Series, Combo Series and Fire Service meters and assemblies, and with E-Series G2® Ultrasonic, E-Series® Ultrasonic, E-Series® Ultrasonic Plus, and ModMAG® electromagnetic flow meters.

Encoder Compatibility: The ORION Cellular water endpoint is suitable for use with a Badger Meter High Resolution Encoder as well as the following Badger Meter approved three-wire encoder registers that have a manufacture date within 10 years of the current date as long as the encoder has three wires connected to it and is programmed into the three-wire output mode for AMR/AMI: Honeywell® (Elster/ABB) ScanCoder, evoQ4 meter with Sensus® protocol module; Master Meter® Octave® Ultrasonic meter encoder output; Metron-Farnier Hawkeye; Mueller Systems 420 Solid State Register (SSR) LCD; Neptune® ProRead, E-Coder®, ARB-V®, and ProCoder; and Sensus iPerl®.

SPECIFICATIONS

Dimensions	5.125 in. (130 mm) (H) 1.75 in. (44 mm) Diameter at top 2.625 in. (W) x 2.875 in. (D) at base (67 mm (W) x 73 mm (D) at base)
Broadcast Network	LTE-M cellular network (primary communication technology)
	NB-IoT (secondary communication technology for certain variants)
RF Message for Troubleshooting	Where available (see table below) frequency is FCC-regulated 902…928 MHz frequency hopping modulation
Operating Temperature Range • Storage, Meter Reading and RF Message (for troubleshooting) • Cellular Communications	 –40…60° C (–40…140° F) –20…60° C (–4…140° F)
Humidity	0%…100% condensing
Battery	One (1) lithium thionyl chloride D cell (nonreplaceable)

Construction: All ORION Cellular water endpoints are housed in an engineered polymer enclosure with an ORION RF board, battery and antenna. For long-term performance, the enclosure is fully potted to withstand harsh environments and to protect the electronics in flooded or submerged pit applications.

Wire Connections: ORION Cellular water endpoints are available with inline connectors (Twist Tight® or Nicor®) for easy installation and connection to compatible encoders/meters. The endpoints are also available with flying leads for field splice connections. Other wire connection configurations may be available upon request.

FEATURES

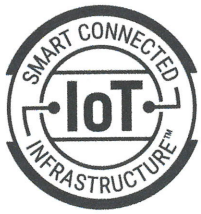
Smart City Ready	Future-proof technology
Communication Type	Two-way
Application Type	Control/Monitor
Endpoint Communication	Configurable call-in schedule, up to four times each workday
Reading Interval Type	15-minute
Encoder Compatibility	Absolute
Fixed Network Reading	✓
Cut-Wire Indication	✓
Encoder Error	✓
Low Battery Indication	✓
Remote Clock Synchronization	✓
Firmware Upgrades	✓

CONFIGURATIONS

Endpoint	Notes
ORION Cellular C	Includes RF and IR messages for troubleshooting
ORION Cellular HLD	Includes RF and IR messages for troubleshooting
ORION Cellular LTE-M	Includes RF and IR messages for troubleshooting

NOTE: For the ORION Cellular LTE-MP endpoint, see the *ORION Cellular LTE-MP Endpoint product data sheet*, available at *www.badgermeter.com*.

ORION® Cellular endpoints are IoT Network Certified for Smart Connected Infrastructure™ by CTIA, an association representing the U.S. wireless communications industry and companies throughout the mobile ecosystem. The certification signifies that the endpoints meet global 4G and 5G, 3GPP, NIST, and CTIA certification standards for cybersecurity and network performance, and are suitable to support critical infrastructure operations.



License Requirements: ORION Cellular water endpoints comply with Part 15, Part 22, Part 24, and Part 27 of the FCC Rules. No license is required by the utility to operate an ORION meter reading system. This device complies with Industry Canada license-exempt RSS standard(s). The device shall be used in such a manner that the potential for human contact in normal operation is minimized. This equipment complies with RSS-102 radiation exposure limits. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Transportation: **WARNING**: The operation of transmitters and receivers on airlines is strictly prohibited by the Federal Aviation Administration. As such, the shipping of radios and endpoints via air is prohibited. Please follow all Badger Meter return and/or shipping procedures to prevent exposure to liability.

Warning: To reduce the possibility of electrical fire and shock hazards, never connect the cable from the endpoint to any electrical supply source. The endpoint cable provides SELV low voltage limited energy power to the load and should only be connected to passive elements of a water meter register.

Caution: Endpoint batteries are *not* replaceable. Users should make no attempt to replace the batteries.
Changes or modifications to the equipment that are not expressly approved by Badger Meter could void the user's authority to operate the equipment.

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www.badgermeter.com

ORION® Cellular Lens Endpoints

DESCRIPTION

For deployment in meter pits, Badger Meter recommends installing standard ORION® Cellular endpoints through non-metallic pit lids. If metal lids must be used, ORION Cellular Lens endpoints may be installed **through** the lid to improve cellular signal and endpoint performance.

