

Electric.  
Water.  
Gas.

**One Signal Reads Them All.**



technology delivered.  
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# E l e c t r i c , W a t e r

## E l e c t r i c - T u r t l e<sup>®</sup> A M R S y s t e m

The Power Line Carrier (PLC) technology that has proven so successful in reading electric meters is now able to deliver water and gas meter readings as well. Hunt Technologies' two-way Turtle system now accommodates multi-utility applications. Water and gas meters equipped with Badger Meter's ORION AMR (Automatic Meter Reading) transmitters are monitored by the Turtle endpoint transceiver located in the electric meter. The electric, water, and gas data are transmitted daily to the utility office via Hunt Technologies' patented ultra narrowband PLC system. Utilities can take advantage of this fixed network communication system to gather readings from all service types over a communication channel that is as reliable as the power distribution system.

### **FIXED NETWORK ADVANTAGES:**

Now there's no need to go out and get meter readings - they come to you, daily. No more sending meter readers out into harsh or dangerous environments. Meter data collection is automatic.

- Constant communication provides tamper detection for gas and water, leak detection for water, and outage and restoration detection for electric.
- Requests can be made to the endpoint for coincident system data, allowing the utility to gather peak readings for use in line loss and leak analysis.

### **DAILY DATA ADVANTAGES**

Daily usage data is available from each service type and affords the utility a host of cost saving benefits.

- Data available to support off-cycle reads. No more estimating bills for move-ins and move-outs.
- Billing cycles are more flexible and can be more frequent. This improves cash flow and makes optimal use of Customer Support resources.
- Historical usage data are available to Customer Support to help in resolution of billing issues.
- Daily data can be used to monitor compliance with water use restrictions during periods of shortage.

## W a t e r - O R I O N<sup>®</sup> W a t e r A M R M o d u l e s

ORION is Badger Meter's latest radio frequency (RF) meter reading system for water and gas utilities. ORION was developed to meet the needs of utilities of all sizes.

### **WIDE RANGE OF APPLICATIONS**

Badger has combined the latest advances in RF transmission, antenna technology, and receiver tuning in the ORION system. Through the use of standard system protocols and interfaces, ORION can easily connect to all Badger<sup>®</sup> meters as well as most other encoder registers used in the water industry.

### **PACKAGING CHOICES**

ORION water transmitters are available in three package configurations:

- Integral-mount, for the ultimate in ease of installation and tamper-resistant design
- Remote-mount, for best RF performance in challenging locations
- Pit-mount, suitable for prolonged submersion, either below or through the pit lid

### **NO FCC LICENSE REQUIRED**

ORION transmitters operate at a frequency in the 902-928 MHz band, which means that no FCC license is required. Transmitters automatically send meter data at predetermined periods, so no "wake-up" signal is required.

### **LEAK DETECTION ENHANCES CUSTOMER SERVICE**

All ORION transmitters feature sophisticated leak detection algorithms. Utilities can notify consumers if a suspected leakage is found at their property.

# & G a s .

## ORION® WATER METER MONITOR

To help consumers become more knowledgeable about their water consumption and to help utilities in their conservation efforts, the ORION Water Meter Monitor allows consumers to easily monitor their water usage, so they can observe their water use and compare to conservation goals. This permits both utilities and consumers to make conscious efforts in managing water consumption.

The ORION Water Meter Monitor is a remote receiver and display that allows consumers to monitor the use of water during two separate consumer-defined time intervals. For example, one interval could be the current month or billing cycle, the other might be one day in which a lawn is being watered. The unit also displays the current reading of the consumer's water meter.

- Monitor can be located generally anywhere indoors
- Simple to use push button controls
- Optional leak detection alert
- Uses standard 9V replaceable battery

## G a s - ORION® Gas AMR Modules

Based on the design of the highly successful ORION Water AMR Module, the ORION Gas Module is a totally integrated unit compatible with popular residential gas meters.

