



NEPTUNE
TECHNOLOGY GROUP

ARB UTILITY MANAGEMENT SYSTEMS WATER | ELECTRIC | GAS

Encoder Quick Install Guide



ENCODER QUICK INSTALL GUIDE

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1 Scotchlok™ Connector Application

All encoder registers that are pre-wired and potted to 16" or 25' pigtails must be connected using either 3M Scotchlok Type UR or UY connector, a proper crimping tool, and the following prescribed method. Each wire of the pigtail must be connected with this connector whether or not they are connected to a receptacle/MIU at the time of installation. If the exposed wires are not connected, moisture can wick along the exposed bare wire and cause electrical shorts to the register terminal screws. All encoder register orders that are pre-wired and potted with either 16" or 25' pigtails are shipped with 3M Scotchlok, Type UR connectors, and a Connector King Splice Tube.

2 Installation Instructions for Single Receptacle/MIU

- 1 Hold the Scotchlok connector between index finger and thumb with the red cap facing down. (See Figure 1.)



Figure 1 Scotchlok Connector

- 2 Take a non-stripped, black wire from the pigtail and a non-stripped, black wire from receptacle/MIU and insert wires into the Scotchlok connector until fully seated in connector. (See Figure 2.)



Do not strip colored insulation from wires, or strip and twist bare wires prior to inserting in connector. Insert insulated colored wires directly into the Scotchlok connector.

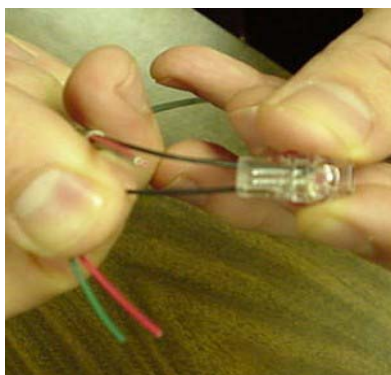


Figure 2 Seating Connector Wires

- 3 Place the connector, red cap side down, between the jaws of the UR crimping tool as shown in Figure 3. Refer

to Table 2 on page 9 for a list of the manufacturers and part numbers.

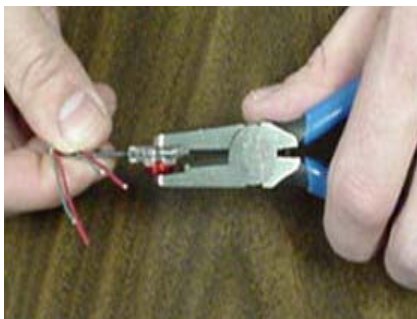


Figure 3 UR Crimping Tool

- 4 Check to ensure that the wires are still fully seated in the connector before crimping the connector. Figure 4 illustrates improper connections due to wires not fully seated.

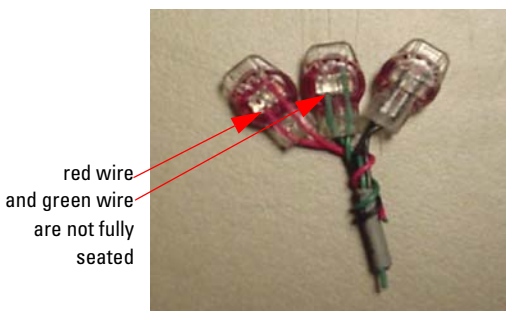


Figure 4 Improper Connections

- 5 Squeeze the connector firmly with the proper crimping tool until you hear a pop, and gel oozes out the end of the connector.
- 6 Repeat steps 1 through 5 for each color wire. (See Table 1 on page 5.)