ORION Cellular Lens endpoints are innovative, two-way endpoints for smart water applications. The endpoints utilize existing IoT (Internet of Things) cellular infrastructure to efficiently and securely deliver meter reading data to the utility in a Network as a Service (NaaS) approach. Leveraging existing cellular infrastructure, the NaaS solution offers all the performance benefits of AMI, while eliminating network-related maintenance and technology concerns and enhancing deployment flexibility. These improvements maximize utility investment and reduce premature hardware replacements.

FUNCTIONALITY

Operation: ORION Cellular Lens endpoints communicate with the encoder and capture 15-minute interval read data and meter status information. The endpoints then broadcast a unique serial number, meter reading data, and applicable status indicators via the cellular network to BEACON® Software as a Service (SaaS). As an advanced data security measure, each message is securely transported to BEACON SaaS via private network only and never over the public internet. The ORION Cellular NaaS solution requires no proprietary gateways to operate, dramatically reducing infrastructure requirements compared to a traditional fixed network. This speeds installations and simplifies expansion as a system evolves.

The endpoints are designed to call in multiple times each workday and feature a configurable schedule that enables utility customers to select call-in times that best support their processes.

Activation: ORION Cellular Lens endpoints are shipped in an inactive, non-transmitting state. The Badger Meter IR Communication Device **must** be used to activate the endpoints and verify the encoder connection. (Smart Activation via wake on consumption is not supported.) Successful endpoint function can be confirmed through a web app demonstrating that communication has been verified to both the encoder and the network. Full installation and activation steps are available in the *ORION Cellular Lens Endpoint Quick Start Guide* (*ORI-QS-04841-EN*) at *badgermeter.com*.

Data Storage: The endpoints store 42 days of 15-minute data.

Dynamic RF Messaging: Specific configurations transmit a backup RF message to facilitate Quick Reads or help troubleshoot in the field in the rare event of a network communication outage. The endpoint begins to transmit this additional RF message when it has been unsuccessful at communicating with BEACON via the cellular network for a defined period of time.

APPLICATION

Form Factor: ORION Cellular Lens endpoints accommodate a larger antenna, the electronics to support the antenna, and a D cell battery pack. The electronics and battery assembly are fully encapsulated in epoxy for environmental integrity.

Meter Compatibility: When attached to a Badger Meter High Resolution Encoder, the ORION Cellular water endpoint is compatible with all current Badger Meter Recordall® Disc, Turbo Series, Compound Series, Combo Series and Fire Service meters and assemblies, and with E-Series G2® Ultrasonic, E-Series® Ultrasonic, E-Series® Ultrasonic Plus, and ModMAG® electromagnetic flow meters.

Encoder Compatibility: The ORION Cellular water endpoint is suitable for use with a Badger Meter High Resolution Encoder as well as the following Badger Meter approved three-wire encoder registers that have a manufacture date within 10 years of the current date as long as the encoder has three wires connected to it and is programmed into the three-wire output mode for AMR/AMI: Honeywell® (Elster/ABB) ScanCoder; evoQ4 meter with Sensus® protocol module; Master Meter® Octave® Ultrasonic meter encoder output; Metron-Farnier Hawkeye; Mueller Systems 420 Solid State Register (SSR) LCD; Neptune® ProRead, E-Coder®, ARB-V®, and ProCoder; and Sensus iPerl®.

SPECIFICATIONS

Dimensions	4.97 in. (126 mm) (H) 0.47 in. (12 mm) (H) above lid 6.00 in. (152 mm) (diameter) top 1.65 in. (42 mm) (D) bottom
Broadcast Network	LTE-M cellular network (primary communication technology)
	NB-IoT (secondary communication technology)
RF Message for Troubleshooting	FCC-regulated 902…928 MHz frequency hopping modulation
Operating Temperature Range • Cellular Communications • Storage, Meter Reading and RF Message	 –4…140° F (–20…60° C) –22…158° F (–30…70° C)
Humidity	0%…100% condensing
Battery	One (1) lithium thionyl chloride D cell (nonreplaceable)

Construction: All ORION Cellular water endpoints are housed in an engineered polymer enclosure with an ORION RF board, battery and antenna. For long-term performance, the enclosure is fully potted to withstand harsh environments and to protect the electronics in flooded or submerged pit applications.

Wire Connections: ORION Cellular Lens endpoints are available with inline connectors (Twist Tight® or Nicor®) for easy installation and connection to compatible encoders/meters. The endpoints are also available with flying leads for field splice connections. Standard ORION Cellular endpoints can support up to 25 foot lengths, and Lens endpoints can support up to 6 foot lengths. Other wire connection configurations may be available upon request.

FEATURES

Smart City Ready	Future-proof technology
Communication Type	Two-way
Endpoint Communication	Configurable call-in schedule
Reading Interval Type	15-minute
Encoder Compatibility	Absolute
Fixed Network Reading	✓
Cut-Wire Indication	✓
Encoder Error	✓
Low Battery Indication	✓
Remote Clock Synchronization	✓
Firmware Upgrades	✓

CONFIGURATIONS

Endpoint	Notes
ORION Cellular HLFX	Lens form factor

ORION Cellular endpoints are IoT Network Certified by CTIA, an association representing the U.S. wireless communications industry and companies throughout the mobile ecosystem. The certification signifies that the endpoints meet global 4G and 5G standards and are ready for use on wireless IoT networks.

