



NEPTUNE
TECHNOLOGY GROUP

ARB UTILITY MANAGEMENT SYSTEMS

WATER | ELECTRIC | GAS

E-Coder)R900i Quick Install Guide



E-Coder)R900i QUICK INSTALL GUIDE

1 Safety & Preliminary Checks

- Verify that you are at the location specified on the Site Work Order.
- Verify that the site is safe for you and your equipment.
- Notify the customer of your presence, and tell the customer that you must have access to the water meter.
- Confirm and/or update the MIU ID number on the Site Work Order.



When installing meters, follow any guidelines issued by your company in addition to those given in this guide. Never perform an installation during a lightning storm or under excessively wet conditions.

2 Inside Site Selection

E-Coder)R900i Inside Version

- The selected location must be clear of all obstructions.
- Avoid installing the MIU behind metal objects or in direct contact with electrical conduits.

3 Installing E-Coder)R900i Inside Version

New Meter Installation – Inside Version



For greater detailed information and installation instructions, refer to the *E-Coder)R900i Installation and Maintenance Guide* (Part # 12560-002)

- 1 The service line must be flushed prior to meter installation in order to remove debris in the line.
- 2 Place an electrical grounding strap on service line, connecting inlet and outlet service lines on either side of meter setting.



Suitable inlet and outlet meter valves and couplings/setters must be installed if they are not already present. Appropriate space must be allowed in the line for the E-Coder)R900i meter laying length and two couple gaskets. The pipe ends must be sufficiently aligned so that the coupling and E-Coder)R900i meter threads can engage without binding or cross-threading.

- 3 Before installing the E-Coder)R900*i* meter, remove the thread protectors and spud caps. Be sure that no debris enters the meter during installation.
- 4 Place the coupling gaskets inside the coupling nuts, and set the E-Coder)R900*i* meter in the line. The E-Coder)R900*i* meter should be in the horizontal position with the register dial facing upward. The direction of flow marked on the meter must agree with the direction of water flow.
- 5 Start the coupling nuts by hand then use a wrench and tighten sufficiently to prevent leakage. Be careful not to cross-thread the connections.
- 6 Open the E-Coder)R900*i* meter outlet valve slowly. Open a downstream faucet, and run enough water to dissipate entrained air and flush the line. While the faucet is open, check to see if the E-Coder)R900*i* meter is operating correctly.
- 7 Turn off the faucet, and check the E-Coder)R900*i* meter installation for leaks.
- 8 To activate the LCD and begin the MIU transmissions, use a small flashlight to activate the light sensor. The light sensor is recessed under a small hole near the center of the faceplate.



The small hole is denoted on the faceplate by a flashlight symbol.

- 9 Test the installation as described in “Testing the E-Coder)R900*i* Inside Installation” on page 4.

Retrofit Meter Installation

- 1 Use a punch/screwdriver and hammer to punch out the tamperproof seal pin on the existing register head.
- 2 Remove the existing register by twisting counter-clockwise.
- 3 Install the new E-Coder)R900*i* register head onto the meter body in the desired orientation by twisting clockwise.
- 4 Test the installation as described in “Testing the E-Coder)R900*i* Inside Installation” on page 4.
- 5 Snap the new tamperproof seal pin to secure the register to the meter body.

4 Testing the E-Coder)R900i Inside Installation

After the MIU has been installed, follow these steps to verify that the MIU is working properly.

- 1 Power up the handheld unit (HHU) test device to start the testing program provided.



To avoid RF signal saturation of the HHU, position the receiver at least 2 to 3 feet from the MIU. In a densely saturated area, removing the antenna from the handheld can assist with readings.

- 2 When the E-Coder)R900i is installed correctly, its MIU ID# and a meter reading appears on the HHU's display within one minute. Verify that this is the correct meter reading by comparing it to the meter's dial.

Note: A register reading of 8 digits will be returned.

- 3 If a meter reading does not appear on the HHU's display or the meter reading in the HHU's display is not the same as the reading on the meter's dial:
 - Reactivate the MIU by using a flashlight to activate the photo sensor light.
 - Verify the battery is connected.
 - Test the installation again (repeat steps 1 and 2).



The light sensor is located under a small recess near the center of the dial plate. This recess is denoted by a flashlight symbol on the dial plate.

