

32172

**Kittitas County
Review Form
Grants & Contract Agreement**



Today's Date 01/20/2016	Agenda Date 02/02/2016
Fund/Department 116-Public Health	

Contract/Grant Information



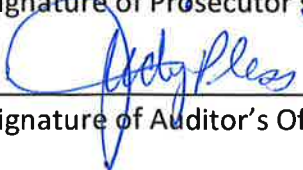

Contract /Grant Agency: Agreement between General Pacific and Kittitas County (Purchase of Water Meter Reading Equipment and Software)	
Period Begin Date: 02/02/2016	Period End Date: Upon 30 day written notification
Total Grant/Contract Amount: \$11,750.00	
Grant/Contract Number:	
Contract/Grant Summary: The agreement between General Pacific and Kittitas County is entered into by both parties and clarifies the scope of work and payment terms for General Pacific. General Pacific shall furnish all labor, materials, supplies, equipment, tools, transportation and all other items of expenses in accordance with the terms and conditions of this agreement. Further clarification of work and payment terms are documented in the agreement and attachments provided.	

Recommendation for Board of Health and Board of Health Review on _____

Department Head Signature: _____, Administrator Date: _____
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Kittitas County Prosecutor, Auditor, and Board of Health Review and Comment:

APPROVED AS TO FORM:

	
Signature of Prosecutor's Office	Date
	
Signature of Auditor's Office	Date
_____ Signature of Board of Health member	_____ Date

Financial Information

Total Amount \$11,750	State Funds \$11,750	Federal Funds \$
Percentage County Funds	Matching Funds \$	CFDA#
	In-Kind \$ Explain	
Is Equipment being purchased? Y	Who owns equipment? KCPHD	
New Personnel being hired?	Contact HR hiring – reporting requirements	
Future impacts or liability to Kittitas County:		

Budget Information

Budget Amendment Needed?	Yes <input type="checkbox"/> attach budget form	No <input checked="" type="checkbox"/> Why not
New Division Created?		Included in 2016 budget
Revenue Code 116-615.02.6.1.334.03.10.6 - \$11,750		

Pass Through Information

Agency to Pass Through	
Amount to Pass Through	\$
Sub-Contract Approved	Date:

Prosecutor Review

Has the Prosecutor reviewed this agreement?	Yes <input type="checkbox"/> No <input type="checkbox"/>
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County Departments Impacted

Auditor	Facilities Maintenance
Information Services	Human Resource
Prosecutor	Treasurer

Submitted

Signature:	Date:
Department:	

Assignment of Tracking Information

Auditor's Office	
Human Resource	
Prosecutor's Office	
Who Signed the grant application	

Reviewer	Date
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AGREEMENT FOR PURCHASE OF WATER METER READING EQUIPMENT AND SOFTWARE

This Agreement, made and entered into this _____ day of _____, 2016, by and between Kittitas County, Washington, a political subdivision of the State of Washington (hereinafter, the “County”), through the Kittitas County Public Health Department, and General Pacific, Inc. (hereinafter “GenPac”), a corporation licensed to do business in the State of Washington.

- 1) **Scope of Work.** GenPac shall furnish all labor, materials, supplies, equipment, tools, transportation and all other items of expense necessary to complete in a workmanlike manner all work in accordance with the terms and conditions of this agreement. The work is defined in detail in the responses, specifications, drawings, and data in the GenPac Response Proposal for Water Meter Reading Equipment and Software (hereinafter, the “solicitation documents”) which are hereby attached as Attachment A and incorporated and made a part hereof by this reference, but may be generally described as the purchase by the County of one (1) Trimble Ranger Handheld Automatic Meter Reading Device, and licensing, set-up, training on, and activation of associated software to facilitate the County’s water meter reading and enforcement activities.
- 2) **Payment Terms.**
 - a. The County shall pay GenPac as full consideration for the satisfactory performance of all work required under this agreement the sum of \$11,750.00 USD payable upon final invoicing from GenPac.
 - b. Payment is contingent upon the approval of invoices by the Office of the Kittitas County Auditor, and also approval of this agreement by the Kittitas County Board of Commissioners.
 - c. GenPac shall provide a completed “Request for Taxpayer Identification Number and Certification” Internal Revenue Service Form W-9 to the County with the initial payment invoice.
- 3) **Delivery.** F.O.B. destination freight prepaid. Delivery of equipment, activation of software, and system training will be scheduled upon successful completion of the billing software interface and test file (if applicable) or earlier.
- 4) **Performance Period.** GenPac shall commence work after execution of this agreement by both parties and shall complete all work as described in Attachment A.
- 5) **Inspection and Acceptance.** The goods subject to this agreement are subject to inspection and approval of the County before acceptance. Risk of loss and responsibility and liability for loss of damage will remain with GenPac until inspection and acceptance of the goods

by the County. Upon acceptance of the goods, risk of loss will pass to the County, except as to latent defects, fraud, and GenPac's warranty obligations.

- 6) **Product Warranty.** GenPac warrants that the goods furnished will be of good materials and workmanship, free from defect, fit for the purposes for which they were purchased, and conform to the specifications listed in the County's request for proposals and solicitation documents submitted to the County by GenPac,. Such warranties are in addition to all express warranties and will run to the benefit of the County. GenPac's period of warranty with respect to each item will be at least as long as that of the manufacturer of such item.
- 7) **Conforming Goods.** The goods subject to this agreement shall conform in all respects with the solicitation documents. In the event of non-conformity, and without limitation upon any other remedy, the County shall have no financial obligation in regard to the non-conforming goods.
- 8) **Termination.** The County may terminate this agreement when GenPac has been provided written notice of default or non-compliance and has failed to cure the default or non-compliance within thirty (30) calendar days. The County, upon termination for default or non-compliance, reserves the right to make any legal action it may deem necessary including, without limitation, offset of damages against any payment due.
- 9) **Indemnity.** To the fullest extent permitted by law, GenPac shall indemnify and hold harmless the County and its officials, agents, and employees from and against all claims, damages, losses, and expenses, direct, indirect, or consequential (including but not limited to attorney's fees) arising out of or resulting from the performance of this Contract or the actions of GenPac or its officials, employees, or contractors under this agreement or under agreements entered into by the GenPac in connection with this agreement. This indemnification shall survive the termination of this agreement.
- 10) **Assignment.** No portion of this agreement may be assigned or subcontracted to any other individual, firm or entity without the express and prior written approval of the County.
- 11) **Advertising.** GenPac agrees that it will not, prior to, in the course of, or after performance under this agreement use the County's name in any advertising or promotional media as a customer or client of GenPac without the prior written consent of the County.
- 12) **Venue and Jurisdiction.** This agreement shall be governed by and in accordance with the laws of the State of Washington. All actions relating in any way to this contract shall be brought in the Superior Court of the County of Kittitas, Washington.

- 13) **Notices.** The parties designate the individuals identified below as the project contacts for the respective parties. The parties further agree that all notices which may be required by this agreement shall be effect when received by certified sent to the following addresses:

For the County:

Erin Moore
Environmental Health Specialist
Kittitas County Public Health Department
507 N Nanum St Suite 102
Ellensburg, WA 98926

For GenPac:

Lori Bryson
Outside Sales Representative
General Pacific, Inc.
P.O. Box 70
Fairview, OR 97024

- 14) **Legal Compliance.** The parties certifies that in performing this agreement they will comply with all applicable provisions of federal, state and local laws, regulations, rules, and orders.
- 15) **Debarment Certification.** GenPac certifies that it:
- Is not presently debarred, suspended, proposed for debarment, declared ineligible or voluntarily excluded from covered transactions by any Federal department or agency.
 - Has not within a three-year period preceding the execution of this contract with Kittitas County, been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public or private agreement or transaction, violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, receiving stolen property, making false claims, or obstruction of justice.
 - Is not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State, or local) with commission of any of the offenses enumerated in Subsection b. of this section.
 - Has not within a three-year period preceding the execution of this contract with Kittitas County had one or more public transactions (Federal, State, or local) terminated for cause of default.
- 16) **Severability.** In the event any provision of this agreement is found unenforceable, the remaining provisions shall nevertheless be enforceable and shall be carried into effect.
- 17) **Entire Agreement.** This agreement shall constitute the entire understanding between the County and GenPac and shall supersede all prior understandings and agreements relating to the subject matter hereof and may be amended only by written agreement of the parties.

IN WITNESS WHEREOF, the parties have caused this agreement to be executed by their duly authorized agent(s) as of the dates stated below.

DATED: _____

DATED: _____

GENERAL PACIFIC INC.

APPROVED:

BOARD OF COUNTY COMMISSIONERS
KITTITAS COUNTY, WASHINGTON

Signature of Signatory

Obie O’Brien, Chairman

Print Name of Signatory

Paul Jewell, Vice-Chairman

Gary Berndt, Commissioner

Attest:

Clerk of the Board

ATTACHMENT “A”

General Pacific Inc.

Response For

Water Meter Reading Equipment and Software

RESPONSE

Water Meter Reading Equipment and Software

Kittitas County Public Health Department



Submitted by:



General Pacific, Inc.

22514 NE Townsend Way Fairview, OR 97024

503-907-2900

Lori Bryson

August 21, 2015

General Pacific, Inc.
22414 NE Townsend Way
Fairview, OR 97024



General Pacific
WATER UTILITY SALES



Badger Meter
Authorized
Distributor

August 21, 2015

Kittitas County Public Health Department
Attn: Kittitas County Water Metering Program RFP
507 N Nanum St, Suite 102
Ellensburg, WA 98926

Thank you for the opportunity to allow us to present Badger's Advanced Metering Analytics Solutions to Kittitas County.

General Pacific is proposing Badger's BEACON AMA using an ORION® Cellular and ORION® ME Mobile hybrid solution. This solution will be a good option to fit the topography and needs at Kittitas County.

General Pacific is proposing Badger's ORION® Cellular option at all suitable locations and ORION® ME Mobile solution for services that are not conducive to a cellular option. This will be a cost effective solution for collecting monthly consumption as well as hourly data from meters in remote locations.

Since 2002, Badger Meter has offered utilities a cutting edge AMR/AMI solution through our ORION® product family. With over 6 million ORION® endpoints successfully deployed at utilities in North America, you can rest assured their track record of reliability is backed by years of experience in the water and gas utility industries.

We feel your trust in Badger Meter and General Pacific will be a good investment for the County. With Badger's 110 years experience in flow measurement and General Pacific's 50 years experience serving utilities in the Northwest, you will have a reliable business partner for support throughout your project duration. General Pacific and Badger Meter both have a long history of out-standing customer support which will be very beneficial in deploying the County metering solution.

We are excited about this opportunity with the Kittitas County should you have any questions or concerns, please feel free to contact me.

Kind Regards,

Lori Bryson
Outside Sales
General Pacific

1 General Information

- 1) General Pacific, Inc. is Badger's authorized distributor in the State of Washington. General Pacific, Inc. (GenPac) is a utility distributor serving water and electric utilities in six western states. Our customer base consists of Municipalities, Cooperatives, PUD's, and Private and Investor owned utilities. GenPac was formed in 1965 as a cooperative owned distributor supporting underserved utilities with quality products and services. GenPac has water, electric, contractor, conservation as well as a web hosting divisions. GenPac has been the Badger distributor since 2007.

Badger chose General Pacific to be their distributor based on their focus and experience in the Automated Metering business. GenPac has been instrumental in over 25 successful AMI projects in the territory, as well as hundreds of successful automated metering projects. GenPac has 36 employees currently, with three staff members focused on water sales and support and three full time employees for technical support. The warehouse and corporate office are located in Fairview, Oregon at 22414 NE Townsend Way. We house our own data center with redundant fiber optic internet sources.

As Badger's authorized distributor General Pacific will also have the full support of Badger Meter's extensive support, technical staff and experience with AMI installations throughout the project.

Lori Bryson, Outside Meter and Technical Sales General Pacific, Inc.

SUMMARY OF QUALIFICATIONS:

Lori is General Pacific's outside sales representative for Washington, Northern Idaho and SE Alaska. Lori has been with General Pacific since 2006. Lori came to GenPac with a background in Utility meter reading and technical support, having worked in related industries since 1995. She has provided project management and implementation support to a number of AMR projects in her territory, as well as AMI implementations. Lori's base office is located at GenPac's corporate headquarters in Fairview, OR, but spends the majority of the time working with customers in the field.

Lori will be the County's first point of contact for this project.

Lori Bryson lbryson@genpac.com 503-477-0912

Jason VanCleave, Inside Meter and Technical Sales, General Pacific, Inc.

SUMMARY OF QUALIFICATIONS:

Jason is General Pacific's Water Division Inside Sales Representative. Jason has been with General Pacific since 2005. He possesses exceptional skill levels in organization and is detail oriented. Jason processes all incoming orders and tracks outgoing orders for accuracy. He maintains our customer records to guarantee all products meet the proper specifications prior

to delivery. Jason provides a first line of technical support for GenPac water customers. His office is located at GenPac's corporate headquarters in Fairview, OR.

Jason will be second point of contact for the County on this project and first point of contact for consumers calling in to purchase product.

