NEPTUNE
TECHNOLOGY GROUP

Permalog Quick Install Guide

PERMALOG QUICK INSTALL GUIDE

1 General Instructions

The Permalog is designed for use with the R900® or R450™ Pit Meter Interface Unit (MIU). Before installing, a Permalog unit must be correctly wired to work with the MIU.

2 Safety & Preliminary Checks

- Verify that you are at the location specified on the Site Work Order.
- Check that the site is safe for you and your equipment.
- Confirm and/or update the MIU ID number on the Site Work Order.

Follow any guidelines issued by your company in addition to those presented in this guide. Never perform an installation during a lightning storm or under excessively wet conditions.

3 Site Selection

The following illustration depicts the full Permalog assembly.

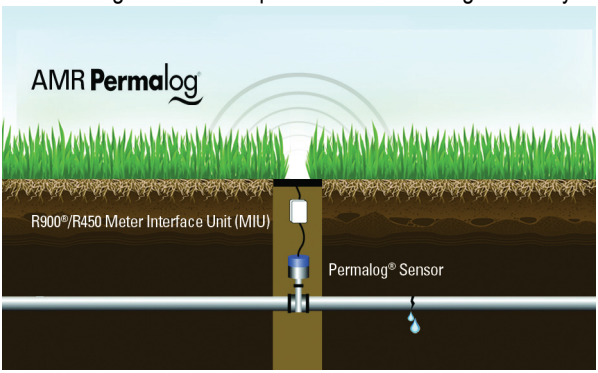


Figure 1 Full Permalog Assembly

R900 and R450 Pit MIUs

- For best results, Neptune recommends placing the antenna through a hole in the pit lid so that the dome sits above the pit lid.
- Select a location with a direct line-of-sight to the path of the water main valve.
- Avoid installing the MIU behind metal fences or walls.
- Use the attached cable that comes with the MIU. However, in some instances additional cable may be required.

4 Preparing the Permalog Unit

Permalog units are prewired with three-conductor wire.

To prepare the Permalog unit, complete the following steps.

1 Find the end of the three-conductor wire attached to the Permalog unit.

2 Cut 1.5 inches off the three-conductor wire. See Figure 2.

Figure 2 Permalog Three-Conductor Wire

3 Strip the outer jacket of insulation exposing approximately 1 inch of interior wires. See Figure 3.

Figure 3 Wires Being Stripped

Figure 4 illustrates the exposed wires that have been stripped.

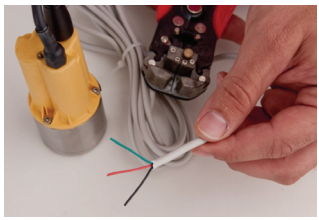


Figure 4 Exposed Wires

4 Remove and discard the black rubber cap from the top of the Permalog unit. See Figure 5.

Figure 5 Removing Black Cap

5 Replace the black rubber cap with the screw-on antenna that is included with the unit. See Figure 6.

Figure 6 Permalog Antenna

5 Wiring the Permalog to the R900/R450 Pit MIU

Connect Permalog and MIU wires according to the color coding shown below in Figure 7.

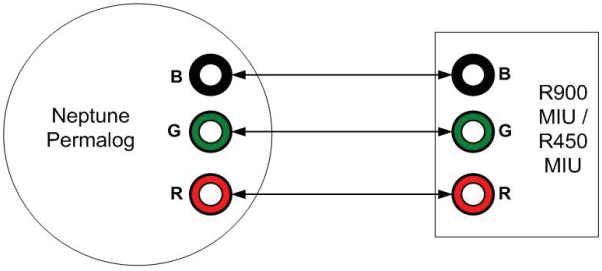


Figure 7 Color Code for Wires

1 Use a Scotchlok™ Type UR connector to connect the MIU wires to the Permalog.

2 Hold the Scotchlok connector between your index finger and thumb with the red cap facing down. See Figure 8.

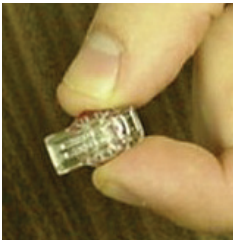
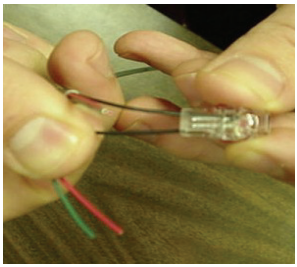


Figure 8 Scotchlok Connector



3 Take a nonstripped black wire from the Permalog and a nonstripped black wire from the MIU and insert wires into the Scotchlok connector until fully seated in the connector. See Figure 9.

