



**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 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 ORION 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 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:** The 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, the 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:** The 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 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 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 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; Mueller Systems 420 Solid State Register (SSR) LCD; Neptune® ProRead, E-Coder® and ARB-V®; and Sensus® Electronic Register encoder (ECR) and ICE.

## SPECIFICATIONS

<b>Dimensions</b>	5.125 in. (H); 1.75 in. (W) at top; 2.125 in. (W) at bottom
<b>Broadcast Frequency MHz Band</b>	FCC regulated 902...928 MHz frequency hopping modulation
<b>Operating Temperature Range</b>	-40...60° C (-40...140° F) based on storage and meter reading.
<b>Storage and Meter Reading</b>	RF output may be reduced by extremely low temperatures. The water meter should not be subjected to temperatures below freezing.
<b>Humidity</b>	0...100% condensing
<b>Battery</b>	One (1) lithium thionyl chloride C cell (nonreplaceable)
<b>Battery Life</b>	20 years (calculated)

**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.

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

**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](http://www.badgermeter.com).

## FEATURES

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

\* 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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