Jason Van Cleave jvancleave@genpac.com 503-907-2876

Debbie Obregon, General Pacific, Accounts Receivable dobregon@genpac.com 503-907-2900

Badger Technical Support

Badger's Technical Support Group will transition to the County's first point of contact for all technical questions once software training has been completed. Badger's qualified staff of support technicians will be available to the County 24 hours a day, 7 days a week. The technical group works out of Badger's corporate headquarters in Milwaukee, WI. They are available at 800-456-5023 7:30 AM to 5:00 PM Central Standard time, calls are returned within 30 minutes after hour.

- Daryl Swift, Badger Meter, Technical Support Manager, dswift@badgermeter.com 414-371-6188
- Kelley Johnson, Badger Meter, Training Coordinator, kjohnson@badgermeter.com 414-371-6165
- Michele Harvey, Sales Support Manager mharvey@badgermeter.com 414-371-6531

2. Information Specific to Proposed Water Metering System

Badger Meter's Advanced Metering Analytics system is comprised of the following integrated components:

- BEACON® AMA, a powerful analytics based reading management software platform designed specifically for water utilities. BEACON AMA system uses a two-way communications – cellular endpoints – to deliver a simple yet powerful end-to-end solution.
- ORION Cellular Endpoints - The Badger Meter BEACON AMA system utilizes smart infrastructure-free cellular endpoints using the secure, machine to machine (M2M) cellular network utilizing AES256 encryption. This option enables rapid deployment and avoids duplication of networks.
- ORION ME Endpoints – High-powered two-way endpoints for mobile collection, using a Trimble Ranger Handheld Field Collector.

This is the best choice for the County due to;

- Badger Meter's extensive experience in the AMR/AMI market and its deployment of over 12 million AMR/AMI endpoints into the field
- Badger Meter's advanced software offering that allows a proactive approach to utility management
- General Pacific's commitment to customer's successful deployment of automated meter solutions.

The BEACON AMA solution software suite puts meter reading data to work to address your utility's demands for actionable information – and improve utility operations in the process. Features include:

- Customizable dashboards to deliver information in a format matched to your utility's requirements.
- Unique alert conditions to define and monitor exceptions.
- Consumer engagement tools including online access and smartphone app to enable access to individual customer information.
- Secure, hosted platform.
- Automatic software upgrades.
- Integration with your billing system.

With the hosted solution, there are no software updates to load or patches to install. To help understand changes, a notification widget indicates an upgrade has occurred, and briefly describes the changes that have been implemented.

The monthly service fee is guaranteed for the warranty period of 10 years on the cellular product, with a contractual agreement between the County and Badger Meter. After 10 years, your utility may renew for a second 10-year service contract and replace the ORION cellular solution endpoints.

The BEACON[®] AMA software suite provides a non-usage alert whenever a meter has not registered usage in a 30-day period. The no usage alarm is automatically cleared once usage has been registered.

All utilities face customer complaints regarding high water bills. Most customers simply want the utility to prove the amount of water usage shown on the bill was actually used. This can be very time consuming to the utility and may require a meter test or a visit to the customer to explain how the reading was taken or how the meter works. However, utilities now have an easy way to deal with these reoccurring customer confrontations. With BEACON AMA software you can easily access the customer's hourly, daily, weekly, monthly, or annual usage profile along with exception statuses (leaks, tamperers, reverse flows or periods of no usage) over the time in question. BEACON AMA software also provides a graphical "proof source" to print or email to the customer which displays a bar graph of their hourly usage.



Traditional AMI networks collect large amounts of metering data used primarily for billing purposes. If the utility wants to better understand the AMI data, they have to run a myriad of reports, and then try to mine the data to find the exception conditions of concern. With the BEACON[®] AMA software suite this is no longer necessary. The BEACON AMA software suite provides utilities with tools over and above meter reading and network management. BEACON AMA software offers proactive analytics based on interval metering and collected exception data. Using the following steps, utilities can put the BEACON AMA software's analytics management tools and system to work:

- Define the system exception conditions to monitor
- Define accounts, or account groups, to monitor for the exception condition
- Define method (email, SMS, or dashboard), frequency, who should be notified of the alert, and what suggested action should be taken
- BEACON AMA software continually monitors the incoming data for the defined exception condition
- When the defined condition is detected, a notice is sent, via the utility's chosen method, and the utility performs the suggested action

The end result for your utility is improved efficiency along with proactive management.

Hybrid or mixed technology systems are readily supported through BEACON AMA. The County can choose to use either the ORION Cellular or ORION ME and endpoints within their system; it's all the same to BEACON AMA. It's just data. No other manufacturer offers you this degree of flexibility. The County can choose where to use each technology within their system depending on their functionality needs

USER ADMINISTRATION / PERMISSIONS

BEACON[®] AMA software allows for three levels of authorization based on user roles, with the ability to establish different levels of read, write, delete and creation through the system administrator. Users are added and permissions set at the database administration level, and different users have individual permissions as needed. Primary and alternate administrators should be defined to provide access availability.

Badger's BEACON AMA Software provides utilities with tools over and above meter reading and network management. BEACON AMA offers proactive analytics based on the interval metering and exception data that is collected.

Once the utility's important exception conditions have been defined and configured, BEACON AMA can now take over and alert the utility when action is needed. This system eliminates the

General Pacific, Inc.
22414 NE Townsend Way
Fairview, OR 97024



need to run reports to find exception conditions and allows the utility to make information driven business decisions.

[BEACON® EyeOnWater Online](#)

BEACON EyeOnWater Online is a consumer engagement platform that enables customers to view and understand their usage profile through easy-to-understand consumption graphs and provides a simple method to establish alerts and water budgets to better manage their usage

ORION® Cellular endpoints are designed for easy system deployment. All ORION endpoints can be activated and installed using our intuitive smart phone installation tool app or ruggedized handheld. After meter installation (if applicable), the encoder (with wired endpoint) is connected to the meter with a simple quarter-turn, and the endpoint is mounted according to the Badger Meter installation data sheet. Once the endpoint is deployed, the smart phone app or the handheld is used to complete the installation and confirm that the reading data can be communicated to the BEACON® AMA software platform.

To eliminate the potential for moisture intrusion, all ORION endpoint electronics and batteries are fully potted with epoxy. Since battery technology now supports extended life in the field, ORION endpoints are packaged with epoxy to ensure the longest life and do not require a field replaceable battery feature.

ORION endpoints are configured for pit (submerged locations) installations. The ORION endpoint features our proven and reliable sealing technique designed to ensure the longevity of the unit in harsh pit environments. All units are available to be ordered for connectivity to an approved encoder using an inline connector between the encoder and the endpoint. A connector is recommended to support ease of installation of the endpoint and deployment of the system.

Badger Meter recommends that ORION endpoints be installed outdoors. Best transmission range is achieved with the unit mounted outdoors, as high as possible, in accordance with other utility devices installed on a building. The endpoint may be ordered with up to 75' of wire between itself and the encoder, for maximum flexibility when meters are located in sub-basements or internal to the building. The endpoint is provided with an 8" wire that terminates in an inline connector.

ORION Cellular endpoints store 120 days of hourly interval meter readings along with exception indicators. The ORION endpoints are based on a two-way design between the metering endpoint and the BEACON® AMA software suite. As a standard, ORION Cellular endpoints are programmed to automatically broadcast the last 24 top-of-the-hour meter readings on a daily basis, eliminating need to perform on-demand reads.

The ORION endpoint is 5" long with a diameter of 1 ¾" and is enclosed in an engineered, thermoplastic housing, which includes an RF circuit board, battery and antenna. The ORION endpoint weighs 0.6 lbs. (9.6 oz.) not including encoder/endpoint cable (cable between encoder

and endpoint). Designed for long-term performance, this device is fully “potted” to ensure its reliability in flooded or submerged applications.

All components and materials are non-hazardous. Material Safety Data Sheets will be supplied to the customer upon request.

In the United States, the Federal Communications Commission (FCC) is the body responsible for regulating domestic wireless telecommunications programs and policies, including licensing, and is responsible for implementing rules and regulations regarding frequency allocations, operating and design characteristics of equipment, power limits and testing/certification requirements, among other responsibilities. Included are rules governing devices such as the ORION AMI system. These rules are documented in Part 15 of Title 47 of the Code of Federal Regulations (“FCC Part 15”). The ORION Cellular system operates on the FCC-regulated 800 or 1900 MHz band while the ORION Fixed Network endpoint operates on the FCC-regulated 902-928 MHz frequency. The ORION system meets all of the FCC requirements, and doesn’t require any additional licensing on the part of the utility.

LEAK DETECTION

The ORION system is able to provide the utility with a potential leak detection notification when continuous usage is measured during any 24-hour time period. The meter’s “potential leak” detection notification automatically resets when the continuous flow condition has been fixed or no longer exists. This information is easily managed through the BEACON[®] AMA software via standard reporting or a configurable analytical alarm.

LOW BATTERY INDICATION SOLUTION

ORION endpoints are designed with a low-battery alarm. Endpoints report the low-battery condition in its broadcast message back to the BEACON AMA software suite, providing the utility with ample warning as to the need to replace the endpoint.

REVERSE FLOW / BACK FLOW ALERT

The BEACON software suite proactively notifies the utility when an ORION endpoint detects a reverse flow from a meter.

METER BOX / LID MATERIALS

The ORION endpoint antenna transmits energy in an upward direction as well as out toward the side of the endpoint in a donut-shaped pattern. Because metallic materials reflect radio frequency signals, Badger Meter recommends a composite or non-metallic lid material and when possible, a non-metallic meter box material to maximize system performance. It’s also recommended to install the endpoint through a 1 7/8” standard hole, found in many pit lids, whenever possible. Meter boxes constructed of concrete with rebar or wire mesh reinforcement may, or may not have a negative effect on the RF propagation. This effect is

directly correlated to the density of the rebar or wire mesh reinforcement within the meter box.

ORION Cellular endpoints store and automatically broadcast the following information in each RF message: Meter readings

- Cut-wire tamper status
- Programming status
- Encoder error
- Battery life indicator
- Network health status
- Endpoint health status
- Leak tamper status
- Encoder removal status, requires HR-E LCD encoder
- Reverse flow

RF MESSAGE ENCODING/ENCRYPTION

The information sent by the ORION cellular endpoint is encrypted using the AES-256 bit encryption standard or through a proprietary encryption method to minimize the risk of the data being captured by unauthorized users.

SELF-HEALING – CELLULAR

Today's cellular networks are designed to provide optimal coverage as while also providing needed overlap (self-healing algorithms) in coverage so that users do not drop signals as they are moving and transitioning between communication towers. This same optimized coverage applies to the radio propagation of the ORION Cellular endpoint using the provider's machine to machine (M2M) network.

SYNCHRONIZABLE INTERNAL CLOCK

The ORION endpoint contains an advanced synchronized internal clock which is regulated by an industrial clock crystal. With this feature, ORION gives utilities synchronized, top-of-the-hour consumption reads across their entire meter reading system. The clock crystals are designed to accurately keep time under normal environmental conditions. Badger Meter designed the system so the clock is automatically updated via the network with every message. Based upon the maximum internal network latency, the accuracy of the endpoint's internal clock should be within +/- 2 seconds.

TEMPERATURE RATINGS

The storage and meter reading range of the ORION Cellular endpoint is -40° C to +60° C (-40° F to +140°F). The communication range is -20° C to +60° C (-4° F to +140°F). The operating range of the ORION Fixed Network endpoint is -40° C to +60° C (-40° F to +140°F).

WARRANTY

A BEACON® AMA solution provides the following ORION Cellular endpoint warranty coverage over the life of the system. Ten year full endpoint warranty with County's option for an additional ten year full warranty, upon replacement and installation by Kittitas County; beginning at the second 10 year managed solution master agreement.

Additionally General Pacific is proposing Badger's **ORION® ME Mobile** Solution for areas that are not conducive to a cellular solution. Badger's ORION® solution was introduced to the market in 2002. This will be a cost effective solution for collecting monthly consumption as well as hourly data from meters in remote locations. Badger has shipped over 12 million ORION units. The strength of the ORION product is that the packaging is very durable and reliable with no need for field programming. Features the County will benefit from:

- **Tamper Indication:** A tamper condition is defined as either a short or open circuit (cut wire) in the endpoint's three-wire system.
- **Leak Detection:** A potential leak has been identified.
- **Reverse Flow / Back Flow Alert:** A reverse flow/back flow condition has been identified. Not available for RTR.
- **No Usage:** A period of time without consumption has been identified.
- **Low Battery Indication:** ORION ME endpoints are designed with a low-battery alarm indicator and broadcast a low battery warning when the endpoint is nearing the end of its useful life.
- **Durable Packaging:** Epoxy suspension transmitter units for long life in a pit environment.
- **No field programming** – once there is flow the radio transmitter will start transmitting.
- **Stores hourly historical interval** metering data within its nonvolatile memory that can be collected with the mobile collection device.

ORION ME Mobile endpoints store 90 days of hourly interval meter readings along with exception indicators. Collection of consumption data or hourly historical data can be done with the Trimble Handheld Field Collector.

WARRANTY

ORION ME Mobile endpoint warranty coverage is 20 years. Ten year full endpoint warranty; pro-rated beginning at the second 10 years.