License Requirements: ORION Cellular water endpoints comply with Part 15, Part 22, Part 24, and Part 27 of the FCC Rules. No license is required by the utility to operate an ORION meter reading system. This device complies with Industry Canada license-exempt RSS standard(s). The device shall be used in such a manner that the potential for human contact in normal operation is minimized. This equipment complies with RSS-102 radiation exposure limits. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body. This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

Transportation: **WARNING**: The operation of transmitters and receivers on airlines is strictly prohibited by the Federal Aviation Administration. As such, the shipping of radios and endpoints via air is prohibited. Please follow all Badger Meter return and/or shipping procedures to prevent exposure to liability.

Warning: To reduce the possibility of electrical fire and shock hazards, never connect the cable from the endpoint to any electrical supply source. The endpoint cable provides SELV low voltage limited energy power to the load and should only be connected to passive elements of a water meter register.

Caution: Endpoint batteries are *not* replaceable. Users should make no attempt to replace the batteries.
Changes or modifications to the equipment that are not expressly approved by Badger Meter could void the user's authority to operate the equipment.

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Badger Meter

ORION® Water Products

with BEACON® Software as a Service (SaaS)

PRODUCTS

This warranty shall apply to Badger Meter ORION® series AMR/AMI Water Endpoints, reading hardware and software for a BEACON® system, sold on or after April 11, 2024.

ORION series AMR/AMI Water Endpoints include Fixed Network (SE), ME and Mobile M endpoints.

This warranty is not transferable and is extended only to utilities, municipalities, other commercial users and authorized distributors, hereafter referred to as "Customer" and does NOT apply to consumers or any person or entity who is not an original Customer of Badger Meter or its authorized distributors.

MATERIAL AND WORKMANSHIP

Badger Meter warrants all ORION series AMR/AMI Water Endpoints including battery, reading hardware and software, hereafter referred to as "Product(s)" as listed below, to be free from defects in material and workmanship for the time period stated.

ORION SE, ORION ME[3] and ORION Mobile M Water Endpoints[1]	20 years and 6 months after shipment
ORION Cellular LTE-MP Endpoints	10 years and 6 months after shipment
Trimble® T10 Tablet[2]	3 years after shipment
Dell® Latitude 5430 Laptop[2] and Latitude 7230 Tablet[2]	3 years after shipment
Panasonic Toughbook® Laptop for BEACON Mobile Solution[2]	3 years after shipment
Trimble® Ranger 7 Handheld[2]	3 years after shipment
Trimble Yuma 7 Tablet[2]	3 years after shipment
ORION ME Modules[2] for Trimble Yuma 7 Tablet and Trimble Ranger 7 Handheld	3 years after shipment
Microsoft® Surface Go 3 Tablet[2]	1 year after shipment
ORION Mobile (ME) Transceiver[2]	3 years after shipment
ORION Mobile Integrated Receiver[2]	1 year after shipment
ORION Fixed Network (SE) Gateway Transceiver	1 year after shipment

[1] Water Endpoints and Endpoint batteries—collectively ORION Water Endpoint Products—are warranted to be free from defects in material and workmanship for twenty (20) years and six (6) months after shipment from Badger Meter. Badger Meter will repair or replace, at its discretion, a non-performing ORION Water Endpoint Product at no cost during the first ten (10) years, and at a prorated price during the last ten (10) years of the warranty. Badger Meter will apply these prorated price discounts to the ORION Water Endpoint Product list prices at the time of ORION Water Endpoint Product return and according to the following prorated price discount schedule: Years 11 through 12 - 75% discount; Years 13 through 15 - 50% discount; Year 16 - 40% discount; Year 17 - 30% discount; Year 18 - 20% discount; and Years 19 through 20 - 10% discount. Replacement Products are warranted for and under the balance of the original.

[2] Batteries, antennas, cables and accessories warranty is limited to 12 months from the date of shipment.

[3] Mobile solutions deployed prior to February 1, 2023 include ORION ME endpoints that are migratable to fixed network. BEACON SaaS mobile solutions deployed on or after February 1, 2023 include ORION ME endpoints that operate in mobile mode only.

PRODUCT RETURNS

Product failures must be proven and verified to the satisfaction of Badger Meter. The Badger Meter obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Badger Meter receiving written notice of any asserted defect within 10 (ten) days after its discovery. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Badger Meter is willing and able to replace the defective Product for the Customer within a reasonable time, after receipt of proof that a defect is involved. Product returns must be shipped by the Customer prepaid F.O.B. to the nearest Badger Meter factory or distribution center. The Customer shall be responsible for all direct and indirect costs associated with removing the Product and reinstalling the repaired or replacement Product.

LIMITS OF LIABILITY

This warranty shall not apply to any Product repaired or altered by any Party other than Badger Meter. The foregoing warranty applies only to the extent that the Product is installed, serviced and operated strictly in accordance with Badger Meter instructions. The warranty shall not apply and shall be void with respect to Products exposed to conditions other than those detailed in Product technical literature or which have been subject to vandalism, negligence, accident, acts of God, improper installation, operation or repair, alteration or other circumstances which are beyond the reasonable control of Badger Meter. With respect to products not manufactured by Badger Meter, the warranty obligations of Badger Meter shall in all respects conform and be limited to the warranty extended to Badger Meter by the supplier.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (except warranties of Title).

