



NEPTUNE
TECHNOLOGY GROUP

WATER | GAS | ELECTRIC

E-Coder)R900;TM Quick Install Guide



E-Coder)R900; 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)R900/™ 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)R900/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)R900/meter laying length and two coupling gaskets. The pipe ends must be sufficiently aligned so that the coupling and E-Coder)R900/meter threads can engage without binding or cross-threading.

- 3 Before installing the E-Coder)R900/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/meter in the line. The E-Coder)R900/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/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 if the E-Coder)R900/meter is operating correctly.
- 7 Turn off the faucet and check the E-Coder)R900/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/Inside Installation" on page 3.

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/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/Inside Installation on page 3.
- 5 Snap the new tamperproof seal pin to secure the register to the meter body.

4 Testing the E-Coder)R900/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)R900/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)R900/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)R900/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.



- 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.

Figure 2 Sliding Battery over Antenna

- 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)R900/ as described in Step 3 on page 3. For help on how to position and activate the MIU, refer to Step 8 on page 2.

7 Installing E-Coder)R900/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)R900/pit meter laying length and two coupling gaskets. The pipe ends must be sufficiently aligned so that the coupling and E-Coder)R900/pit meter threads can engage without binding or cross-threading.

- 3 Before installing the E-Coder)R900/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)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/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/meter is operating correctly.
- 7 Turn off the faucet and check the E-Coder)R900/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/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/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/Pit Installation" on page 3.
- 5 Snap the new tamperproof seal pin to secure the register to the meter body.

8 Testing the E-Coder)R900/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/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)R900/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)R900/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.



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

Figure 5 Removing Battery from Hinges

- 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

- 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.



Figure 7 Using Scotchlok to Splice Wires

- 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 Data Logging Extraction Steps

Complete the following steps for Data Logging.



- 1 From the ARB® N_SIGHT™ Mobile home screen on the CE5320 handheld, select Menu. (See Figure 12.)

Figure 12 ARB N_SIGHT Mobile Screen

- 2 From the ARB N_SIGHT Mobile synchronization screen on the handheld, select Data Logger. (See Figure 13.)

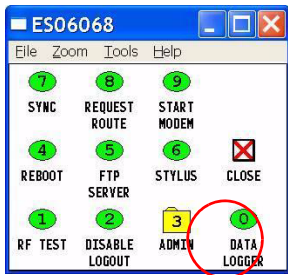


Figure 13 ARB N_SIGHT Synchronization Screen



If the User Authentication screen appears, sign in using your Reader ID and password, if applicable.

The handheld will start the initialization of the AMR device on the handheld at this time.

Once the initialization takes place, the data logging extraction screen appears.

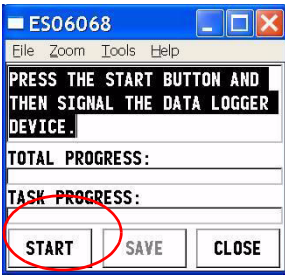


Figure 14 Start Button

- 3 Select **Start** to begin listening for transmissions. (See Figure 14.)

The handheld is now ready to receive the data logging information and displays **Listening for Transmissions**. (See Figure 15.)



Figure 15 Listening for Transmissions



Figure 16 Data Logging Activation

- 4 Activate the E-Coder)R900/ register by holding the special LED flashlight activator over the photo-sensor eye which is under the recessed hole in the dial face (noted by the flashlight symbol) until the LED flashes and turns off. (See Figure 16.)

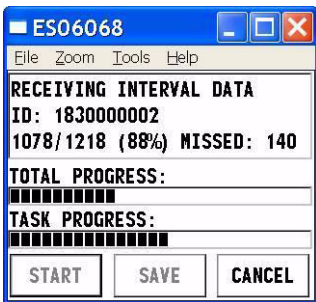


You can position the activator one to two inches from the photo sensor, or even angled slightly, and still activate the unit. Attempt to line up the center of the flashlight and the photo sensor as closely as possible.

When activated properly, the E-Coder)R900/LCD displays **RF LOG** in place of the register reading. (See Figure 17.)



Figure 17 RF Log Display



- The CE5320 Handheld begins receiving the interval data. The display on the handheld changes to read Receiving Interval Data along with a progress bar and the percentage success rate. (See Figure 18.)

Figure 18 Receiving Interval Data

When the download is complete, the handheld displays **Data Now Ready to be Saved**. (See Figure 19.)

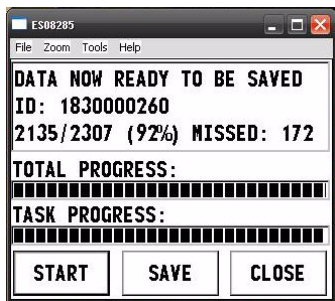


Figure 19 Data Ready to be Saved



Once all the data has been sent to the handheld, the E-Coder)R900/LCD screen goes back to the normal meter reading.

- Click Save on the handheld screen.

The handheld displays **Data has been Saved**, indicating that the interval data is now stored on the handheld. (See Figure 20.)



Figure 20 Data Has Been Saved

The data is then ready to be downloaded into the ARB N_SIGHT Mobile host software for graphing data.



Refer to the *ARB N_SIGHT Mobile Software Online Help* for steps on how to perform this task.

13 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.
- Inform the customer that you have completed your work. If you were unable to finish, inform the customer when you will be back to complete the project.



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