TRIMBLE RANGER 3 HANDHELD FIELD COLLECTOR

The Trimble® Ranger 3 is a full-featured, handheld data collection computer. It combines a Windows® mobile operating system, ergonomic keypad and military-grade durability, providing

a full day of continuous meter reading. The Trimble Ranger 3 handheld is compatible with manual, touch and ORION® endpoint systems.

The Trimble Ranger 3 HH can be used for mobile collection of ORION ME radio endpoints consumption data, field mitigation of ORION Cellular or ME endpoints, and collection of hourly data stored in the endpoint. Using the ORION endpoint utility, the Trimble Ranger 3 can help determine an ORION Cellular endpoint has connected to a cellular provider. ORION ME Mobile endpoints can be programmed, started or paused using the Trimble Ranger 3. ORION Cellular endpoints cannot be field programmed but the IR Programming function is used to perform a force read of the endpoint to the encoder and ping to confirm endpoint network communication.

STANDARD FEATURES • Microsoft® Windows Mobile 6.5 Professional • Custom keypad: 53 tactile keys with separate navigation, alpha and numeric keypads, and 8+1 directional pad • Touch screen • Full-day battery life under normal operating conditions • Complete recharge in 4.0 hours (80% in 2 hours) • Three tri-color notification LEDs • Rugged polycarbonate case with Hytrel® overmold • Integrated components: • Bluetooth® 2.0 + EDR • WiFi 802.11b/g • Speaker and microphone with 3.5 mm stereo headset/microphone port • GPS receiver • Electronic compass • 1D barcode laser scanner* • 5 MP auto-focus camera with LED flash and LED flashlight function*

Badger's expertise in flow measurement has allowed them to develop technologies and products to meet continually evolving customer needs. They are the manufacturer of the complete system – the meter, absolute encoder, the ORION Cellular transmitter, ORION ME transmitter and the BEACON AMA software. With their manufacturing facilities and local representative they will be able to provide the County with superior customer service and support along with quality products expected from Badger Meter, Inc.

1. References

Bethpage Water District (case study [link](#))

ORION SE / Cellular – 8,800 Services

Michael J. Boufis - Superintendent

25 Adams Avenue

Bethpage, NY 11714

[516.931.0093](tel:516.931.0093)

mboufis@bethpagewater.com

General Pacific, Inc.
22414 NE Townsend Way
Fairview, OR 97024



Salisbury-Rowan Utilities

ORION SE / Cellular – 21,000 Services
Jason Wilson - Engineering Manager
1 Water Street
Salisbury, NC 28144
[704.216.7553](tel:704.216.7553)
jawils@salisburync.gov

EJ Water Cooperative

ORION Cellular – 10,000
Bill Teichmiller - CEO
P.O. Box 8
Dieterich, IL 62424
[217.925.5566](tel:217.925.5566)
teich4@ejwatercoop.com

City of Yakima

20,000 connections
100% implementation of Badger BEACON AMA/Galaxy Fixed Network Started April 2013
completed April 2014 Dave Brown
David.Brown@yakimawa.gov (509) 575-6154

Yakima County

1,800 connections
Implementation of Badger BEACON AMA/Galaxy Fixed Network Started July 2014 with plans for
ORION ME Mobile planned for rural areas
joe.stump@co.yakima.wa.us (509) 574-2425

Badger ORION References:

Skagit PUD

24,000 connections
100% change over from Sensus to Badger completed in 2010
Kevin Tate
tate@skagitpud.org
360-848-4477
Skagit has completed some analysis on water loss and on reducing reading staff

General Pacific, Inc.
22414 NE Townsend Way
Fairview, OR 97024



Alderwood Water District

44,000 connections

Have / had Neptune, Sensus, and Badger meters installed

Just completed a contract with Badger for a 4 year change out to 100% ORION

Alderwood had all Neptune reading equipment and about 2,400 R900 (Neptune) Radios installed – will be pulled and replaced ORION.

Have about 4,000 currently installed – they are installing themselves – they did consider using an install but decided last minute to do it themselves

Chuck Pfeiff

425-787-0250

cpfeiff@alderwoodwater.com

NorthShore Utility District

23,500 connections

Currently have all Sensus meters installed

Just completed a contract with Badger for a 2 year change out to 100% ORION

NorthShore had all Sensus reading equipment and had about 3,000 MXU (Sensus) Radios installed – will be pulled and replaced with ORION.

NorthShore has about 12,000 ORION installed and they look to be done by July 2012 They are doing the install in house

Al Nelson

anelson@nud.net

425-398-4428

Chelan PUD

6,400 connections

100% change over from Sensus / Neptune to Badger completed in 2008

Chelan has seen significant improvements in water loss and leak detection tools offered by ORION

Ron Slabaugh

Ron.slabaugh@chelanpud.org

509-661-4131

Ron is a great source – Chelan has a number of studies they have done as well – studies are what AMR and new meter has done for the PUD – increase in revenue, water loss, leak detection,...

General Pacific, Inc.
22414 NE Townsend Way
Fairview, OR 97024



City of Coeur d' Alene, ID

17,000 connections

Mixed between Sensus MXU drive by and Badger ORION drive by

City started off installing Sensus and had significant failures, completed AMR install with Badger ORION and as the Sensus units continue to fail – they are being replaced with ORION

Rob Stark

rstark@cdaid.org

208-699-1456

Rainier View Water

15,000 connections

Converted from Master Meter radio to Badger ORION Summer 2011

PO BOX 44427 Tacoma WA 98448-0427 Phone: 253-537-6634

Contact: Chuck Warner

Project start date: July 2011, Pilot acceptance October 2011, Completion date TBD

Additional Information:

Badger Meter recommends through the lid installation on all ORION Cellular Endpoints.

Through-the-Lid Installation Kit

The **Through the Lid Installation Kit (PN: 64394-024)** is designed for use with a pit lid of one inch maximum thickness and a standard hole diameter of 1-7/8 inches.

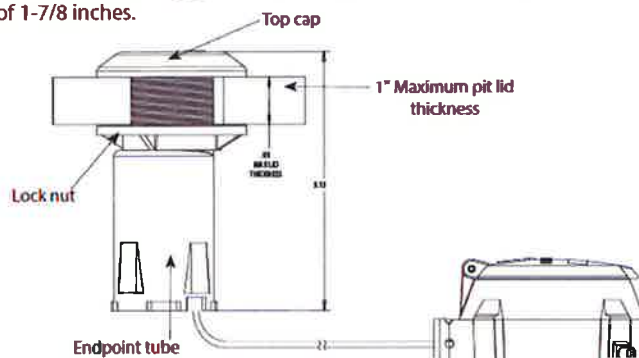


Figure 7: ORION pit endpoint

Under the lid mount is acceptable for ORION ME Mobile endpoints

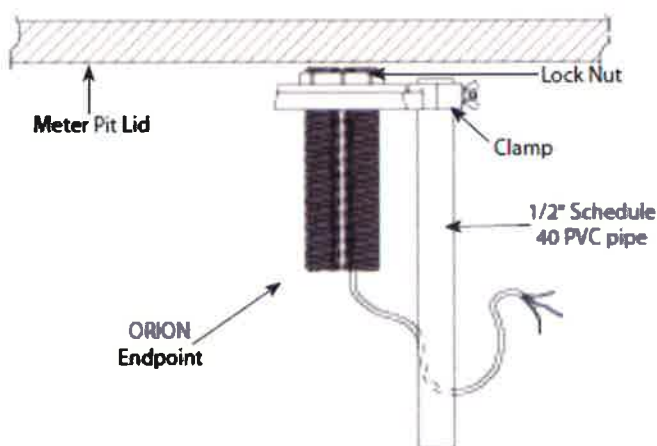


Figure 4: Pit ORION Beneath Lid Installation

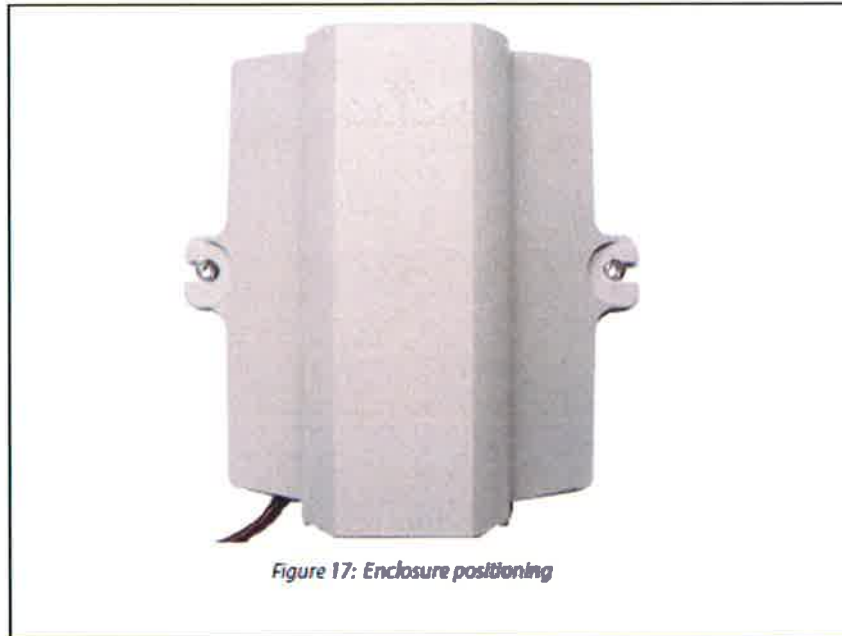


Figure 17: Enclosure positioning

REMOTE WALL MOUNT ENCLOSURE

CERTIFIED TEST FILE STATEMENT

Badger Meter provides certification files to help manage meter and endpoint inventory and to maintain meter accuracy data. The standard method of delivery for this format is via electronic mail. Any deviations from our standard format, or any custom file formats, will be considered on a time and material basis. Please contact our Technical Support Group (1-800-456-5023) if you require more information.

PRODUCER PRICE INDEX

Prices quoted may be subject to an increase in proportion to an increase in the Producer Price Index for Totalizing Fluid Meters and Counting Devices as reported by the U.S. Department of Labor. The base index for this quote shall be the August 2015 index of copper materials. An increase in price will be no more frequent than every twelve (12) months, if necessary.

BADGER METER PRODUCTS

Badger Meter will provide a quote for the products offered in this RFP for a period of 12 months. Pricing may be adjusted after that time based on the Producer Price Index as necessary. Badger Meter product design may be changed during the contract period and if so a suitable replacement will be offered at the contract pricing.

CIS BILLING INTERFACE

The County will be responsible for contacting their utility billing company regarding the interface to BEACON AMA. Badger Meter will provide the file format and test the file once completed. All costs of the interface file will be the responsibility of the County. This interface is best complete prior to going live with BEACON AMA so that customer data records can be automatically updated in BEACON AMA by the use of the data import file. Accounts records can be set up manually in BEACON AMA as well if desired. Data can be exported in a .CSV file for utility use as well.

ORDERING INFORMATION

The County may request that participants in the Metering program purchase the meter and endpoint on their own, which can be purchased directly from General Pacific via a phone/credit card order or by sending in a check. A sample order form is attached and can be customized to meet the needs if we are the successful candidate. General Pacific will stock the meter and register to meet the County's specifications at the Fairview, OR warehouse for immediate shipment. ORION Cellular or ORION ME endpoints will be factory ordered to preserve the battery life and to make sure the warranty does not start until installed. Also, local suppliers can order the product to have on hand for consumers if desired.



22414 NE Townsend Way
PO Box 70
Fairview, OR 97024
(503) 907-2900 Fax (503) 489-2103

Quotation

DATE 8/21/2015
Quotation # 42237
Customer ID

RFP RESPONSE QUOTE
Erin Moore
Kittitas County, WA

Quotation valid until: 8/20/2016
Prepared by: Lori Bryson

Comments or Special Instructions:

RESPONSE TO RFP FOR WATER METERING

QUANTITY	DESCRIPTION	EACH PRICE	TOTAL PRICE	EXTENDED MAINTENANCE FEE
1	Meter Reading Collection Equipment; BEACON AMA Engagement Fee and Training; This fee includes the licensing, set-up and activation of the utility's BEACON software account and Badger Meter configuration work tied to the utility supplied billing interface. Fees charged to a utility by their utility billing vendor are separate and are the responsibility of the utility. BEACON AMA Fundamentals instruction presented in the form of WebX. Hardware Equipment; Trimble Ranger Handheld with Windows Mobile Professional 6.5 or later, 256 MB RAM, 8 GB non-volatile flash memory, integrated Bluetooth, Wi-Fi 802.11 b/g, GPS, electronic compass and accelerometer. ORION handhelds also include an internal ORION transceiver, 5 MP auto-focus camera with LED flash, LED flashlight and 1D barcode laser scanner. Handheld features a gray overlay, 4.2 " high resolution color touch screen, custom Badger Meter keypad and is preloaded with the Badger Field Application suite of handheld software. Office docking station (charging cradle), optical programmer, 15-pack screen protectors (one applied) and USB flash drive are also included with all handhelds.	\$11,750.00	\$11,750.00	Included with monthly subscription fee
1	PART # M25-X-1C61-G-70-308 Recordall M25 5/8" x 3/4" Bronze BiAlloy LL meter, HRE Register, Nicor Connector	\$104.00		
1	ORION Cellular Endpoint, 308 Inline connector, Use with meter and encoded register. 1 Daily Download / 24 Hours Hourly Data	\$95.00		
1	Monthly Subscription Fee; Daily upload of 24 hourly reads, Web Access to software, unlimited utility logons, Includes Eye On Water Consumer Access. 10 Year Contract, includes replacement of any warrantied endpoints during the contract term. Invoicing for monthly endpoint subscription fee starts at time of endpoint activation or 6 months from date of shipment, whichever comes first. Per month <u>per service fee</u> .	\$0.89	*Note; Fee can be included in the initial purchase price of endpoint, to cover the 10 year term	
1	ORION ME Mobile Endpoint, 308 Inline Connector, for use with existing meter and encoded register. 90 Days of hourly data profile stored in endpoint, collect reads with Trimble Handheld Field Collector	\$95.00		



Badger Meter

BEACON® Advanced Metering Analytics

Software Suite

OVERVIEW

At the core of the Badger Meter BEACON Advanced Metering Analytics (AMA) managed solution is the innovative BEACON AMA software suite. In a secure hosted solution, the BEACON AMA software suite delivers powerful, easy-to-use data tools for the utility, including a consumer engagement website and smartphone/tablet applications (apps), that provide water intelligence for utilities and their customers.