Figure 9 Seating Connector Wires

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

4 Place the connector red cap side down between the jaws of the UR crimping tool as shown in Figure 10.

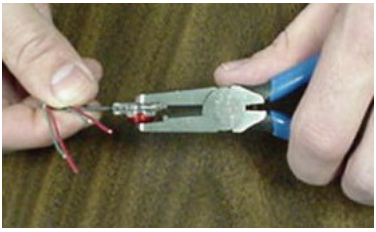
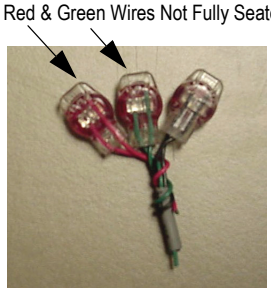


Figure 10 UR Crimping Tool



5 Check to ensure that the wires are still fully seated in the connector before crimping the connector. Figure 11 illustrates improper connections due to wires not fully seated.

Figure 11 Improper Connections

6 Squeeze the connector firmly with the proper crimping tool until you hear a pop and gel oozes out the end of the connector.

7 Repeat steps 2 through 6 for each colored wire. See Figure 7.

8 Once all three colored wires have been connected, they should look like Figure 12.

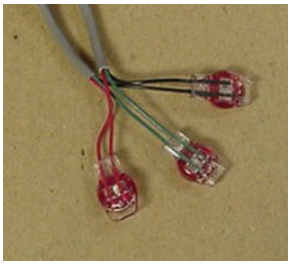


Figure 12 Three Colored Wires Connected

Connecting the Splice Tube

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

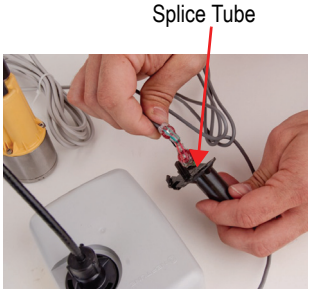


Figure 13 Splice Tube

9 Take all three connected Scotchloks and push into the splice tube until fully encapsulated by the silicone grease. See Figure 13.

Figure 14 illustrates the inserted wires.

Figure 14 Wires Inserted

Figure 15 Wires in Slots

10 Separate each wire and place in the slots on each side as shown in Figure 15.

11 Snap the cover closed to finish the installation as shown in Figure 16.

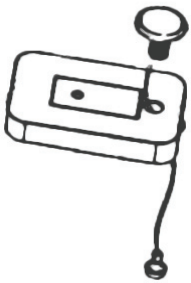
Figure 16 Cover in Place

12 Activate the Permalog unit by swiping the Neptune magnet over the top of the unit. Activation lights will flash on the Permalog unit as shown in Figure 17.

Figure 17 Activation Magnet

6 Installing the R900/R450 Pit MIU

- For greater detailed information and installation instructions, refer to the *R900 Wall and Pit Installation and Maintenance Guide* (Part No. 12560-001) and the *R450 Wall and Pit Installation and Maintenance Guide* (Part No. 112857-001).
- Before wiring the Permalog unit, make sure the cable is long enough so that when the installation is complete, the valve box (with MIU attached) can be removed easily without straining the cable.



1 Feed the antenna cable and housing through the 1.75” hole in the meter valve box. 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 the top of the threads on the nut is facing upward. See Figure 18.

Figure 18 Pit Antenna Cable and Housing

2 Place the flat black rubber washer on the MIU around the male coax connection. See Figure 19.

3 Apply a coating of NovaGuard around the base of the “F” connector and on the flat rubber washer.

4 Connect the coaxial cable connector to the “F” connector on the transmitter housing. This connection should be hand-tight. See Figure 19.

