Badger Meter

HR-E® High Resolution Encoder

INTRODUCTION

Product Inspection and Unpacking

Upon opening the shipping container, visually inspect the product and applicable accessories for any physical damage such as scratches, loose or broken parts, or any other sign of damage that may have occurred during shipment.

NOTE: If damage is found, request an inspection by the carrier's agent within 48 hours of delivery and file a claim with the carrier. A claim for equipment damage in transit is the sole responsibility of the purchaser.

License Requirements

This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Any changes made by the user not approved by Badger Meter can void the user's authority to operate the equipment. No license is required by the utility to operate an HR-E meter reading system.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

PRODUCT OVERVIEW

Description

The HR-E high resolution encoder is a fully potted, eight-wheel absolute encoder. The encoder with glass lens is available factory pre-wired to Badger Meter AMR/AMI products, or may be spliced to other devices following the instructions. This version is permanently sealed to eliminate the intrusion of moisture, dirt, or other contaminants, and is suitable for installation in all environments, including meter pits subject to continuous submergence.

The encoder with terminal screws features the same permanent sealing of the register's internal elements, but does not provide a moisture resistant enclosure. Therefore, it is suitable for indoor installation in a dry environment only, and is marked as such on the terminal screw cover.

Compatibility

The encoder is designed for use with all current Badger Meter Recordall® Disc, Turbo Series, Compound Series, Combo Series and Fire Service meters and assemblies. Each HR-E is clearly identified on the face of the dial with an assembly number, unit of measure and meter model. 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.

CONNECTING AN ENCODER TO AN ENDPOINT

⚠CAUTION

THE HR-E HIGH RESOLUTION ENCODER SHOULD ONLY BE CONNECTED TO A PRODUCT APPROVED BY BADGER METER. CONNECTION TO AN UNAPPROVED PRODUCT WILL VOID THE WARRANTY.

Badger Meter encoders have a factory installed three-conductor cable (brown) for connection to the endpoint. If the wire is cut or broken and requires a field splice after the initial installation, connect like-color wires to maintain proper installation. Badger Meter wiring standards use the black wire as the negative (–) conductor and the red as the positive (+) conductor.

Before proceeding with the installation, be certain that the meter type and size correspond, and that the proper encoder configuration has been supplied for the application.

Wire Connections

The encoder 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 field splice connection, or fully prewired to an AMR/AMI endpoint.

Splicing Considerations

Splice connections made in pit environments require a pit field splice kit (62084-001), which can be ordered separately. See the *Field Splice Kit Installation Instructions* available on our website.

ORION endpoints shipped factory pre-wired to a Badger Meter encoder require no splicing. All you do is mount the encoder to the meter and tighten the seal screw.

HR-E WITH TERMINAL SCREWS

The HR-E with terminal screws features the same permanent sealing of the encoder's internal elements, but does not provide a moisture resistant enclosure. Therefore, the HR-E with optional terminal screw is suitable for indoor installation in a dry environment only, and is marked as such on the terminal screw cover.

The terminal screws are identified by the letters "R", "B", and "G" (standing for Red, Black and Green) molded into the screw cavity.

1. Strip approximately 1-1/2 inch of outer insulation sheath from the endpoint wire, or other supplied wire, using a coax stripping tool. Take care not to damage the inner wire insulation.
2. Unwind the outer foil shield from the cable and cut it off even with the outer sheath using the wire cutting pliers.
3. Cut the uninsulated shield drain wire even with the outer sheath.
4. Strip approximately 1/2 inch of insulation from the inner wires using the wire stripper.
5. Use a screwdriver to loosen the encoder terminal screws sufficiently to allow the bare wire ends to fit below the screw heads.
6. Bend the bare wire ends into hook shapes that will closely fit around the shafts of the terminal screws, and hold the hooks around the screw shafts while tightening the screws with the screwdriver. Do not overtighten screws. The hooks should be oriented with the openings to the right, so that tightening the screws (by turning to the right) will tend to draw the wire closer to the screw.
7. Place a plastic cable tie approximately 1/4 inch from the end of the outer insulation sheath. Tighten securely for strain relief. Remove excess cable tie.
8. Make sure that the cable exits the terminal screw cavity via the opening on the right side of the cavity wall and that cable tie resides on the interior of terminal cover.
9. Place the cover over the terminal screw cavity and secure by tightening the seal screw.

TESTING

After all connections are complete, test the entire installation including the encoder, the wiring and the endpoint for proper operation in accordance with the instructions supplied with the endpoint.

INSTALLING THE HR-E

Bayonet Mount

The bayonet mount positions the encoder in any of four orientations for visual reading convenience. The encoder can be removed from the meter without disrupting water service.

Install the encoder on the water meter and secure it using the tamper-proof screw provided.

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

Making Water Visible®

www.badgermeter.com

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