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Certification Exhibit

FCC ID: P2SCMIU-VZW-1

FCC Rule Part: 15.247

ACS Project Number: 15-3049

Manufacturer: Neptune Technology Group
Model: CMIU

Manual

NEPTUNE
TECHNOLOGY GROUP

Celluar MIU Installation and Maintenance Guide

Cellular MIU Installation and Maintenance Guide

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FCC Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1 This device may not cause harmful interference,

2 This device must accept any interference received, including interference that may cause undesired operation.

Any Change or modification to the product is not expressly approved by Neptune and could void the user's authority to operate the device.

This equipment complies with the FCC radiation exposure limits set forth in an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the equipment and the user's body.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Cellular MIU Installation and Maintenance Guide

Literature No. IM CMIU 11.15

Part No. XXXXX-XXX

Neptune Technology Group Inc.

1600 Alabama Highway 229

Tallassee, AL 36078

Tel: (800) 633-8754

Fax: (334) 283-7293

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1 Product Description

This section provides a general description of the Neptune Technology Group cellular meter interface unit (subsequently referred to as CMIU).

The CMIU by Neptune is a compact electronic device that collects meter reading data from an encoder register. It then transmits the data for collection. The collected data is stored and downloaded into the utility billing system for processing.

The CMIU is easily installed and operates within the cellular frequencies.

Figure 1 Cellular MIU

The CMIU does require field programming.

Product Description

CMIU Programming

The CMIU does require field programming.

Low Battery Emissions

The CMIU stops RF transmissions when the battery discharges below normal the operating voltage.

2 Specifications

This section provides you with the specifications for the CMIU.

Electrical Specifications

The power is supplied by a Lithium battery.

Encoder Register Interface

Supported Encoder	Maximum Cable Length
Neptune ARB® V[1]	300 feet (91 meters)
Neptune ProRead™ and E-Coder®	500 feet (152 meters)
Sensus Protocol registers	200 feet (61 meters)

[1] Meets manufacturer's published specifications for wire length between encoder and remote receptacle. The length is based on solid three conductor wire, 22 AWG.

Specifications - CMIU

Environmental Conditions

Operating Temperature	-22° to 149°F (-30° to 65°C)
Storage Temperature	-40° to 158°F (-40° to 70°C)
Operating Humidity	0 to 100% Condensing

Functional Specifications

Register Reading	8 digits
MIU ID	10 digits

3 General Installation Guidelines

This section describes tools, materials, and general installation information for the CMIU.

Tools and Materials

Tables 1 and 2 show the recommended tools and materials you need to successfully install the CMIU.

It is possible that some items do not apply to your specific installation, or the list does not contain all required tools or materials.

Table 1 Recommended Tools

Item	Description/Recommendations	Use
Took Kit	Contains standard tools including: • Assorted screwdrivers • Needle-nose pliers • Wire stripper • Diagonal cutters • Electrician's knife • Hammer • Crimping tool Part # 5500-158	Perform various installation procedures.
Magnet	6 lb. force Part # 12287-001	Activating the MIU.

Table 2 Recommended Materials

Item	Description/Recommendation	Use
Cable	Solid 3 conductor #22 AWG (black/ green/red) Part # 6431-352	Connect MIU to encoder register.
Moisture Protection Compound	Novaguard sealant Part # 96018-072	Cover exposed wires and terminal screws on register and MIU.
Scotchloks	Part # 8138-125	Connect wall MIU or replacement pit MIU to encoder register.
Site Work Order	Documentation provided by your utility	Receive and record information about the work site.

Safety and Preliminary Checks

Observe the following safety and preliminary checks before and during each installation.

- 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 need access to the water meter.
- Write in the ID number(s) of the MIU you are about to install, if the site work order does not have an MIU ID number.
- Verify that the ID number(s) matches the ID number(s) on the MIU you are about to install, if the site worker already has an MIU ID number.

Verifying/Preparing the Encoder Register

The CMIU is designed for use with the following encoder registers:

- ARB V
- ProRead
- ProRead AutoDetect
- E-Coder
- Competitive registers using Sensus which include: Sensus ECRII, ICE, iPerl, OMNI and electronic register; also Hersey/Mueller Translator, Badger ADE, and HR E|LCD.

Before installing an MIU, the encoder register must be correctly wired and/or programmed to work with the MIU. E-Coder registers do not require programming.