Any description of the Product, whether in writing or made orally by Badger Meter or its agents, specifications, samples, models, bulletins, drawings, diagrams, engineering sheets or similar materials used in connection with any Customer's order are for the sole purpose of identifying the Product and shall not be construed as an express warranty. Any suggestions by Badger Meter or its agents regarding use, application or suitability of the Product shall not be construed as an express warranty unless confirmed to be such, in writing, by Badger Meter.

Exclusion of Consequential Damages and Disclaimer of Other Liability

The liability of Badger Meter with respect to breaches of the foregoing warranty shall be limited as stated herein. Badger Meter's liability shall in no event exceed the contract price. BADGER METER SHALL NOT BE SUBJECT TO AND DISCLAIMS: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY BADGER METER, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL AND CONTINGENT DAMAGES WHATSOEVER.

Badger Meter Warranty

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www.badgermeter.com

BEACON®
Advanced Metering Analytics

BEACON® Software as a Service (SaaS)

With ORION® Network as a Service (NaaS)

OVERVIEW

The BEACON® solution with ORION® Network as a Service (NaaS) presents a simple, yet powerful solution to bring a new level of utility optimizing information to light.

The solution combines our intuitive BEACON Software as a Service (SaaS) with a NaaS approach using proven ORION Cellular endpoints to deliver greater visibility and control over utility management.

Built-in infrastructure management services and a system design that keeps you in step with technology advancements, allows you to do what you do best—manage your water utility. Plus, built-in consumer engagement tools help enhance customer service, increase satisfaction and reduce costs.

SOFTWARE APPLICATIONS

BEACON SaaS

With tools beyond meter reading and network management, BEACON SaaS offers targeted advanced metering analytics. BEACON puts interval meter data to work to increase efficiency in day-to-day utility operations and address demands for actionable intelligence.

- **Problem solver** – User intuitive data tools place the power of water consumption data at your fingertips, allowing you to rapidly respond to customer inquiries and quickly resolve—and even eliminate—many billing issues.
- **Customized design** – A customizable dashboard delivers information configured to user security access level in a format matched to the utility's individual requirements, providing data management integrity, security and control.
- **Works with you** – Integration with utility systems—billing, work order, inventory, Customer Relationship Management (CRM) and Geographic Information Systems (GIS)—streamlines and improves utility operations without disrupting the current utility billing interface file transfer process.
- **Find out fast** – Alert conditions can be set to monitor and notify users of system exceptions, including continuous flow, for faster leak detection.
- **Innovation at your service** – Secure, hosted platform with automatic software upgrades ensures the latest technology and features are always available.

EyeOnWater®

The BEACON software suite includes informative consumer outreach tools to improve customer service consisting of the EyeOnWater consumer engagement website, smartphone mobile apps, and email or SMS text alerts, providing easy access to personal consumption data and alerts to potential leaks.

With these tools, water consumers are able to view their usage activity, and gain greater understanding and control of what they use and the value you provide.

HARDWARE

ORION NaaS is powered by the proven ORION system for interval data capture and two-way communication. The solution employs cellular endpoints which, as they leverage the public cellular network and require no proprietary gateways to operate, dramatically reduce infrastructure requirements compared to a traditional fixed network. This speeds installations and simplifies expansion as a system evolves.

- **High resolution data** – ORION Cellular endpoints are programmed to automatically broadcast 15-minute meter reading and event data to the BEACON software up to four (4) times per day. The high resolution data helps identify potential customer-side leaks and other anomalies in water use, and provides the utility with a potent tool to enhance its customer service.
- **Two-way communication** – BEACON software communicates with ORION Cellular endpoints to accomplish a number of system tasks, including requesting additional information from the endpoint and synchronizing the internal endpoint clock. If needed, the ORION two-way system architecture sends upgrades to the endpoint firmware over the air via the network, utilizing the powerful BEACON software suite.
- **Data integrity** – Each message from the ORION Cellular endpoint is securely transported to the BEACON software only via private network and never over the public internet.

SECURITY

BEACON is ISO 27001 certified and SOC 2 examined for security, availability and confidentiality.

Badger Meter

BEA-DS-00554-EN-11 (January 2025)

Product Data Sheet

TECHNICAL SUPPORT AND TRAINING

Configured for the utility, safe and secure BEACON SaaS provides utilities with regular software updates, long-term support and maintenance. Comprehensive BEACON training courses are available for online or on-site delivery at the time of system deployment. To maintain best practices, a library of online resources and options for group web-based training and support are also available. Once deployed, our technical support specialists can be contacted by phone, email and web to provide ongoing, customer-friendly support. Customized one-on-one training is available (fee applies) to further enhance user expertise.

Additionally, Badger Meter offers extended customized training to further enhance user expertise.

TECHNICAL REQUIREMENTS

BEACON

Developed as a hosted software platform, BEACON is a cloud-based application accessed through a standard web browser. Internet access is required. User logins provide secure access.

BEACON supported web browsers include the latest and next previous major releases of Google® Chrome, Microsoft® Edge, Mozilla® Firefox®, Microsoft® Internet Explorer® (IE 11 only); and Apple® Safari®.