Combined with proven ORION® AMI technology, the BEACON AMA software suite brings greater visibility and utility management control. Utilities can quickly and effectively implement the appropriate AMR/AMI technology, based on their unique reading data needs, all supported through the BEACON AMA software suite.

BEACON AMA SOFTWARE

With tools beyond meter reading and network management, BEACON AMA software offers targeted Advanced Metering Analytics. BEACON AMA software puts interval meter data to work to increase efficiency in day-to-day utility operations and address demands for actionable intelligence.

BEACON AMA software includes these features and benefits:

- **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.

SECURITY

BEACON AMA is certified under ISO 27001 and meets the Service Organization Control (SOC) reporting framework of SOC 2 for data security.



CONSUMER ENGAGEMENT TOOLS

With the BEACON AMA software suite, utility customers interested in managing their own usage patterns and consumption rates have access to their water usage data. The BEACON AMA software suite includes instructive consumer engagement tools consisting of a consumer engagement website, a smartphone/tablet mobile app, and email reports, which provide easy access to consumption data. With these tools, water consumers are able to view their usage activity, and gain a greater understanding and control of what they use and the value you provide.

EyeOnWater Online

The consumer engagement website, EyeOnWater Online, gives utility customers access to their water usage profiles in easy-to-understand consumption graphs. EyeOnWater Online provides a simple method for utility customers to establish alerts and create water budgets for better water usage management. Utilities can also communicate with their customers by posting notifications and alerts that are visible upon login to the consumer engagement website.

EyeOnWater Smartphone/Tablet App

The EyeOnWater app brings the power of EyeOnWater Online to your customer's smartphone or tablet. Alerts, notifications and water usage education are conveniently and readily available anytime using a mobile device.

EyeOnWater Email

EyeOnWater eSummary electronically delivers water usage information, including alerts and trends, right to your customers' email inbox.

SMARTPHONE INSTALLATION TOOL

The smartphone installation application is another unique tool in the BEACON AMA software suite. BEACONTool facilitates the installation of ORION Cellular endpoints with the convenience and ease of a mobile app.

TECHNICAL SUPPORT AND TRAINING

Configured for the utility, the safe and secure hosted BEACON AMA software suite provides utilities with regular updates, long-term support and maintenance. Comprehensive training is provided at the time of system deployment. To maintain best practices, a library of online videos and options for web-based training and support are also available. Once deployed, our technical support specialists may be contacted by phone, email and web to provide ongoing, customer-friendly support.

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

SOFTWARE ACCESS

Developed as a hosted software platform, the BEACON AMA software suite can be accessed through standard web browsers: Google® Chrome (29 or higher), Microsoft® Internet Explorer® (9 or higher), Apple® Safari® (5 or higher) or Mozilla® Firefox® (23 or higher).

Making Water Visible®

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Badger Meter

BEACON Advanced Metering Analytics

Software At A Glance

BEACON At A Glance is the control center for your Utility, with a variety of modules that provide a snapshot view of current and historical activity, real-time status for any issues that may need attention and access to all BEACON major functions.

Simply click and drag a module to reposition it or use the **Add/Remove** link to add or remove a module. Available modules are described below.

Billing Reads

Process read data captured by the system into a billing file that can be passed to your billing software. Billing Reads shows meters that have a current billing read available and meters missing reads.

- Click the number of meters to display a list.
- To display a list of all previously run billing read files, click **Billing Reads**.
- To create a new billing read file, click **New Billing Read**.

Flow Health

Provides an overview of any flow issues in the water system. Select all the meters in the system or select a user specific group to view.

Click to see a list of accounts currently reporting the condition.

Gateway Health

Number and % of gateways reporting with and without issues as well as a list of gateways with the reported issues.

Endpoint Health

Number and % of endpoints reporting with and without issues as well as a list of endpoints with the reported issues.

System Water Usage

Snapshot of the water usage in your system. Can be used to compare today's usage to yesterday's water usage in graph and number formats. Use the calendar to select the specific time period to view. Select all the meters in the system or select a user specific group to view.

Top Accounts By Usage

Displays the top accounts that are currently using the most water in the system by day, week or month. Up to 40 accounts can be selected. Columns can be sorted.

Click to see account details.

Favorites

Users have the ability to mark specific accounts as favorites. Columns can be sorted.

To mark a favorite, click when viewing the account card on the Monitor page. Each user sees *only* the accounts he or she personally marked as a favorite.

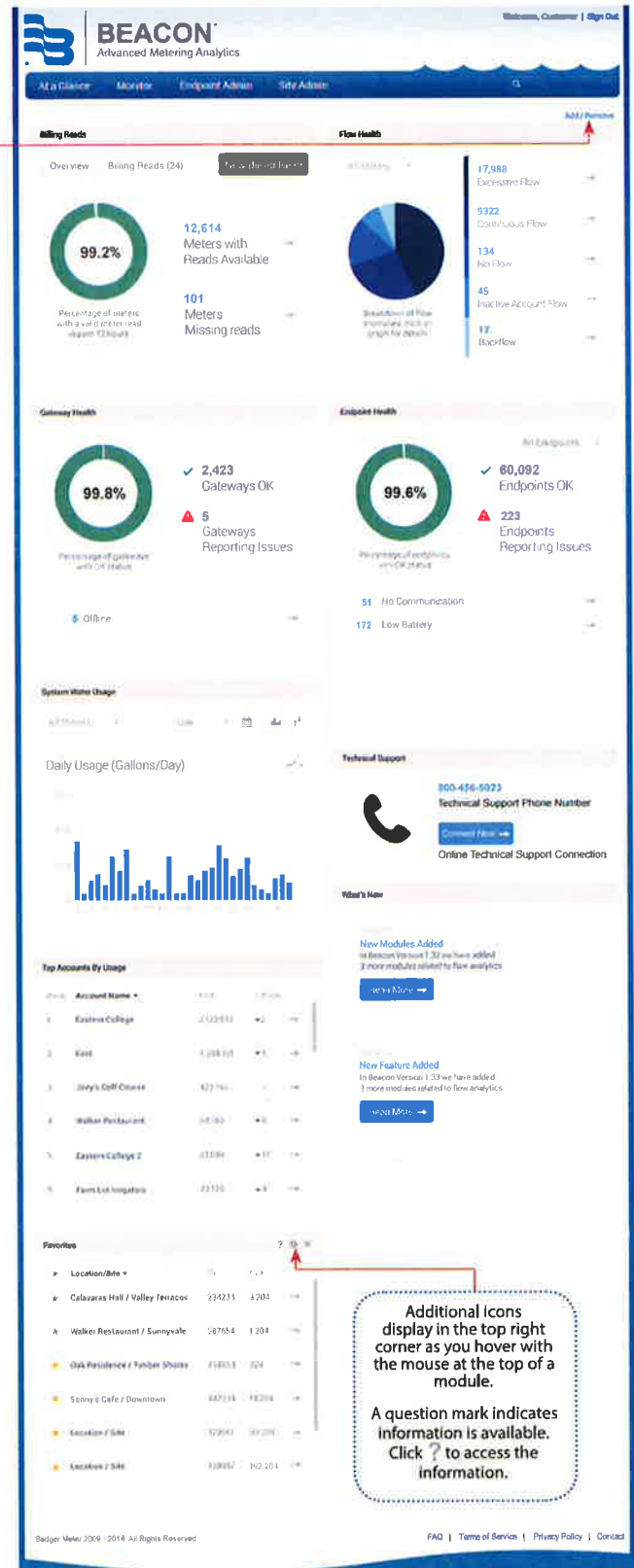
Click to see account details.

What's New

Displays information on new and upcoming features for the BEACON AMA software.

Technical Support

Displays the phone number to call for Badger Meter Technical Support and a link when you need to connect online.



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Badger Meter

ORION®

Trimble® Ranger 3

OVERVIEW

The Trimble® Ranger 3 is a full-featured, handheld data collection computer. It combines a Windows® mobile operating system, ergonomic keypad and military-grade durability, providing a full day of continuous meter reading. The Trimble Ranger 3 handheld is compatible with manual, touch and ORION® endpoint systems.

OPERATION

System: The Trimble Ranger 3 handheld uses the Windows Mobile 6.5 Professional operating system with the Badger Meter suite of handheld software.

Display: A large 4.2 inch, high resolution color, resistive touch screen with LED backlight supports reading in both sunlight and darkness.

Control: The Trimble Ranger 3 handheld features ergonomic navigation with versatile alpha and numeric keypads that are easy to use, even when wearing gloves. The user may also operate the handheld using the easy-to-navigate touch screen controls.

Power: A lithium ion rechargeable battery pack powers the Trimble Ranger 3 handheld, providing a full day of continuous usage under normal operating conditions.

The handheld can be charged using either the Office Docking Station or AC power supply that comes with the handheld. An optional DC power vehicle charger and spare battery are also available.

Performance: The Trimble Ranger 3 handheld was designed to meet MIL-STD-810G military standards for drops, vibration, humidity, altitude and extreme temperatures. With an IP67 rating, it is impervious to water, dust and the harsh conditions associated with meter reading.

ORION: An ORION equipped handheld can be used for reading and programming endpoints and as a troubleshooting tool in the field. To meet the needs of the utility, the Trimble Ranger 3 handheld can be ordered with an internal ORION Migratable (ME) FHSS mobile transceiver, an internal ORION Classic (CE) FHSS receiver, or without an ORION radio as a manual handheld.



STANDARD FEATURES

- Microsoft® Windows Mobile 6.5 Professional
- Custom keypad: 53 tactile keys with separate navigation, alpha and numeric keypads, and 8+1 directional pad
- Touch screen
- Full-day battery life under normal operating conditions
- Complete recharge in 4.0 hours (80% in 2 hours)
- Three tri-color notification LEDs
- Rugged polycarbonate case with Hytrel® overmold
- Integrated components:
 - Bluetooth® 2.0 + EDR
 - WiFi 802.11b/g
 - Speaker and microphone with 3.5 mm stereo headset/microphone port
 - GPS receiver
 - Electronic compass
 - 1D barcode laser scanner*
 - 5 MP auto-focus camera with LED flash and LED flashlight function*

* ORION handhelds only

STANDARD SOFTWARE

Badger Meter Suite of Field Application Software

Meter Reading Software – Admin and Kiosk Modes

Programming/Field Troubleshooting Software

Windows Mobile 6.5 Professional Operating System including the following:

Microsoft Office Mobile

- Word® Mobile
- Excel® Mobile
- PowerPoint® Mobile
- Outlook® Mobile

Internet Explorer Mobile

- Contacts
- Tasks/Notes
- Calendar
- Calculator
- Adobe Acrobat® Reader
- Windows Media Player
- Microsoft Pictures and Videos
- Microsoft ActiveSync
- Online Help
- Trimble SatViewer (GPS interface application)

STANDARD ACCESSORIES

- Office docking station with power cord
- Rechargeable lithium-ion battery pack
- International AC power supply charging kit with four plug adapters
- Audio port dust cover
- I/O port dust cover
- Screen protectors
- Hand strap
- Touch screen stylus (2) with tether
- USB cable (mini)
- IR programming cable
- ORION antenna (ORION handhelds only)

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Legacy Document Number: ORI-T-62-EN

PHYSICAL (without antenna)

Size 10.5" (26.6 cm) x 5.2" (13.1 cm) x 1.9" (4.8 cm)

Weight 2.3 lb (1.04 kg), including battery and stylus

ELECTRICAL

Processor Texas Instruments AM3715
Sitara® ARM® Cortex-A8 processor

Display 4.2" landscape VGA 640 x 480 pixels
sunlight readable TFT with LED backlight

Power Lithium-Ion rechargeable pack
2500 mAh (11.1 V)

I/O USB 2.0 full speed host and 2.0 high speed client;
15 V DC power port; 3.5 mm stereo and microphone
audio port stereo; 9-pin RS-232 serial port

GPS Accuracy 2-4 m with SBAS correction

ENVIRONMENT

Operating Temperature -22...140° F (-30...60° C)

Storage Temperature -40...158° F (-40...70° C)