5 Completing the E-Coder)R900i Inside Installation

- 1 Read the MIU one more time before leaving the site to ensure MIU is transmitting.
- 2 Make sure the appropriate ID# on the MIU has been assigned to the meter setting.



All tags are provided to aid in the elimination of transcription errors.

6 Replacing the E-Coder)R900i Inside Version Battery

Removing the Battery Assembly

- 1 Remove the tamper nail by using a small flatblade screwdriver and hammer. The blade of the screwdriver needs to be 1/8" to 3/16" wide.
- 2 Place the end of the screwdriver in the center of the tamper nail as shown in Figure 1.



Figure 1 Screwdriver in Tamper Nail

- 3 Use the hammer to drive the screwdriver through the head of the tamper nail. The head of the tamper nail will shear off and the body of the tamper nail will fall out underneath the battery.
- 4 Pull up on the battery housing to unsnap the battery.
- 5 Slide the battery pack up over the antenna shaft.



Figure 2 Sliding Battery over Antenna

- 6 Snap in the new battery by sliding it down over the antenna (see Figure 2). Press down on the battery housing until you hear the snaps engage.

- 7 Push in a new tamper nail (see Figure 3) until it snaps in place. Use of a hammer or other device may be necessary to force the tamper nail into position.



Figure 3 Pushing in New Tamper Nail

- 8 Reactivate the E-Coder)R900i as described in Step 3 on page 4. For help on how to position and activate the MIU, refer to Step 8 on page 3.

7 Installing E-Coder)R900i Pit Version

New Meter Installation –Pit Version



For greater detailed information and installation instructions, refer to the *E-Coder)R900i Installation and Maintenance Guide* (Part # 12560-002).

- 1 The service line must be flushed prior to meter installation in order to remove debris in the line.
- 2 Place an electrical grounding strap on service line, connecting inlet and outlet service lines on either side of meter setting.



Suitable inlet and outlet meter valves and couplings/setters must be installed if they are not already present. Appropriate space must be allowed in the line for the E-Coder)R900i pit meter laying length and two couple gaskets. The pipe ends must be sufficiently aligned so that the coupling and E-Coder)R900i pit meter threads can engage without binding or cross-threading.

- 3 Before installing the E-Coder)R900i pit meter, remove the thread protectors and spud caps. Be sure that no debris enters the meter during installation.
- 4 Place the coupling gaskets inside the coupling nuts and set the E-Coder)R900i meter in the line. The E-Coder)R900i meter should be in the horizontal position with the register dial facing upward. The direction of flow marked on the meter must agree with the direction of water flow.
- 5 Start the coupling nuts by hand, then use a wrench and tighten sufficiently to prevent leakage. Be careful not to cross-thread the connections.
- 6 Open the E-Coder)R900i meter outlet valve slowly. Open a downstream faucet and run enough water to dissipate entrained air and flush the line. While the faucet is open, check to see if the E-Coder)R900i meter is operating correctly.
- 7 Turn off the faucet and check the E-Coder)R900i meter installation for leaks.
- 8 To activate the LCD and begin the MIU transmissions, use a small flashlight to activate the light sensor. The

light sensor is recessed under a small hole near the center of the faceplate.



The small hole is denoted on the faceplate by a flashlight symbol.

- 9 Test the installation as described in “Testing the E-Coder)R900*i* Pit Installation.”

Retrofit Meter Installation

- 1 Use a punch/screwdriver and hammer to punch out the tamperproof seal pin on the existing register head.
- 2 Remove the existing register by twisting counter-clockwise.
- 3 Install the new E-Coder)R900*i* register head onto the meter body in the desired orientation by twisting clockwise.
- 4 Test the installation as described in “Testing the E-Coder)R900*i* Pit Installation.”
- 5 Snap the new tamperproof seal pin to secure the register to the meter body.

8 Testing the E-Coder)R900*i* Pit Installation

After the MIU has been installed, follow these steps to verify that the MIU is working properly.

- 1 Power up the handheld unit (HHU) test device to start the testing program provided.



To avoid RF signal saturation of the HHU, position the receiver at least 2 to 3 feet from the MIU. In a densely saturated area, removing the antenna from the handheld can assist with readings.