EyeOnWater Consumer Engagement

The EyeOnWater consumer engagement website is a cloud-based application accessed through a standard web browser. Internet access is required. Water consumer user logins provide secure access to their information.

Supported web browsers include the latest and next previous major releases of Google® Chrome, Microsoft® Edge, Mozilla® Firefox®, Microsoft® Internet Explorer® (IE 11 only); and Apple® Safari®.

Smartphone applications require the following operating systems that can be downloaded from Google Play or the Apple Store:

- Android 7.0 or later
- iPhone, iPad iOS 16.0 or later

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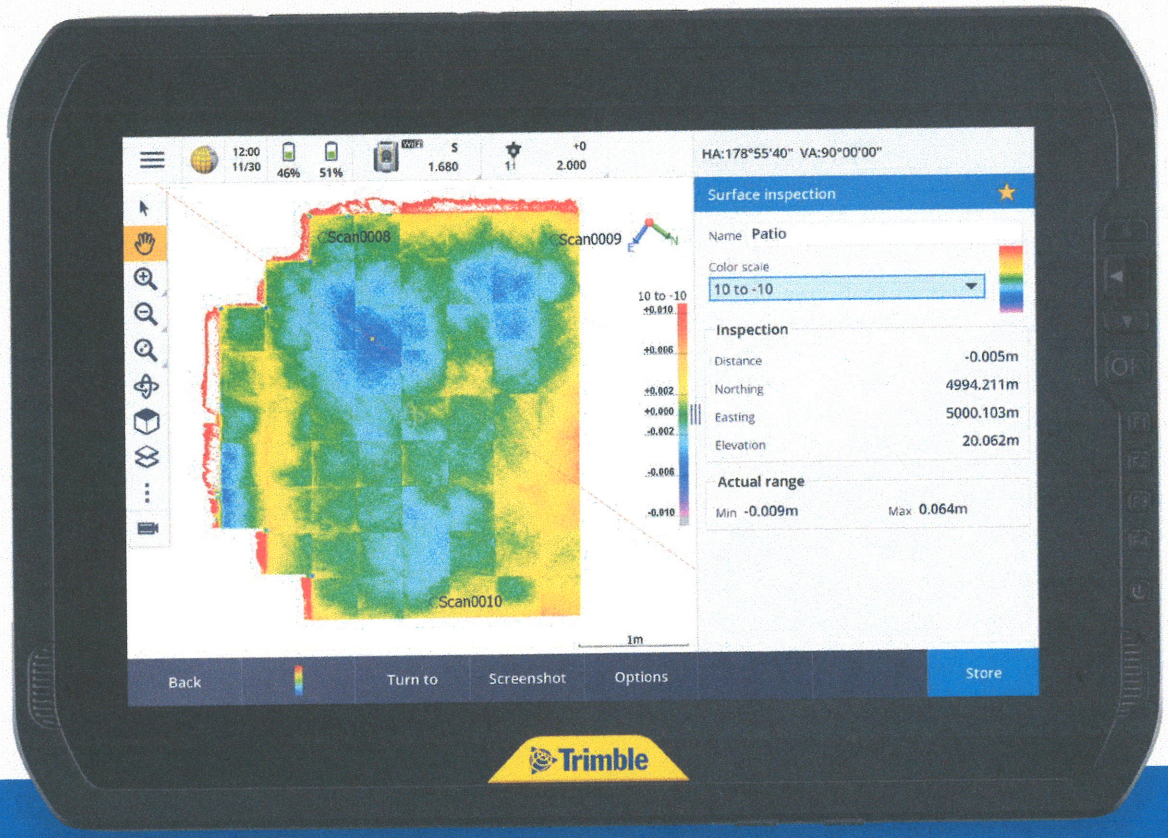
Trimble T100

TABLET



Depend on it.

KEY FEATURES

- Fast and powerful processor, for efficient data collection and data processing
- Windows® 11 brings the office to the field
- Large 10.1-inch touchscreen, sunlight readable and wet weather efficient with a high resolution display
- Ergonomic design that's comfortable and portable on long demanding days in the field
- Expandable Trimble® Empower modules, provide flexibility for user configurations

Learn more: geospatial.trimble.com/trimble-t100-tablet

Trimble T100 TABLET

Product Models	T100 (Wi-Fi)	T100 (4G LTE)
WLAN (Wi-Fi)	Yes	Yes
4G Data	No	Yes
Memory storage (SSD)	512 GB	512 GB
Internal GNSS	Included	Included

STANDARD FEATURES

System
- Intel® 8th Generation Core™ i5 Processor
- Intel HD Graphics 620
- 16 GB RAM
- 512 GB Storage[1]
- 10.1" 800 nits 1920 x 1200 (16:10) LED-backlight screen with capacitive multi-touch
- Wacom Digitizer for EMR Pen Support
- 8 Megapixel with LED Flash rear camera
- Wi-Fi 802.11ac
- Bluetooth® v 5.1
- 4G LTE WWAN EM7565
- Internal battery 92 Wh non removable
- Integrated speaker and microphone
- IP65 Dust and Moisture Ingress Protection