Humidity MIL-STD-810G, Method 507.5

Water IP67, sealed against accidental immersion
(1 m for 30 minutes)
IEC-529

Drop MIL-STD-810G, Method 516.6
Procedure IV 48" onto plywood over concrete
26 drops at room temperature
(all faces, edges, corners, one drop each)
6 drops at 60° C, 6 drops at -30° C

Sand & Dust IP67, IEC-529

Vibration MIL-STD-810G, Method 514.6
Procedures I and II

Altitude MIL-STD-810G, Method 500.5
Procedures I, II, III, 15,000 ft at 73° F (23° C)

SPECIFICATIONS

Processor Speed Intel XScale, 800 MHz

Memory SDRAM ~256 MB
Data storage (on-board flash) ~8 GB
Secure digital (SD/SDHC) card slot

Wireless Integrated Bluetooth 2.0 + EDR and
WiFi 802.11b/g, standard

Certifications FCC, IC (Canada), RoHS compliant
WiFi Alliance certified
MIL-STD-810G, IP67, MIL-STD 461



Badger Meter

Recordall® Disc Meters

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



Model LP—5/8", 5/8" x 3/4"



Model 25—5/8", 5/8" x 3/4"



Model 35—3/4"



Model 55—1"



Model 70—1"

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 Standards 61 and 372 (Trade Designations: MLP-LL, 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 ($100 \pm 1.5\%$), 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 meter is available in a lead-free bronze alloy with externally-threaded spuds. 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 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 (NPT)
LP	5/8"	×	7-1/2"	5/8"	3/4" (5/8")	1/2"
	5/8" x 3/4"	×	7-1/2"	5/8", 3/4"	1" (3/4")	3/4"
25	5/8"	×	7-1/2"	5/8"	3/4" (5/8")	1/2"
	5/8" x 3/4"	×	7-1/2"	5/8", 3/4"	1" (3/4")	3/4"
35	3/4"	×	7-1/2"	3/4"	1" (3/4")	3/4"
	3/4"	×	9"	3/4"	1" (3/4")	3/4"
	3/4" x 1"	×	9"	3/4"	1-1/4" (1")	1"
55	1"	×	10-3/4"	1"	1-1/4" (1")	1"
70	1"	×	10-3/4"	1"	1-1/4" (1")	1"

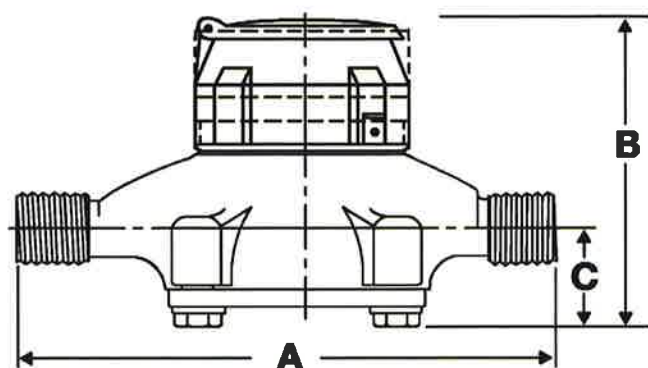
SPECIFICATIONS

	Model LP (5/8" & 5/8" x 3/4")	Model 25 (5/8" & 5/8" x 3/4")	Model 35 (3/4")	Model 55 (1")	Model 70 (1")
Typical Operating Range (100% ± 1.5%)	0.5...20 gpm (0.11...4.5 m³/hr)	0.5...25 gpm (0.11...5.7 m³/hr)	0.75...35 gpm (0.17...7.9 m³/hr)	1...55 gpm (0.23...12.5 m³/hr)	1.25...70 gpm (0.28...16 m³/hr)
Low Flow	0.25 gpm (0.057 m³/hr) Min. 95%	0.25 gpm (0.057 m³/hr) Min. 98.5%	0.375 gpm (0.085 m³/hr) Min. 97%	0.5 gpm (0.11 m³/hr) Min. 95%	0.75 gpm (0.17 m³/hr) Min. 95%
Maximum Continuous Operation	10 gpm (2.3 m³/hr)	15 gpm (3.4 m³/hr)	25 gpm (5.7 m³/hr)	40 gpm (9.1 m³/hr)	50 gpm (11.3 m³/hr)
Pressure Loss at Maximum Continuous Operation	5/8" size: 2 psi @ 10 gpm (0.14 bar @ 2.3 m³/hr) 5/8" x 3/4" size: 1.5 psi @ 10 gpm (0.10 bar @ 2.3 m³/hr)	5/8" size: 3.5 psi @ 15 gpm (0.24 bar @ 3.4 m³/hr) 5/8" x 3/4" size: 2.8 psi @ 15 gpm (0.19 bar @ 3.4 m³/hr)	5 psi @ 25 gpm (0.37 bar @ 5.7 m³/hr)	3.4 psi @ 40 gpm (0.23 bar @ 9.1 m³/hr)	6.5 psi @ 50 gpm (0.45 bar @ 11.3 m³/hr)
Maximum Operating Temperature	80° F (26° C)				
Maximum Operating Pressure	150 psi (10 bar)				
Measuring Element	Nutating disc, positive displacement				
Meter Connections	<i>Available in NL bronze and engineered polymer to fit spud thread bore diameter sizes:</i>				
	5/8" or 3/4" (DN 15 mm)	5/8" size: 5/8" (DN 15 mm) 5/8" x 3/4" size: 3/4" (DN 15 mm)	3/4" (DN 20 mm)	1" (DN 25 mm)	1" (DN 25 mm)

MATERIALS

	Model LP (5/8" & 5/8" x 3/4")	Model 25 (5/8" & 5/8" x 3/4")	Model 35 (3/4")	Model 55 (1")	Model 70 (1")
Meter Housing	Lead-free bronze alloy				
Housing Bottom Plates	Lead-free bronze alloy, cast iron, engineered polymer		Cast iron, lead-free bronze alloy		
Measuring Chamber	Engineered polymer				
Disc	Engineered polymer				
Trim	Stainless steel				
Strainer	Engineered polymer				
Disc Spindle	Engineered polymer	Stainless steel	Stainless steel	Engineered polymer	Stainless steel
Magnet	Ceramic	Ceramic	Ceramic	Polymer bonded	Ceramic
Magnet Spindle	Engineered polymer	Stainless steel	Stainless steel	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" and 5/8" x 3/4" (15 mm)	LP	7-1/2" (190 mm)	3.70" (94 mm)	1.26" (32 mm)	3.75" (95 mm)	3 lb (1.4 kg)
5/8" (15 mm)	25	7-1/2" (190 mm)	4-15/16" (125 mm)	1-11/16" (42 mm)	4-1/4" (108 mm)	4-1/2 lb (2 kg)
5/8" x 3/4" (15 mm)		7-1/2" (190 mm)	4-15/16" (125 mm)	1-11/16" (42 mm)	4-1/4" (108 mm)	4-1/2 lb (2 kg)
3/4" (20 mm)	35	7-1/2" (190 mm)	5-1/4" (133 mm)	1-5/8" (41 mm)	5" (127 mm)	5-1/2 lb (2.5 kg)
3/4" (20 mm)		9" (229 mm)	5-1/4" (133 mm)	1-5/8" (41 mm)	5" (127 mm)	5-3/4 lb (2.6 kg)
3/4" x 1" (20 mm)		9" (229 mm)	5-1/4" (133 mm)	1-5/8" (41 mm)	5" (127 mm)	6 lb (2.7 kg)
1" (25 mm)	55	10-3/4" (273 mm)	6" (152 mm)	2-1/32" (52 mm)	6-1/4" (159 mm)	8-3/4 lb (3.9 kg)
1" (25 mm)	70	10-3/4" (273 mm)	6-1/2" (165 mm)	2-5/16" (59 mm)	7-3/4" (197 mm)	11-1/2 lb (5.2 kg)

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 10,000,000 gallons (1,000,000 ft³, 100,000 m³).

A Model 25 register is used in the following example:



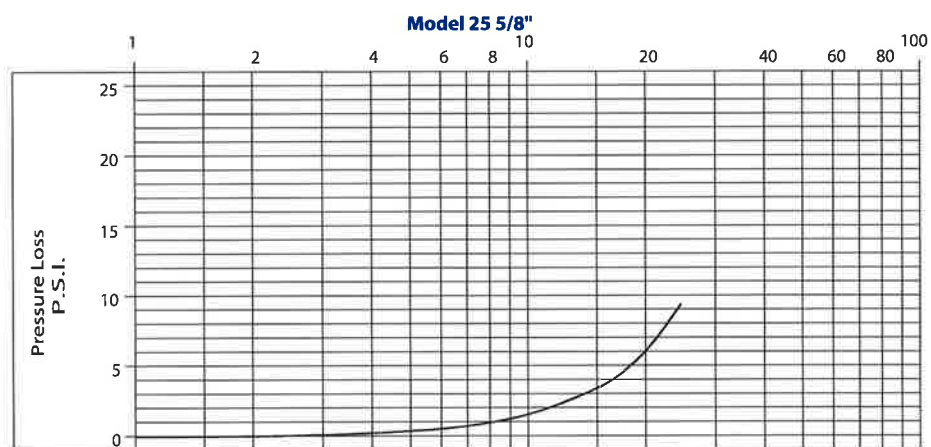
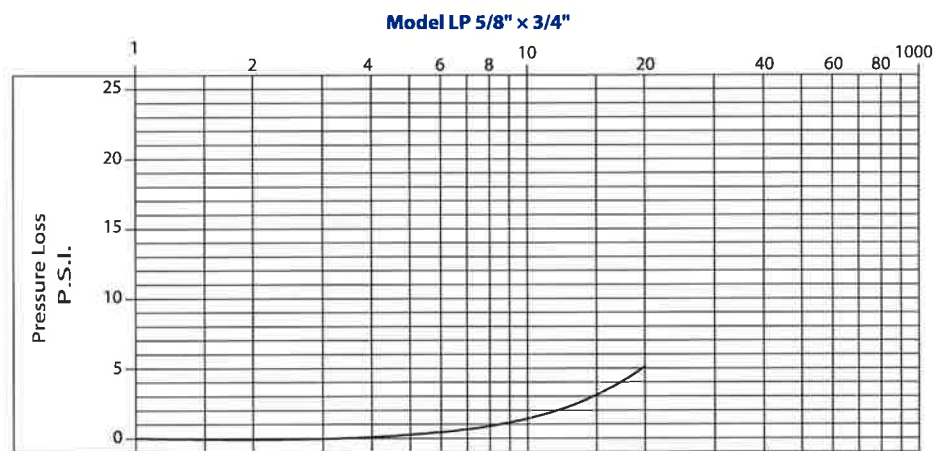
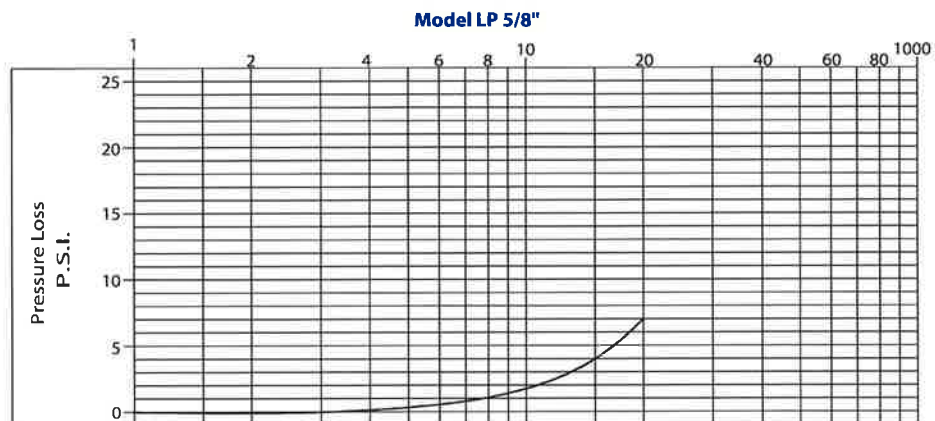
Model	Gallon	Cubic Feet	Cubic Meter
LP	10	1	0.1
25 (5/8")	10	1	0.1/0.01
25 (5/8" x 3/4")	10	1	0.1/0.01
35	10	1	0.1
55	10	1	0.1
70	10	1	0.1

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 www.badgermeter.com.