Table 1 Color Code for Wires

Approved Encoder Register	MIU Wire Color/ Encoder Terminal		
Neptune ARB [®] V	Black / B	Green / G	Red / R
Neptune ProRead (ARB [®] VI)	Black / B	Green / G	Red / R
Neptune E-Coder (ARB [®] VII)	Black / B	Green / G	Red / R
Sensus (Invensys) ECR II	Black / G	Green / R	Red / B
Sensus (Invensys) ECR III	Black / G	Green / R	Red / B

- 7 Once all three color wires have been connected, read the encoder register to ensure proper connections and the receptacle/MIU is functioning properly. (See Figure 5.)

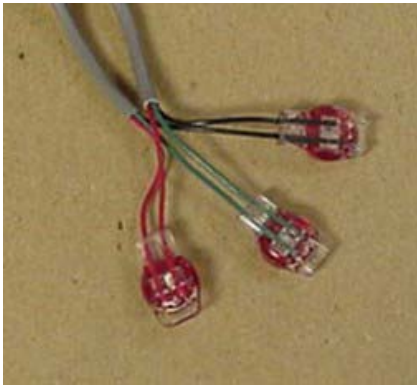


Figure 5 Three Color Wires Connected

- 8 Proceed to the section, "Completing the Installation".

3 Completing the Installation

To complete the installation of the Scotchloks, complete the following steps to install the Connector King Splice Tube.

- 1 Take all 3 connected Scotchlok's and push into the splice tube until fully encapsulated by the silicone grease. (See Figure 6.)

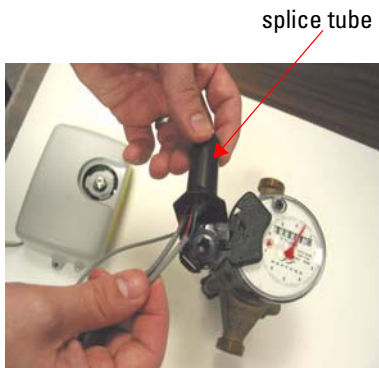


Figure 6 Splice Tube

- 2 Separate each gray wire and place in the slots on each side as shown in Figure 7.

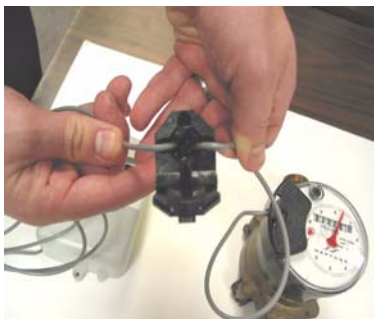


Figure 7 Gray Wires in Slots

- 3 Snap cover closed to finish the installation as shown in Figure 8.



Figure 8 Cover in Place

4 Installation Instructions for Networked Receptacle/Dual Port MIUs

The Dual R900 MIUs work only with Neptune ProRead Registers. Each register must be programmed in “RF Network” mode prior to installation. The field programmer must have software SESW 56.05 or higher.

Before installing an MIU, each register must be programmed with the correct format, referred to as the “RF Network” format.



- ProRead registers cannot be programmed while connected together in a network. Each register must be programmed separately prior to making the network connection.
- The designations "HI" and "LO" are Neptune's designations for the high (HI) flow or turbine side of the compound and the low (LO) flow or disc side of the compound.

Programming the HI Register

- 1 Select RF Compound HI format.
- 2 Verify that the Network Number field is equal to 99.
- 3 Verify that the Network Size field is equal to 02.
- 4 Match the Dial Code (DC) to your register.
- 5 Program the register.
- 6 Read or query the register to confirm correct programming.

Programming the LO Register

- 1 Select RF Compound LO format.
- 2 Verify that the Network Number field is equal to 01.
- 3 Match the Dial Code (DC) to your register.
- 4 Program the register.
- 5 Read or query the register to confirm correct programming.

Wiring the Registers

- 1 Connect each color wire with the appropriate color wire from the pigtail and both Dual R900 MIUs as illustrated in Figure 9, until all three colors have been successfully connected. Refer to “Installation Instructions for Single Receptacle/MIU” on page 3 for proper installation techniques.