Operating System
- Microsoft® Windows® 11 Professional

Communications
- Cellular: 4G LTE worldwide coverage, certified on Verizon and AT&T, data only
- Wi-Fi 802.11ac
- Bluetooth v 5.1
- USB 3.1 Type C x 2
- Supports USB C DisplayPort Alt Mode

Standard Accessories
- EMR Stylus with replacement tips and removal tool
- AC-DC power adapter with power cord
- Screen protector
- USB A to USB C adapter

Optional Accessories
- EMR Stylus and replacement tips and removal tool
- Handstrap
- Vehicle Power Supply
- Office stand
- Pole mount (Short and long versions)

TECHNICAL SPECIFICATIONS

Physical
Size: 279 mm x 200 mm x 18.5 mm (11 in x 7.9 in x 0.7 in)
Weight: 1.65 kg (3.6 lbs.)
Processor: Intel® Core™ i5
Memory: 16 GB SDRAM
Storage: 512 GB SSD
User Interface: Power button, directional pad, programmable function keys
Power / Battery Status LED, On screen keyboard
Battery: 92 Wh internal non removable
Battery life: 10 hours @ 20 °C with GPS on
Charging time: 1:15 to 50% 3 hours to 100%[2]

Environmental
Temperature
Operating: –20 °C to +55 °C (–4 °F to 131 °F)[3]
MIL STD 810H Method 501.7, 502.7 Procedure II
Storage: –40 °C to +70 °C (–40 °F to 158 °F)
MIL STD 810H Method 501.7, 502.7 Procedure I
Thermal Shock: –20 °C and 60 °C non-operating
MIL STD 810H Method 503.7 Procedure I-C
Humidity: 0% – 95% non-condensing
MIL STD 810H Method 507.6 Procedure II - Aggravated Cycle
Water & dust proof: IEC 60629 Edition 2 - IP65
Vibration / Shock resistance: MIL STD 810H Method 514.8 Procedure I - Random Vibration
MIL STD 810H Method 514.8 Procedure II - Loose Cargo Transportation
Drop: Tests include room temperature, –20 °C, +60 °C
MIL STD 810H Method 516.8 Procedure IV - Transit Drop
Chemical Exposure: Contamination by Fluids
MIL STD 810H Method 504.3 Procedure II
Non Operating Altitude: –30 °C and 12,192 m (40,000 Feet)
MIL STD 810H Method 500.6 Procedure I
Operating Altitude: 5 °C and 9,144 m (30,000 Feet)
MIL STD 810H Method 500.6 Procedure II

Input/Output
Display: LED backlight scratch-resistant, auto rotate
Size: 10.1" capacitive multi-touch with EMR
Resolution: 1920 x 1200 px
Brightness: 800 nits
Audio: Built-in microphone and speaker
I/O: USB 3.1 type c x 2
Trimble EMPOWER Module Bays x 2
AC / DC Adapter: AC 100~240 V, 50~60 Hz,
DC 5 V, 9 V, 15 V, 20 V, 65 W
USB C PD 65W
Digital camera (rear facing): 8 MP with flash
Sensors: E-Compass, Accelerometer, gyroscope, ambient light sensor, proximity sensor

GNSS
Internal antenna: Beidou, Galileo, GLONASS, GPS L1 C/A, QZSS

1 Total usable memory will be less depending upon actual system configuration.
2 Battery operation and recharge times will vary based on many factors, including screen brightness, applications, features, power management, battery conditioning and other settings or preferences.
3 Tested under MIL-STD-810H method 501.6, Procedure II, and method 502.6, Procedure II. Battery capacity is reduced at lower temperatures or extremely high temperatures. Batteries should neither be charged at temperatures below 32 °F (0 °C) nor temperatures above 113 °F (+45 °C) to avoid impacting battery longevity and performance.
4 SBAS (Satellite Based Augmentation System), where available.

Caution: Do not expose bare skin to this product when handling this unit in extreme hot or cold environments. Do not charge batteries in extreme hot environments

Specifications subject to change without notice.

CE Bluetooth®

Contact your local Trimble Authorized Distribution Partner for more information

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Trimble

Badger Meter

BEACON® AMA Solution

ORION® Cellular Coverage Analysis (CCA)

Customer: Distributor - Western Environment Utilities CO

Date Issued: 10/17/2025

Project: Town of Jerome, AZ

Revision: 1.0

SUMMARY INFORMATION

Endpoint Type: ORION Cellular Endpoint with connectivity to M2M cellular networks

Service Area (square miles): 15

Total Endpoints: 332

REQUEST INFORMATION

Solution Architect: Bill Batchelor

Badger Meter Account Manager: Dominick Fenton

Distributor Account Manager: John Bjorklund

INFORMATION PROVIDED

	FILE NAME	DATE RECEIVED
Coverage Request Form:	JeromeAZCCA.pdf	10/9/2025
Endpoint Locations:	Town of Jerome Meter Location_Numbers_Size.csv	10/9/2025

ANALYSIS COVERAGE AREA

Analysis is based on service location addresses provided by the Town of Jeorme, AZ, with 332 out of 332 (100%) successfully geocoded. A map of the geocoded endpoint locations is shown below.