PRESSURE LOSS CHARTS

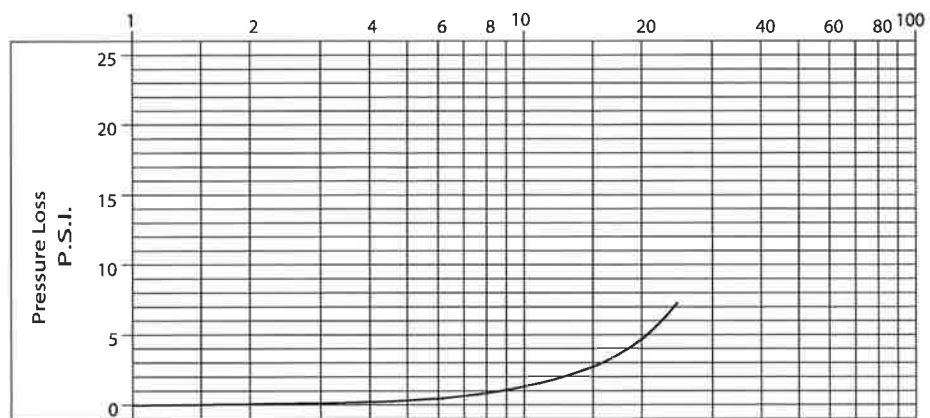
Rate of Flow in Gallons per Minute



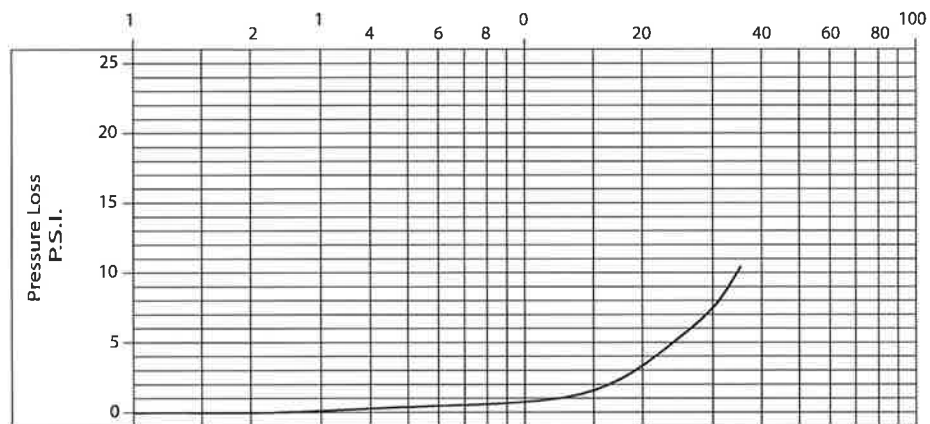
PRESSURE LOSS CHARTS (CONTINUED)

Rate of Flow in Gallons per Minute

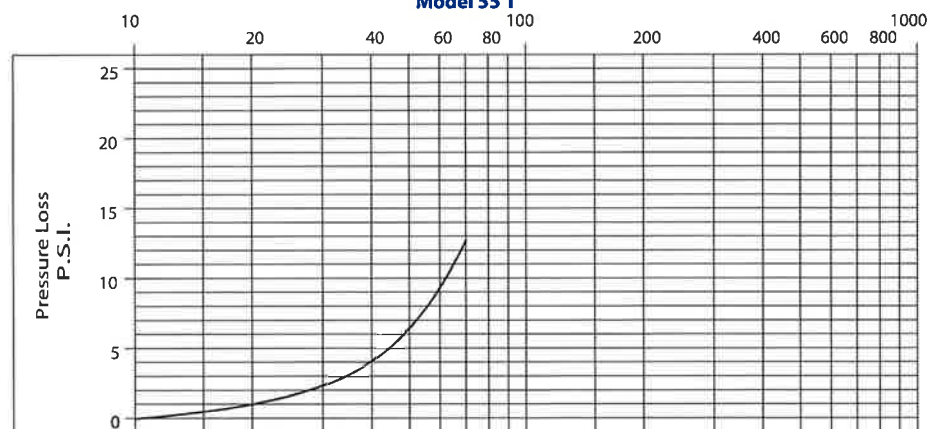
Model 25 5/8" x 3/4"



Model 35 3/4"

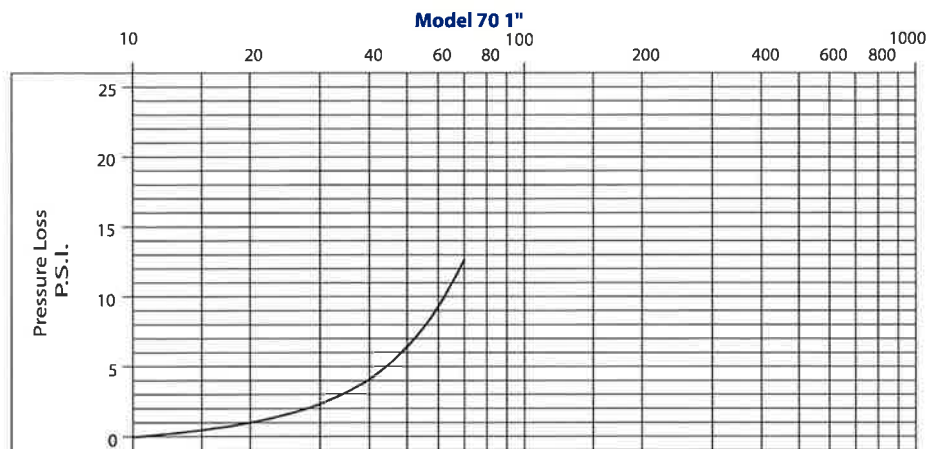


Model 55 1"

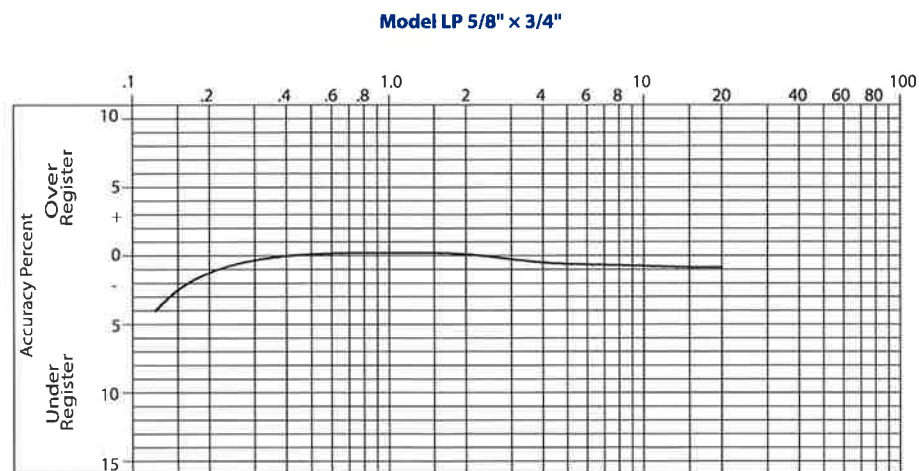
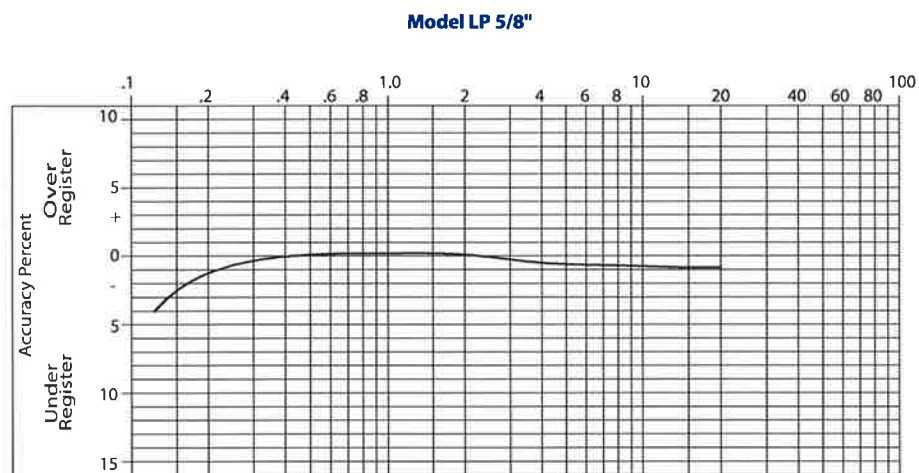


PRESSURE LOSS CHARTS (CONTINUED)

Rate of Flow in Gallons per Minute

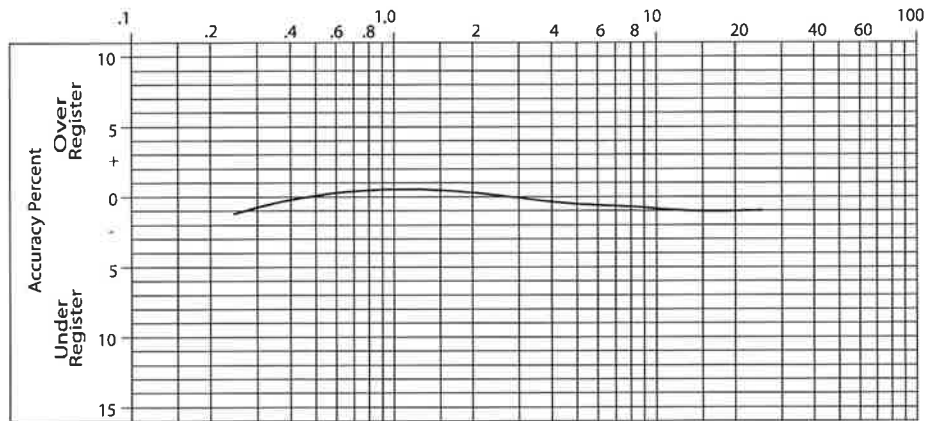


ACCURACY CHARTS

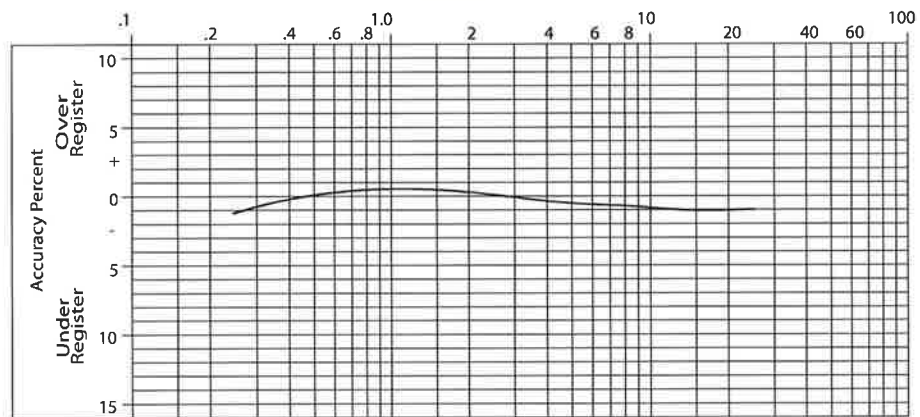


ACCURACY CHARTS (CONTINUED)

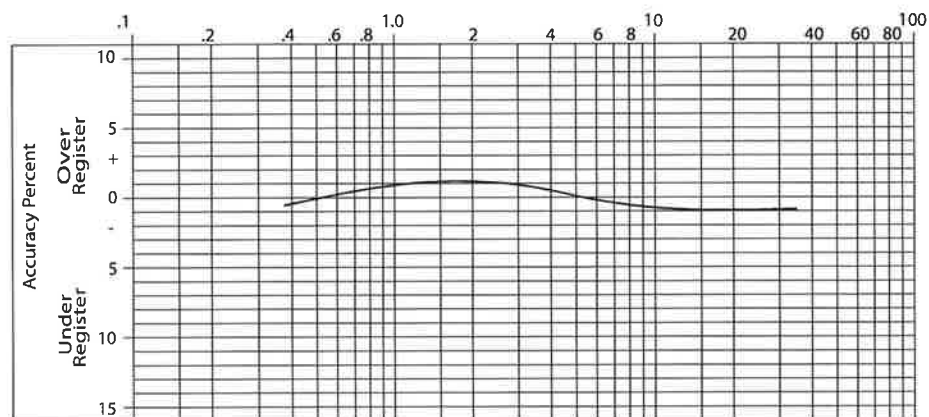
Model 25 5/8"



Model 25 5/8" x 3/4"

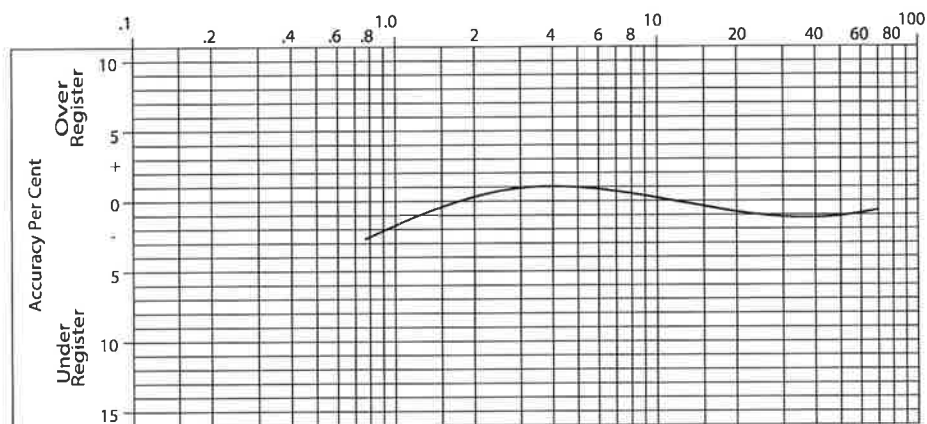


Model 35 3/4"

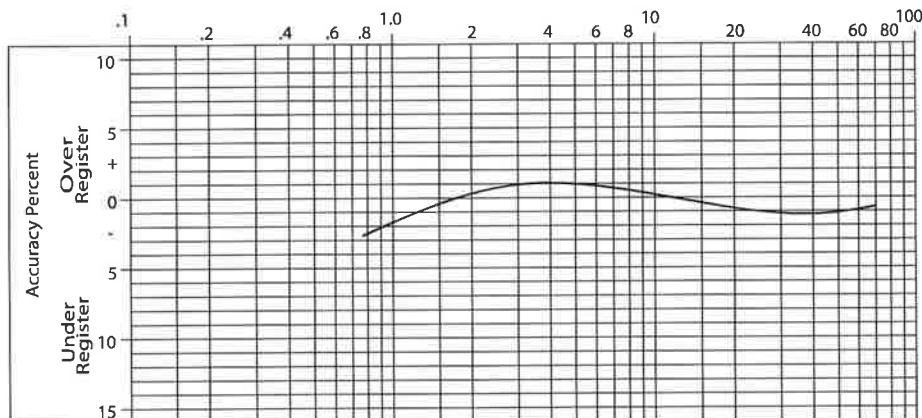


ACCURACY CHARTS (CONTINUED)

Model 55 1"



Model 70 1"



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Legacy Document Numbers: RDM-DS-00062, 63, 64, 65, 66, and 73



Badger Meter HR | E High Resolution Encoder

DESCRIPTION

Applications: The High Resolution Encoder (HR-E) is designed for use with all current Recordall® Disc, Turbo, Compound, Combo and Fire Series meters and assemblies. The HR-E provides connectivity with Badger Meter ORION® and GALAXY® AMR/AMI endpoints, BadgerTouch® modules and other AMR/AMI technology solutions approved by Badger Meter.