- 2 When the E-Coder)R900*i* is installed correctly, its MIU ID# and a meter-reading appears on the HHU's display within one minute. Verify that this is the correct meter reading by comparing it to the meter's dial.

Note: A register reading of 8 digits will be returned.

- 3 If a meter reading does not appear on the HHU's display or the meter reading in the HHU's display is not the same as the reading on the meter's dial:

- Reactivate the MIU by using a flashlight to activate the photo sensor light.
- Verify the battery is connected.
- Test the installation again (repeat steps 1 and 2).



The light sensor is located under a small recess near the center of the dial plate. This recess is denoted by a flashlight symbol on the dial plate.

9 Completing the E-Coder)R900i Pit Installation

- 1 Read the MIU one more time before leaving the site to ensure MIU is transmitting.
- 2 Make sure the appropriate ID# on the MIU has been assigned to the meter setting.



All tags are provided to aid in the elimination of transcription errors.

10 Replacing the E-Coder)R900i Pit Version Battery

Removing the Battery Assembly:

- 1 Remove the tamper seal pin by using a hammer and a screwdriver or a spring-loaded punch to drive out the seal pin located in the tab at the bottom of the battery pack and register.
- 2 Place the end of the screwdriver or punch in the center of the seal pin as shown in Figure 4.



Figure 4 Screwdriver in Seal Pin

- 3 Use the hammer or punch to drive out the seal pin. The head of the seal pin will shear off and the body of the seal pin will be underneath the register.



Figure 5 Removing Battery from Hinges

- 4 Pull up on the battery housing to remove the battery from hinges located on the register as shown in Figure 5.

- 5 As close to the battery housing as possible, cut the battery wires one at a time. See Figure 6.



Figure 6 Cutting the Battery Wires



Figure 7 Using Scotchlok to Splice Wires

- 6 Use Scotchlok™ to splice the wires from the new battery casing to the wires that were connected to the old battery casing. See Figure 7.

- 7 Place the scotchloks in the small compartments on each side of the register hinges.
- 8 Attach new battery pack to hinges and swing down into position. Be careful not to pinch any wires during this procedure.
- 9 Push in new register seal pin until it snaps.

11 Upgrading the E-Coder)R900i Antenna

- 1 Remove the pit lid from the pit box.



The existing pit lid will require a 1¾" diameter hole to be drilled or cut into the lid or the pit lid will have to be replaced w/ a lid that contains a hole.

- 2 Unscrew the connector nut from the top of the connector housing on the existing whip antenna.
- 3 Remove the connector housing by turning it counter-clockwise ¼ turn to remove.
- 4 Remove the flat black rubber washer from the base of "F" connector.
- 5 Unscrew the whip antenna from the "F" connector.
- 6 Remove the through-the-lid antenna components from the plastic bag.
- 7 Feed the antenna cable and housing through the 1¾" hole in the meter pit lid. Slip the large plastic nut over the antenna cable and thread it onto the antenna assembly to secure it to the pit lid.



Make sure the smooth side at top of threads on nut is facing upward. (See Figure 8.)

Figure 8 Feeding Antenna Cable

- 8 Place the flat black rubber washer on the MIU around the male coax connection. (See Figure 9.)



Figure 9 Placing Washer on MIU

- 9 Apply a coating of NovaGuard around the base of the "F" connector and on the flat black rubber washer.



- 10 Connect the coaxial cable connector to the "F" connector on the MIU/register housing. This connection should be hand-tightened. (See Figure 10.)

Figure 10 Connecting the Coaxial Cable

- 11 Make sure the washer is properly seated. Connect the plastic connector housing to the 3-lobed, black plastic latch plate. (See Figure 11).



Figure 11 Connecting the Plastic Connector

- 12 Slide the black conical-shaped gasket down the cable until it engages the connector housing (See Figure 11.)
- 13 Tighten the connector nut onto the threaded portion of the connector housing. This connection should be hand-tightened. Do not use pliers.

12 Checklist

Before leaving the installation site, be sure to:

- Record MIU ID for each register.
- Verify that you have followed all requirements of this Quick Install Guide.
- Verify that you have recorded all required information.
- Clean up any installation debris.
- Verify that the requirements of the site work order have been completed.



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