Badger Meter

BEACON® AMA Solution

ORION® Cellular Coverage Analysis (CCA)

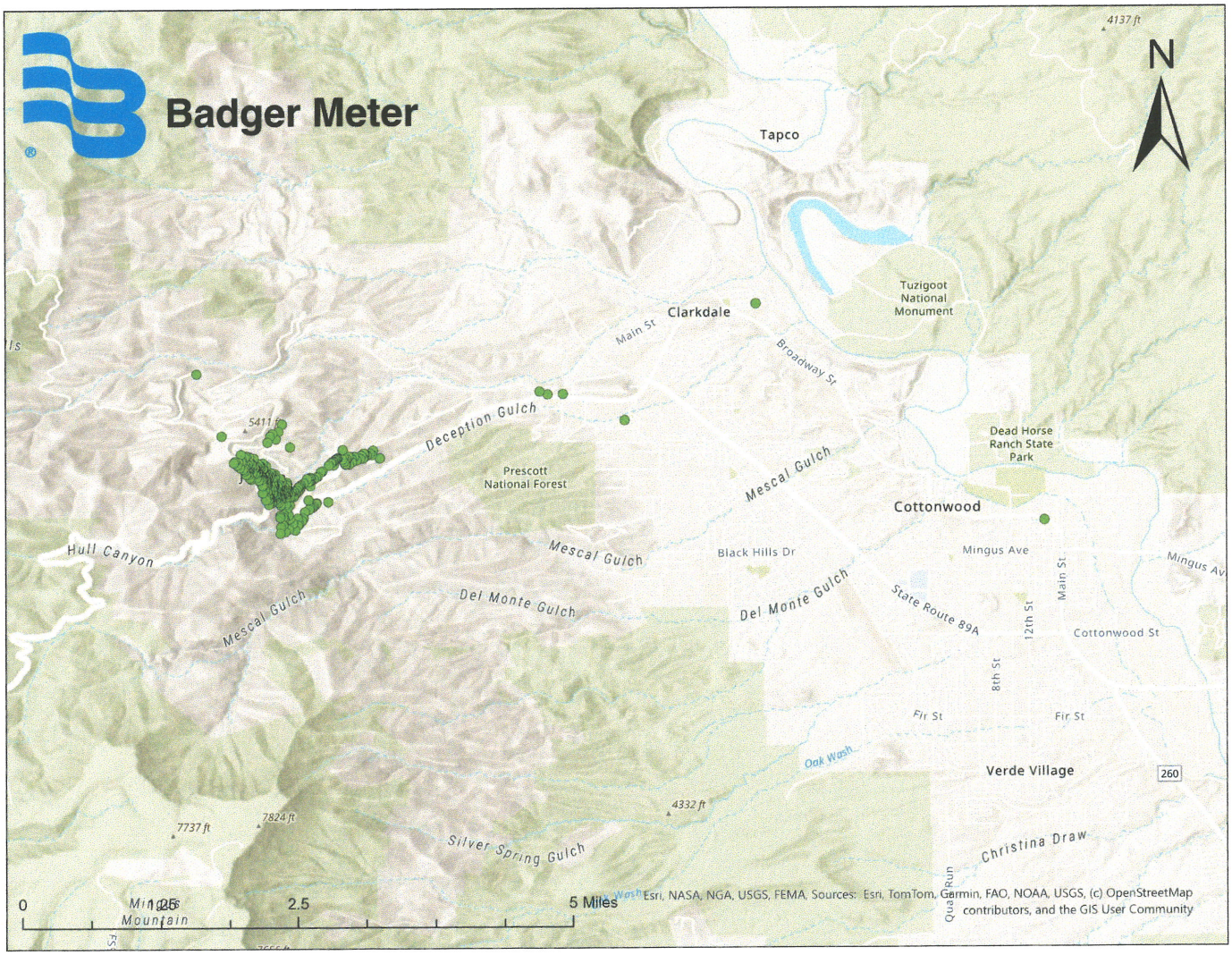
Customer: Distributor - Western Environment Utilities CO

Date Issued: 10/17/2025

Project: Town of Jerome, AZ

Revision: 1.0

ENDPOINT LOCATIONS MAP



Badger Meter

BEACON® AMA Solution

ORION® Cellular Coverage Analysis (CCA)