Electronic Resolution: Encoder output from the HR-E includes eight-dial resolution to AMR/AMI endpoints and the option of four, five, six, seven or eight-dial resolution for touch applications. Refer to tables on the next page for details.

Mounting: The HR-E in its shroud assembly uses a bayonet mount compatible with all Recordall Disc, Turbo, Compound and Fire Series meters and assemblies. The bayonet mount allows positioning of the register in any of four orientations for visual reading convenience. The HR-E can be removed from the meter without disrupting water service.

Magnetic Drive: A direct-drive, high-strength magnetic coupling, through the meter body to the wetted magnet, provides reliable and dependable register coupling.

Local Indication: The HR-E face features an eight-dial mechanical odometer wheel stack and a flow finder with a calibrated test circle.

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

Construction: The housing of the HR-E is constructed of a strengthened glass lens top and a corrosion-resistant metal bottom. Internal construction materials are thermoplastic for long life and high reliability. The encoder gearing is self-lubricating thermoplastic to minimize friction and provide long, reliable life. The shroud assembly is thermoplastic.

Temperature: The operating range of the HR-E is - 40...140° F (- 40...60° C). The water meter should not be subjected to temperatures below freezing.

Sealing: The HR-E encoder is permanently sealed to eliminate the intrusion of moisture, dirt or other contaminants. The HR-E 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 HR-E exceeds all applicable requirements of AWWA Standard C707. With leak rates less than 10-6 cc/sec, as tested by a helium mass spectrometer, the HR-E is suitable for installation in all environments, including meter pits subject to continuous submergence.

Wire Connections: The HR-E is available with an in-line connector for easy connection and installation to AMR/AMI endpoints. It is also available with a flying lead for a field splice connection or fully prewired to an AMR/AMI endpoint. A terminal screw version of the HR-E is also available. This version features a tamper-resistant cap over the three-wire terminals. The HR-E with terminal screws is



designed for indoor installations in protected environments such as residential basements.

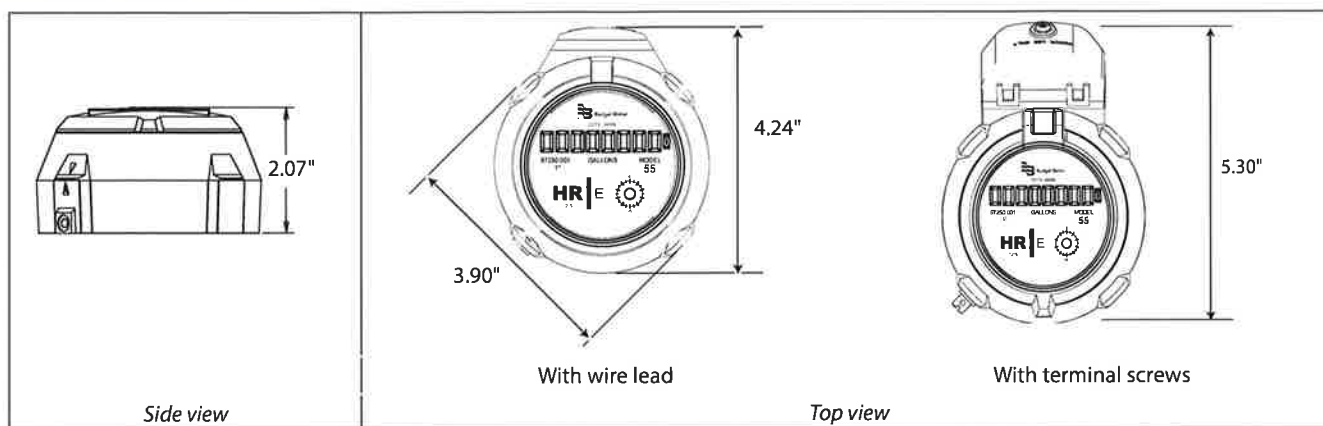
SPECIFICATIONS

Encoder Type	Straight reading, permanently sealed, magnetic drive
Unit of Measure	U.S. Gallons, Cubic Feet, Cubic Meters, clearly identified on encoder face
Number Wheels	Eight with 5/32 inch high numerals
Test Circle	360° circle with ten major increments with ten divisions each
Weight	10 ounces
Humidity	0...100% condensing when equipped with potted lead wire, 0...95% non-condensing with screw-terminal wire connections
Temperature	- 40...140° F (- 40...60° C)
Signal Output	Industry Standard ASCII Format
Visual Resolution	1/100th of Test Circle
Electronic Resolution	8-dial resolution for AMR/AMI; 4, 5, 6, 7 or 8-dial resolution for BadgerTouch
Signal Type	3-wire synchronous for AMR/AMI solutions (red=clock/power, black=ground, green=data) 2-wire asynchronous for Touch solutions
Power Source	External

Electrical: The electronic circuitry is designed to provide immunity to electrical surges and transients per IEC1000-4-2, IEC1000-4-4. Operation of the HR-E is dependent on the wire length limitations of connected AMR/AMI equipment.

Operating Characteristics: The reading obtained by an AMR/AMI device is sensed directly from the position of the encoder's odometer using internal LED light paths to determine the exact position of each number wheel. This technology eliminates electromechanical contacts that could wear out, and provides greater long-term performance.

DIMENSIONAL DRAWINGS



MEASUREMENT RESOLUTION

The minimum electronic resolution of the HR-E is as noted below (8-Dial Reading). To verify the correct resolution for your application, contact Badger Meter Customer Service.

Recordall Disc Series	Size	8-Dial Resolution (gal)	8-Dial Resolution (ft³)	8-Dial Resolution (m³)
M25/MLP	5/8"	0.1	0.01	0.001
M25/MLP	3/4"	0.1	0.01	0.001
M35	3/4"	0.1	0.01	0.001
M40	1"	0.1	0.01	0.001
M55	1"	0.1	0.01	0.001
M70	1"	0.1	0.01	0.001
M120	1-1/2"	1	0.1	0.01
M170	2"	1	0.1	0.01

Fire Service Series	8-Dial Resolution (gal)	8-Dial Resolution (ft³)	8-Dial Resolution (m³)
3"	1	0.1	0.01
4"	1	0.1	0.01
6"	10	1	0.1
8"	10	1	0.1
10"	10	1	0.1

Recordall Turbo Series	Size	8-Dial Resolution (gal)	8-Dial Resolution (ft³)	8-Dial Resolution (m³)
T160	1-1/2"	1	0.1	0.01
T200	2"	1	0.1	0.01
T450	3"	1	0.1	0.01
T1000	4"	1	0.1	0.01
T2000	6"	10	1	0.1
T3500	8"	10	1	0.1
T5500	10"	10	1	0.1
T6200	12"	100	10	0.1
T6600	16"	100	10	1
T10000	20"	100	100	1

Recordall Compound Series	Size	8-Dial Resolution (gal)	8-Dial Resolution (ft³)	8-Dial Resolution (m³)
High Side T200	2"	1	0.1	0.01
Low Side M25	2"	0.1	0.01	0.001
High Side T450	3"	1	0.1	0.01
Low Side M25	3"	0.1	0.01	0.001
High Side T1000	4"	1	0.1	0.01
Low Side M35	4"	0.1	0.01	0.001
High Side T2000	6"	10	1	0.1
Low Side M35	6"	0.1	0.01	0.001

Resolution stated as individual high and low readings.

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Badger Meter

ORION® Water Endpoints

Cellular Endpoint

DESCRIPTION

The ORION® Cellular endpoint is an innovative, two-way water endpoint that utilizes existing cellular infrastructure to efficiently and securely deliver meter reading data to the utility via the reliable cellular network.

The Cellular endpoint is a member 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: The ORION Cellular endpoint communicates with the encoder and captures readings and meter status information. At a predetermined interval, the endpoint broadcasts this data via the cellular network and the information is captured and analyzed using BEACON AMA software.

Activation: All ORION endpoints are shipped in an inactive, non-transmitting state. ORION Cellular endpoints are designed for easy activation and installation with either the smartphone installation application or Trimble® Ranger handheld.

Broadcast Mode: The ORION Cellular endpoint broadcasts fixed network reading data through the secure existing cellular network within the service area.

Data Profiling: To build data redundancy within the system, the ORION Cellular endpoint stores 120 days of hourly data for capture via two-way communication.

Output Message: The ORION Cellular endpoint broadcasts its unique serial number, current meter reading and applicable status indicators. Each message is encrypted to meet AES 256 encryption standards.



APPLICATION

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

Meter Compatibility: When attached to a Badger Meter high resolution encoder, the ORION Cellular 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® Ultrasonic and M-Series® Electromagnetic Flow meters.

Encoder Compatibility: The ORION Cellular endpoint is suitable for use with Badger Meter high resolution encoders as well as the following Badger Meter approved three-wire encoder registers that have a manufacture date of 2000 or newer, are programmed into the AMR/AMI three-wire output mode and have three-wires connected: Elster InVISION and ScanCoder® encoders and evoQ4 meter (encoder output); Hersey® Translator; Master Meter® Octave® Ultrasonic meter encoder output; Metron-Farnier Hawkeye; Neptune® ProRead, E-Coder® and ARB-V®; and Sensus® Electronic Register encoder (ECR) and ICE.

SPECIFICATIONS

Dimensions	5.125" (H) 1.75" (W) at top 2.125" (W) at bottom
Broadcast Network	CDMA cellular network
Operating Temperature Range	
Storage and Meter Reading Communications	-40...60° C (-40...140° F) -20...60° C (-4...140° F)
Humidity	0% ... 100% condensing
Battery	One (1) lithium thionyl chloride C cell (nonreplaceable)

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

FEATURES

Communication Type	Two-Way
Application Type	Control/Monitor
Reading Interval Type	Hourly
Encoder Compatibility	Absolute
Fixed Network Reading	✓
Premise Leak Detection	✓
Cut-Wire Indication	✓
Reverse Flow Indication	✓
No Usage Indication	✓
Encoder Error	✓
Low Battery Indication	✓
Remote Programming	✓
Remote Clock Synchronization	✓
Firmware Upgrades	✓

License Requirements: ORION Cellular endpoints comply with Part 15, Part 22 and Part 24 of the FCC Rules. No license is required by the utility to operate an ORION meter reading system.

Transportation: The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. The ORION Cellular endpoint is considered an operating transmitter and cannot be shipped by air.

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: The 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 Endpoints

Migratable Endpoint

DESCRIPTION

The ORION® Migratable endpoint (ME) is a two-way water endpoint for mobile applications with the capability of migrating to fixed network mode to support future utility capabilities.

In addition to providing the current and snapped daily reading, the ORION Migratable endpoint two-way functionality allows users to capture data profile information wirelessly, without having to directly access the endpoint, during the normal reading process. An ORION Migratable endpoint is easily upgraded to an ORION Fixed Network endpoint (SE) through a software license.

The Migratable endpoint is a member of the time-tested ORION family of products from Badger Meter, designed for maximum flexibility. Since 2002, the ORION product family has been providing comprehensive Advanced Metering Analytics (AMA) for interval meter reading and data capture using both one-way and two-way communications.

FUNCTIONALITY

Operation: The ORION Migratable endpoint continuously monitors the encoder circuit. At predetermined intervals, the endpoint broadcasts the totalized reading value along with other meter data to the mobile collection devices.

Activation: ORION Migratable endpoints offer a Smart Activation feature. All ORION endpoints are shipped in an inactive, non-transmitting state. After the endpoint is installed, it begins broadcasting data when the encoder senses the first usage of water. No field programming or tools are required to activate the endpoint.

Broadcast Mode: Once activated, ORION Migratable endpoints begin transmitting in mobile priority mode. After installation, using the endpoint two-way communication, an endpoint transmits its meter data every six seconds.