### EASY INSTALLATION

The ORION module is easy to mount directly on the gas meter using a custom adapter plate that fits between the meter and index. It has an unobtrusive profile, and uses a durable thermoplastic housing. For long-term reliability, the electronics and battery are completely encapsulated to protect them from the elements. During installation, the ORION module is programmed with the current gas meter reading, so that account history is maintained. The ORION module encodes the gas meter reading, meter identification number, and tamper information.

### COMPATIBLE GAS METERS

The integral ORION module is compatible with:

- American® Models AL-175/250/425
- Sensus® Models R-175/200/250/275 (11 tooth)
- Actaris® Models 175/250/400

For all other aluminum body gas meters with plastic index covers, the Gas RT and the ORION remote transmitter module are available.

### SAFETY

Meets industry Class 1 Division 1 intrinsic safety requirements.

### ENVIRONMENTAL

Suitable for indoor and outdoor applications. Functional temperature range from -20°C to +60°C.



## COMMAND CENTER™ SOFTWARE

The Command Center™ software application is designed to manage the solution provided by Hunt Technologies. Built on a component-based architecture using Microsoft's .NET, this state-of-the-art browser-based application has quickly emerged as a prominent tool within the utility markets.

System Alerts	
Unexpected Electric Usage	0
Usage Monitoring Group	0
Meters with Leak Detection	1
Meters with Tamper Detection	5
Meters with Stale RF Readings	0
Unverified Meters	3

### SYSTEM ALERTS NUGGET FROM THE DASHBOARD

The System Alerts nugget pushes indication of suspected water leakage, tamper detection and stale readings to the user each time water readings are processed. This can be as frequently as daily.

### SUSPECT METERS REPORT

The Suspect Meters Report gives detailed information regarding suspected water leakage, tamper detection and stale readings and allows the user to add or remove suspect meters to/from user defined status groups. This allows the user to categorize meters for such things as "follow up needed" or "service order issued."

**Tamper Detected Meters**

*i* A Tamper Detect occurs when the transmitter cable is shorted or opened, and is a latching flag. It can only be reset when a technician visits the site to correct the tamper condition and reset the flag. This screen shows all the Multi-Utility devices that have detected a tamper condition.

Multi Utility meters with Tamper Detection						
Meter #	Type	Service Location	Transmitter Serial Number	Last Reading Date	Detected Date	Days in Status
10-1	Water Meter	10	54252	09/07/2004	08/14/2004	25
10-2	Water Meter	10	54574	09/07/2004	08/03/2004	36
MU54579	Water Meter	mut3	54579	09/07/2004	09/03/2004	5
MU54579	Water Meter	mut4	54579	09/07/2004	09/03/2004	5
MU54587	Water Meter	mut5	54587	09/07/2004	09/03/2004	5

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### WATER USAGE REPORT

The Usage Report for Water provides total usage in gallons for each period a reading is taken. This can be as frequently as daily.

### BILLING EXTRACT

The software is seeded with the format needed for import to the Badger CONNECT software. This prevents the user from having to learn and create the format on their own. Water readings are extracted separately from electric meters.

**Data Extract Setup**

Available Extract Items (Water)	Selected Items
<input checked="" type="checkbox"/> Reading	Serial Number
<input checked="" type="checkbox"/> Serial Number	Reading Date
<input checked="" type="checkbox"/> Tamper Flag	Reading
<input checked="" type="checkbox"/> Leak Flag	Tamper Flag
<input type="checkbox"/> Customer/Reading Information	Leak Flag
<input checked="" type="checkbox"/> Reading Date <input type="checkbox"/> Reading Time <input type="checkbox"/> Meter Number <input type="checkbox"/> Customer ID <input type="checkbox"/> Endpoint S/N <input type="checkbox"/> Service Location ID <input type="checkbox"/> Account Number	

Options: Custom format

Extract template name\*:



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