Customer: Distributor - Western Environment Utilities CO

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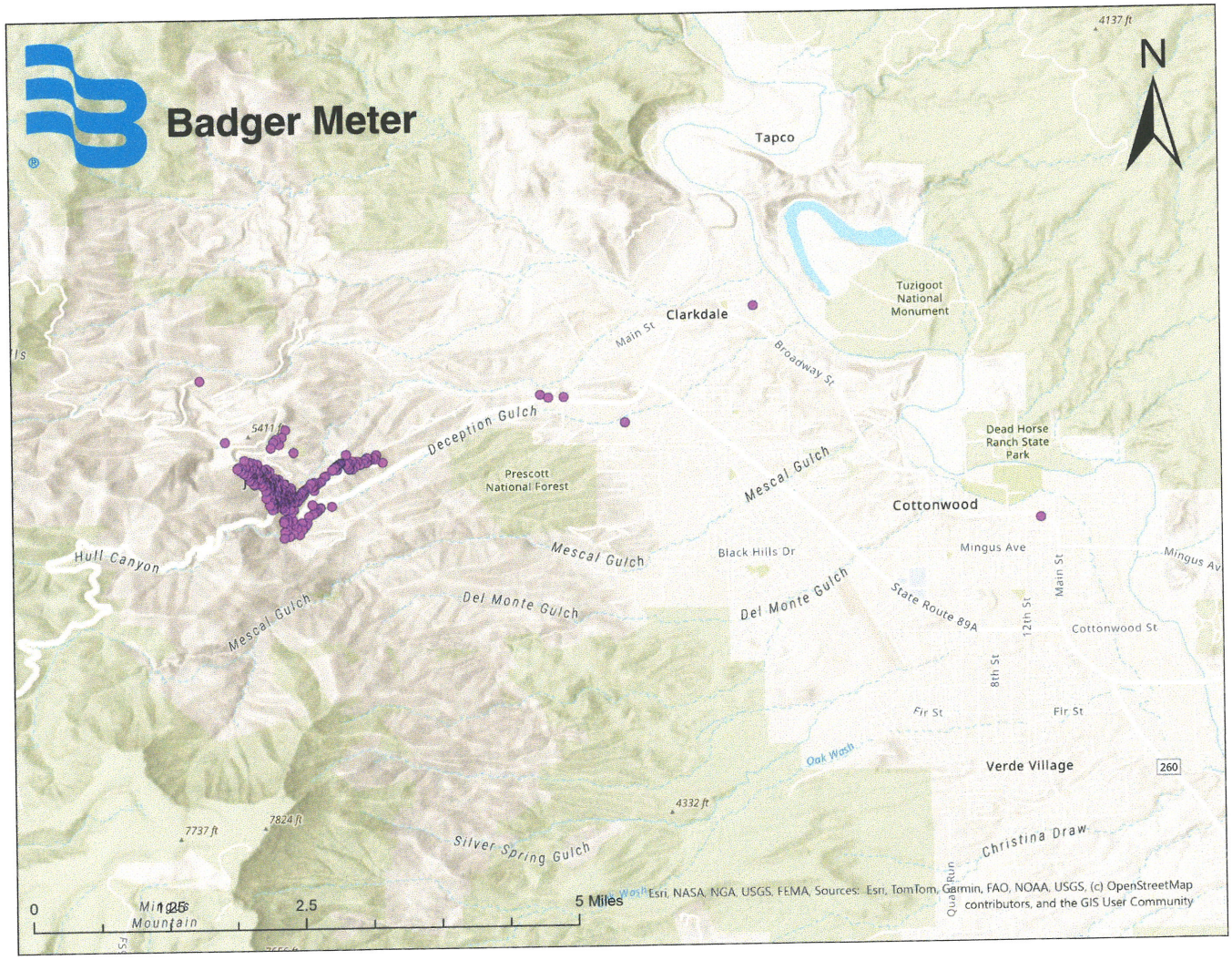
Revision: 1.0

CELLULAR COVERAGE ANALYSIS

- This cellular coverage analysis has been run to determine connectivity of our providers M2M solutions which include both LTE-M and NB IoT networks. ORION Cellular Endpoints provide connectivity to both LTE-M and NB IoT networks.
- Using information provided from our carrier partners, this service area has M2M network coverage that will support our ORION Cellular endpoints.
- The map below provides an illustration of that coverage. Further guidance as to the placement of endpoints by type will be provided as deployment plans are refined



Customer: Distributor - Western Environment Utilities CO

Date Issued: 10/17/2025

Project: Town of Jerome, AZ

Revision: 1.0

ASSUMPTIONS MADE

- Submitted information including but not limited to street addresses, service area, GPS coordinates, and meter locations are accurate.
- If GPS coordinates or a GIS shapefile are not provided for endpoint locations, street addresses are geocoded into decimal-degree latitude and longitude using ESRI's StreetMap Premium for ArcGIS North America HERE address locaters.
- Data from third party providers such as USGS National Elevation Dataset (NED), USGS National Land Cover Database (NLCD), Tele-Atlas municipal boundaries, cellular providers, and the RF propagation software used by Badger Meter is accurate.
- ORION endpoints are installed and maintained according to "ORI-UM-00025 ORION Water Endpoint Installation Manual" using a Badger Meter approved endpoint installation kit in a location that allows two-way communication between the endpoint and the cellular network.
    - Pit or vault installations are through a non-metal pit lid and the pit or vault lid is at or above grade
    - Indoor installations are mounted as high as possible in the floor joists above grade on an exterior wall

CLARIFICATIONS

- The ORION cellular coverage analysis is subject to change for reasons which may include but are not limited to; consultation with the customer, site visit by Badger Meter authorized personnel, and the availability of new or updated information.
- Cellular coverage within the utility service area is required to deploy ORION cellular endpoints.
- Review the cellular coverage analysis with your Badger Meter representative in order to understand how it may be used by the utility as a tool to deploy the system.
- All endpoints are to be installed in compliance with the published ORION installation guidelines which can be found at www.badgermeter.com
- Cellular endpoint type recommended is specific to the latitude and longitude for each location.

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