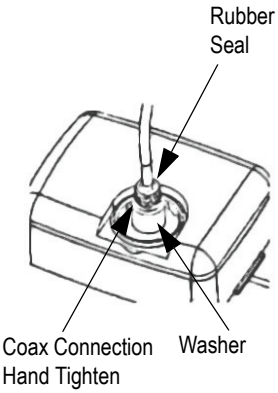
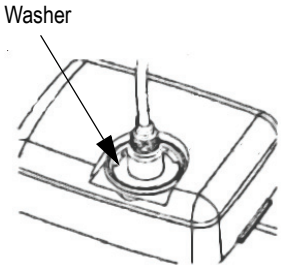


Figure 19 Coax Connection



5 Make sure the washer is properly seated. Connect the plastic connector housing to the three-lobed black plastic latch-plate. See Figure 20.

Figure 20 Latch Plate

6 Slide the black conical-shaped gasket down the cable until it engages the connector housing. See Figure 21.

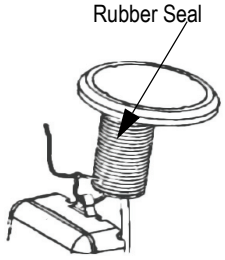
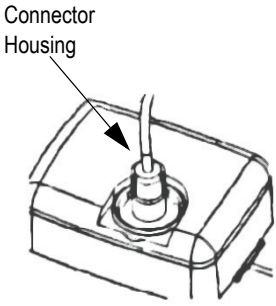


Figure 21 Rubber Seal



7 Tighten the connector nut onto the threaded portion of the connector housing.This connection should be hand-tight. Do not use pliers. See Figure 22.

Figure 22 Connector Housing

8 For a flooded valve box or deep vault installations:

- Use the included cable tie to hang the MIU from the antenna tube.
  See Figure 23.

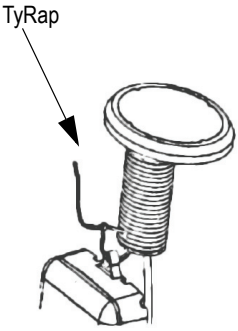


Figure 23 Cable Tie

Or,

:

- Place the Permalog unit, magnetically, on top of the main valve stem as shown in Figure 24.

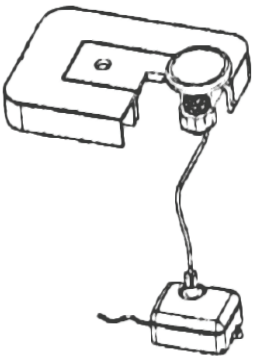


Figure 24 Pit Installation

Be careful not to lodge the MIU between the valve box and any components inside the box.

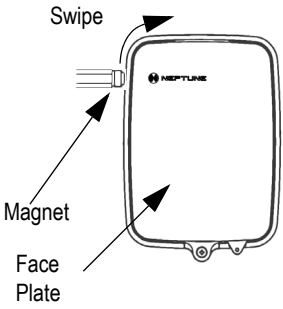


Figure 25 Activation Magnet

9 Position the magnet against the left side of the MIU directly in line with the Neptune logo, as shown, and swipe it bringing it from the side and around the corner to the top to activate the MIU. See Figure 25.

7 Testing the Permalog Unit and R900 MIU Installation

After the R900 MIU has been installed and wired, 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 MIU is installed correctly, its MIU ID# and a Permalog reading appears on the HHU's display within one minute.

All Permalog units return 6 digits.

3 If a Permalog does not appear on the HHU's display:

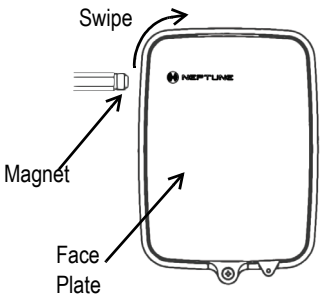
- Reactivate the MIU and Permalog using the magnet.
- Verify all electrical connections.
- Test the installation again (repeat steps 1 and 2).