Data Profiling: ORION Migratable endpoints store up to 90 days of hourly historical interval meter data within nonvolatile memory.

Output Message: The endpoint broadcasts its unique serial number, current meter reading, daily snapped meter reading and applicable status indicators for mobile reading collection.



APPLICATION

Configurations: Available in integral, remote or endpoint-only configurations, the ORION Migratable endpoint can be deployed in indoor, outdoor and pit applications. The endpoint electronics and battery assembly are fully encapsulated in epoxy for environmental integrity.

Meter Compatibility: When attached to a Badger Meter encoder, the ORION Migratable 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® Ultrasonic and M-Series® Electromagnetic Flow meters.

Encoder Compatibility: The ORION Migratable endpoint is suitable for use with all Badger Meter encoders as well as the following Badger Meter approved three-wire encoder registers that have a manufacture date of 2000 or newer, are programmed into the AMR/AMI three-wire output mode and have three-wires connected: Elster C700 Digital, InVISION and ScanCoder® encoders and evoQ4 meter (encoder output); Hersey® Translator; Master Meter® Octave® Ultrasonic meter encoder output; Metron-Farnier Hawkeye; Neptune® ProRead, E-Coder® and ARB-V®; and Sensus® Electronic Register encoder (ECR) and ICE.

SPECIFICATIONS

Dimensions	5.125" (H); 1.75" (W) at top; 2.125" (W) at bottom
Broadcast Frequency MHz Band	FCC regulated 902-928 MHz frequency hopping modulation
Operating Temperature Range – Storage and Meter Reading	-40°...60° C (-40°...140° F) based on storage and meter reading. RF output may be reduced by extremely low temperatures. The water meter should not be subjected to temperatures below freezing.
Humidity	0% ... 100% condensing
Battery	One (1) lithium thionyl chloride C cell (nonreplaceable)
Battery Life	20 years (calculated)
Endpoint/Encoder or E-Series Ultrasonic Meter Assembly	Badger Meter 308 connector with 6-, 25- or 75-foot lead length
Endpoint Only	3-, 10-, 25- or 75-foot lead length prewired

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

Range: Transmission reception depends on a number of factors: topographical features, a building's construction materials and obstacles such as buildings, trees, vegetation and fences. Temporary conditions, such as a vehicle parked near the endpoint or heavy rain or snow, could also affect reception. These factors need to be considered when installing and communicating with the endpoint using a handheld or mobile reading system. For a more in-depth discussion, see the white paper, *Understanding RF Propagation of AMR/AMI Systems*, available at www.badgermeter.com.

FEATURES

Communication Type	Two-Way
Application Type	Control/Monitor
Reading Interval Type	Midnight/Now
Encoder Compatibility	Absolute/Incremental
Mobile Reading	✓
Migratable to Fixed Network	*
Premise Leak Detection	✓
Cut-Wire Indication	✓
Reverse Flow Indication (Absolute Encoder)	✓
No Usage Indication	✓
Encoder Error (Absolute Encoder)	✓
Low Battery Indication	✓
Remote Programming	✓
Remote Clock Synchronization	✓
Firmware Upgrades	✓

* Can be upgraded with migration license.

License Requirements: ORION Migratable endpoints comply with Part 15 of the FCC Rules. No license is required by the utility to operate an ORION meter reading system.

Transportation: The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. The ORION endpoint is considered an operating transmitter and cannot be shipped by air.

Caution: 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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Legacy Document Number: Excerpt from ORI-DS-00197-EN



Badger Meter ORION® Water Products

PRODUCTS

This warranty shall apply to Badger Meter ORION® series AMR/AMI water endpoints, endpoint assemblies, reading hardware and software sold on or after September 22, 2014.

ORION series AMR/AMI water endpoints include Fixed Network (SE), Migratable (ME), Classic (CE) and Classic with Data Profiling (CE). Endpoint assemblies include ORION endpoints shipped with Badger Meter HR E-LCD, HR-E, ADE®, RTR® encoders and E-Series® meters.

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, endpoint assemblies, 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.

Endpoints ¹	20 years and 6 months after shipment
Endpoint Assemblies ^{1,2}	20 years and 6 months after shipment
CE Serial Repeater	5 years and 6 months after shipment
Permalog+ Acoustic Leak Logger	3 years and 6 months after shipment
SE, SE II Network Gateway Transceiver	1 year and 6 months after shipment
CE (4.0, 2.0) Network Gateway Receiver	1 year and 6 months after shipment
Mobile Reading System	1 year and 6 months after shipment
Trimble® Ranger Handheld and Charging Cradle	1 year and 6 months after shipment
Mobile ME Transceiver Kit or CE Receiver Kit	1 year and 6 months after shipment
ReadCenter® Reading Data Management Software	1 year and 6 months after shipment

¹ Badger Meter warrants endpoints, endpoint assemblies and endpoint batteries—collectively ORION endpoint Products—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 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 endpoint Product list prices at the time of ORION 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.

² ORION endpoint is warranted per the 20-year proration shown above. Refer to the appropriate E-Series Ultrasonic Meter Warranty for meter, electronics and battery coverage.

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.

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Legacy Document Number: ORI-W-19



Badger Meter

ORION® Water Products

Meter Reading System Hardware

Thousands of utilities across North America are currently deploying Badger Meter technology solutions. An investment in the ORION® meter reading system provides your utility with the tools to increase efficiency and meter reading accuracy, improve your ability to provide customer service to the end water user, and to manage and conserve resources.

To maximize the return on your investment and the benefits received through the ORION meter reading system, Badger Meter is pleased to provide your utility with the ORION Meter Reading System Hardware Maintenance Support Program. The program was designed specifically for our utility customers to extend coverage for the ORION meter reading system hardware components. Whether you need assistance with the day-to-day operation of the reading hardware, obtaining software updates or troubleshooting and diagnosing an operating problem, the ORION Meter Reading System Hardware Maintenance Support Program provides peace of mind, knowing that our technical support professionals are ready to answer your questions to help keep your system up and running.

PROGRAM BENEFITS

- Reduction of unexpected system downtime through access to loaner equipment and online software updates.
- Improved productivity with 24-hour availability of Badger Meter technical support professionals.
- Maximized utility revenue through tools that promote timely operation and billing.
- Peace of mind knowing you are getting the maximum return on your ORION meter reading system investment.

MAINTENANCE SUPPORT PROGRAM

The ORION Meter Reading System Hardware Maintenance Support Program has been designed to provide utilities with added protection for their investment in ORION hardware for up to four additional years after the expiration of the initial product warranty. The Program includes all parts and repairs—with the exception of accessory products including batteries, antennas, communication cables, deliberate or malicious customer damage and lost or stolen hardware—for the ORION Mobile Reading System, ORION network gateway transceiver, ORION gateway receiver and the Trimble® Ranger handheld.

The customer shall be responsible for all direct and indirect costs associated with removing the product and reinstalling the repaired or replacement product.

The ORION Meter Reading System Hardware Maintenance Support Program includes unlimited software updates, evaluation and testing of reading equipment, priority access to loaner equipment support during repair process, and unlimited access to the Badger Meter 24-hour technical support hotline. In addition, a ten percent discount is available on all WebEx® and on-site hardware training upon request. Second-day return shipment of equipment back to utilities in the U.S. is included.

Please contact your Badger Meter Account Manager or Distributor Sales Representative for ORION Meter Reading Hardware Maintenance Support Program Pricing.

NON-PROGRAM PRICE SCHEDULE

Utilities electing not to participate in the ORION Meter Reading System Hardware Maintenance Support Program are able to receive equipment repairs on a time, material and shipping cost basis, software upgrades, loaner equipment (if available), technical support and WebEx-based training according to the following Non-Program Price Schedule:

Loaner Handheld Equipment	\$500 minimum charge, which includes ten days of use \$30 per day after the initial ten-day term
Loaner Mobile Reading System Equipment	\$2,000 minimum charge, which includes ten days of use \$125 per day after the initial ten-day term
Technical Support / WebEx Training Per Incident	\$250 minimum charge, includes the first hour of online assistance \$150 each additional hour
Trimble Ranger Software Upgrades	\$2,500 per Trimble Ranger
ORION Mobile Reading Software Upgrade, US Census Bureau Mapping	\$9,000 per ORION Mobile Reading System, with up to 25,000 services
ORION Mobile Reading Software Upgrade, NAVTEQ Mapping	\$11,410 per ORION Mobile Reading System, with up to 25,000 services

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Legacy Document Number: ORI-W-18-EN



Badger Meter

BEACON AMA Managed Solution

Water Endpoints

PRODUCTS

This warranty shall apply to Badger Meter BEACON AMA water endpoints sold on or after September 11, 2014.

BEACON AMA water endpoints include ORION® series AMI Cellular and Fixed Network water endpoints configured and deployed as part of the Badger Meter BEACON AMA managed solution.

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 BEACON AMA water endpoints, hereafter referred to as "Product(s)," to be free from defects in material and workmanship for ten (10) years and six (6) months after shipment.

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.

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Badger Meter

HR-E

High Resolution Encoder

PRODUCTS COVERED

This Badger Meter warranty shall apply to the High Resolution Encoder (HR-E) ("Product"), sold on or after June 3, 2014. 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 the Product to be free from defects in materials and workmanship appearing within ten (10) years 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. 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 Badger Meter instructions. 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 literature or which have been subject to 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.

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**General Pacific**

WATER UTILITY SALES

Serving utilities since 1965

**Kittitas County
Public Health
Customer
METER ORDER**

PO Box 70 Fairview, OR 97024
22414 NE Townsend Way Fairview, OR 97024
Phone 503-907-2900 Fax 503-489-2103
sales@genpacwater.com

Date: _____

TO [Name] _____
[Company Name] _____
[Street Address] _____
[City, ST ZIP Code] _____
[Phone] _____
Email: _____

Special shipping instructions:

QTY	ITEM #	DESCRIPTION		UNIT QTY	UNIT PRICE	LINE TOTAL
	M25-X-1C61-G-70-308	Badger M25 5/8" x 3/4" Meter, HRE Register, USG, 7 1/2" lay length, Cast Iron Bottom, 61 Bronze Body, 308 Inline connector		EACH	104.00	
	ORION CELL	ORION Cellular Endpoint, 308 Inline connector		EACH	95.00	
	ORION ME	ORION ME Mobile Endpoint, 308 inline connector		EACH	95.00	
		*Note- only order 1 model of the ORION Endpoint				
SUBTOTAL						
SALES TAX						
TOTAL						

PAY BY: CHECK OR CREDIT CARD

CARD TYPE: _____

NUMBER: _____

EXPIRATION DATE: _____

PHONE IN ORDERS: CONTACT JASON VANCEAVE
503-907-2900 OR 800-547-9744 EXT. 640

MAKE CHECKS PAYABLE TO: GENERAL PACIFIC, INC.**THANK YOU FOR YOUR BUSINESS!**

BEACON® AMA Training Agendas

Note: This is a proposed agenda, Utility schedules and processes, number of people attending the training and experience of trainees may require adjustments to the scheduled times. Please contact the Badger Meter Training Coordinator or assigned Trainer with questions.

BEACON INTRO Part One - Takes place shortly after endpoints are shipped/received

Times	Subject	Notes	Suggested Attendees	Possible Other Attendees
20 min	Overview of ORION® Cellular (SE if applicable)	General explanation of how the endpoints function and interact with the BEACON software	Billing Clerks, Customer Service, Managers, Meter Readers & Installers	
20 min	Installation of Endpoints	<ul style="list-style-type: none"> ORION® Cellular Endpoints ORION® SE Endpoints 	Meter Readers & Installers	Billing Clerks, Customer Service, Managers
15 min	Users	Creating and Managing new Staff users	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
15 min	Endpoints	<ul style="list-style-type: none"> Available Pre-provisioned Provisioned Additional statuses 	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
30 min	Provisioning Endpoints	<ul style="list-style-type: none"> Account ID Location ID Meter ID 	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
10 min	Other Assets Features	<ul style="list-style-type: none"> Gateways Update 	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
10 min	Review & Questions		Billing Clerks, Customer Service, Managers	Meter Readers & Installers
Day One Ends		Total training time 2 hrs.		

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BEACON INTRO Part Two - Take place after all endpoints are installed/provisioned and have collected at least a few days of data. One week minimum is preferred.

Times	Subject	Notes	Suggested Attendees	Possible Other Attendees
30 min	At A Glance	All Modules Covered: <ul style="list-style-type: none"> • Flow health • Endpoint Health • Favorites • Gateway Health • Tech Support • System Water Usage • Top Accounts • What's new 	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
45 min	Monitor	All Sections Covered: <ul style="list-style-type: none"> • Facets Filter/Search • Water usage Graph • Results/Cards <ul style="list-style-type: none"> ○ Notes ○ Tags ○ Alerts ○ More 	Billing Clerks, Customer Service, Managers, Meter Readers & Installers	
15 min	Getting Reads to Billing	Export Results to File	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
15 min	EyeOnWater	<ul style="list-style-type: none"> • Inviting your customers to set up an account • Users - Customers • What does your customer see 	Billing Clerks, Customer Service, Managers	Meter Readers & Installers
15 min	Questions & Review		Billing Clerks, Customer Service, Managers	Meter Readers & Installers
Day Two Ends		Total training time 2 hrs.		