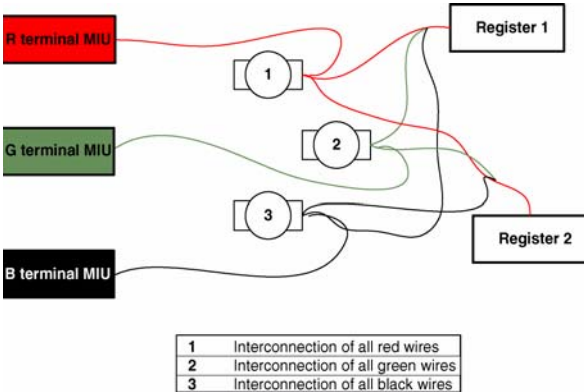


Figure 9 Interconnection of Like Terminals



- When splicing wires, remove any bare or non-insulated wire. Make sure that you only insert insulated wire into the splice connector.
- Observe proper polarity when wiring the registers so that all terminals are interconnected with other of the same color: red, black, or green. Refer to Figure 9.

5 Crimping Tool Manufacturers

To apply the Scotchlok connectors, Neptune insists on the use of a proper crimping tool. The following table shows a list of various manufacturers and model numbers.

Table 2 Proper Crimping Tools

Manufacturer	Mfg. Model Number
3M	E-9R (10:1)* E-98M (10:1) E-9C/CW (7:1) E-9E (4:1) E-9Y (3:1)
Eclipse Tools	100-008

* To reduce fatigue, use tool within each splicing group with the highest mechanical advantage indicated in the parentheses ().



Use of normal pliers or channel locks is highly discouraged, as they do not apply even pressure and can result in an improper connection.

6 Encoder Non Pre-Wired and Potted Application



In the event that a non pre-wired and potted encoder register is to be installed in a wet environment, it must be installed with approved Novagard (G661) or Dow[®] Corning Compound #4 applied to the terminal screws and exposed bare wires.

All warranties will be void for a register if installed without the approved Novagard or Dow. They have been reviewed and approved to protect against extreme conditions where corrosion could occur.

The uses of these products are to ensure optimum performance and reliability from the ARB systems. The following steps must be strictly adhered to when applying.

Installation Instructions

- 1 Wire the encoder register with the proper colors.
- 2 Test wiring and verify read.
- 3 Loop wire around strain relief post.
- 4 Tear open packet.

- 5 Apply the entire contents of the packet to the terminal screws and exposed bare wires. Fill the entire cavity. Apply a second packet, if necessary.

Figure 10 illustrates proper installations.



Figure 10 Proper Installations

Figure 11 illustrates improper installations.



Figure 11 Improper Installations

- 6 Place the terminal cover over the terminal screws and seat it securely into position.
- 7 Wipe off excess Novagard or Dow from the outside of the register.
- 8 Seal wire cover (optional).
- 9 Retest the installation.
- 10 Discard empty packet.



Novagard may cause irritation to eyes and skin. If swallowed do not induce vomiting: dilute with 1-2 glasses of water or milk and seek medical attention. Please refer to

- MSDS Novagard Silicone Compounds & Grease Inc. 5109 Hamilton Ave. Cleveland, OH 44114 216-881-3890.
- For copies of MSDS sheets please call Neptune's Technical Support at 1-800-647-4832.

7 Contact Information

Within the United States, Neptune support is available Monday through Friday, 8:00 AM to 7:00 PM Eastern Standard Time, by telephone or fax.

To contact Technical Support by phone, call 1 (800) 647-4832, and ask for technical support. If all support technicians are helping other customers, your call is routed to the Neptune Support voice mail system. Please leave your name, name of your company, and your telephone number.

Calls are returned within business hours in the order they are received.

To contact Technical Support by fax, send a description of your problem to 1 (334) 283-7497. Please include on the fax cover sheet the best time of day for a support technician to contact you. To contact Technical Support by E-mail, send your letter to the following address: hhsupp@neptunetg.com.

Notes



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