If a problem still exists, contact your Neptune sales representative.

8 Testing the Permalog Unit and R450 MIU Installation

After the R450 MIU has been installed and wired, follow these steps to verify that the MIU is working properly.

MIU Activation



1 Position the magnet against the left side of the MIU directly in line with the Neptune logo, as shown. Swipe it bringing it from the side and around the corner to the top to activate the MIU. See Figure 26.

Figure 26 Activation Magnet

2 The MIU will transmit its configuration packet to the R450 Data Collector (DC) or R450 Mini Collector (MC) approximately 30 seconds following the magnet swipe.

3 The MIU will send the register reading to the R450 DC or R450 MC approximately 15 seconds following the configuration packet.

4 Once the R450 DC or R450 MC receives the configuration packet and meter reading, the R450 DC or R450 MC will send out an email confirmation to the installer to allow for verification of proper installation and MIU location (email text shown below).

Example of MIU Config Email

```
Subject: 0028/G/-105/Collector Two/MIU
Config

MIU <- Coll............Marginal[-104]
Coll<- MIU.............Pass[-105]
Register...............Valid Read
Collector..............Collector Two
Signal/Noise...........39
Noise..................130
MIU ID.................110500028
MIU ID (secondary).....10500028
================================
```

RSSI Values and ARB® N_SIGHT™ AMI System Host Software Capabilities

In the ARB N_SIGHT AMI Host Software (formerly ARB N_SIGHT FixedBase), Signal Strength, RSSI values, is a key indicator of the system health as well as the communication capabilities of the MIU to and with the R450 DC.

These values are associated with the *Uplink,* the ability of the R450 DC to hear reading information from the MIU, and *Downlink,* the ability of the MIU to hear instructions from the R450 DC.

The MIU Config Email provides feedback on the RSSI values between the MIU and the collector following MIU activation. Depending on the RSSI values recorded, the System indicates the values as:

- Pass
- Marginal
- Fail (should they fail)

It is important to note that RSSI values in the Pass range are required for both the Downlink and the Uplink to ensure full, two-way capabilities of the MIU as part of the ARB® FixedBase™ AMI System. See Table 1.

Table 1 MIU RSSI Downlink

RSSI Description	RSSI Values	Result in Performance
Pass	RSSI >= -95	Full capability
Marginal	-105 <+ RSSI < -95	Occasional two-way capability - not reliable
Fail	RSSI >= -105	MIU not capable of two-way communications

9 Checklist

Before leaving the installation site, be sure to:

- ☑ Record the MIU ID for each Permalog unit.
- ☑ 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.

10 Contact Information

Within North America, Neptune Customer Support is available Monday through Friday, 8:00 AM to 7:00 PM Eastern Standard Time, by telephone, fax, or email.

To contact Customer Support by phone, call 1-800-645-1892. If all Customer Support Technicians are helping other customers, your call will be routed to the Customer Support voice mail system. Please leave your name, the name of your company, and your telephone number. Your call will be returned during business hours in the order it was received.

To contact Customer 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 Customer Support Technician to contact you. To contact Customer Support by E-mail, send your letter to the following address: hhsupp@neptunetg.com.

Notes

NEPTUNE
TECHNOLOGY GROUP

Take Control

neptunetg.com

Neptune Technology Group Inc.
1600 Alabama Highway 229
Tallassee, AL 36078
USA
Tel: (800) 645-1892
Fax: (334)283-7293

Neptune Technology Group (Canada) Ltd.
7275 West Credit Avenue
Mississauga, Ontario
L5N 5M9
Canada
Tel: (905) 858-4211
Fax: (905) 858-0428

Neptune Technology Group Inc.
Ejército Nacional No. 418
Piso 12, Desp. 1201-1202
Col. Chapultepec Morales
Delegación Miguel Hidalgo
11570 México, Distrito Federal
Tel: (525) 55203 5294 / (525) 55203 5708
Fax: (525) 55203 6503

QI Permalog 05.11 Part No. 12891-003