When a ProRead encoder register is used, the non-AutoDetect ProRead register must be programmed for three-wire mode.

If connecting the MIU to a new ProRead encoder register, or if a three-conductor cable is already connected to a ProRead encoder register, ensure that the ProRead register is programmed for three-wire mode using the ProRead programmer and its RF/MIU 6, 8, or 10ID TDI format. This can be accomplished through the ProRead receptacle before removing the receptacle.

Installation of a Register (Non Pre-Wired or Potted Only)

1. Before wiring the pit encoder register, make sure the cable is long enough. When the installation is complete, the pit lid can be removed easily without straining the cable.
2. Use only 22 AWG cable to make the connection from the encoder register to the MIU.
3. Remove the terminal screw cover from the encoder register.
4. Strip off ¾ inch of jacket from the cable, leaving only the three insulated wires.
5. Take precautions not to nick or cut the insulation on the three wires, strip off ½ inch of insulation from each of the three wires.

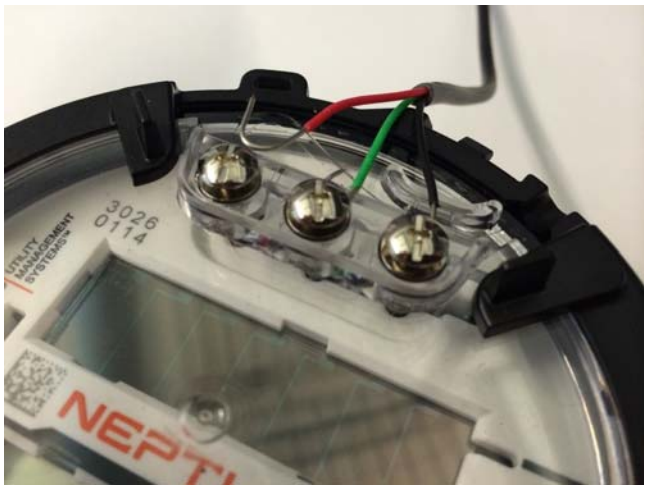

Figure 2 Wiring a Neptune Encoder Register

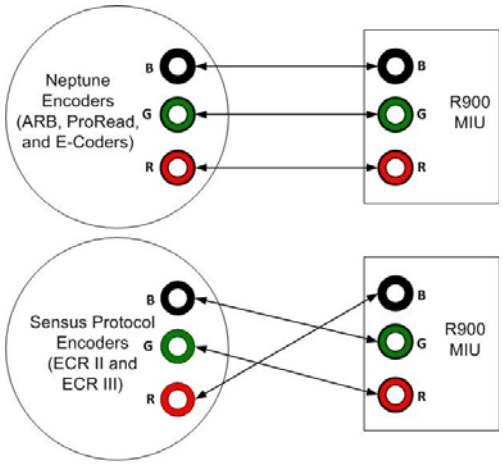

Figure 3 MIU Color Code for Wires

6 If required, connect the three conductor wires to the encoder register's terminals per the manufacturer's instructions. See Figure 2 and Figure 3.

7 Thread the cable around the strain relief posts of the encoder. See Figure 4.

Figure 4 Cable Threaded Around Strain Relief Posts

8 Apply sealant liberally and ensure that it encapsulates the terminal screws and exposed wires. See Figure 5.

Neptune requires Novaguard G661 sealant or Dow Corning compound 4.

Figure 5 Application of the Sealant

Any leak point can cause a reading failure in a submerged meter setting.

9 Snap the cover onto the encoder register. See Figure 6.

Figure 6 Covering the Terminal Screws

10 Run the cable to the MIU and fasten it securely.

- Do not exceed maximum cable lengths as defined in “Specifications - CMIU” on page 2.
- If the encoder register is prewired and potted, use Scotchloks for connecting the register to the MIU.

4 Wall Installation

This chapter provides instructions for installing the CMIU.

Installing the Cellular MIU

Removing the Main Housing

Complete the following steps to install the wall MIU.

1 Remove the main housing from the mounting adapter.

Figure 7 Wall MIU Main Housing

The Hi-Lo fastener for securing the main MIU housing to the adapter plate is shipped separately.

2 StudyFigure 8 and the location requirements, then decide how to install the MIU and mount the adapter with set screw positioned at bottom.

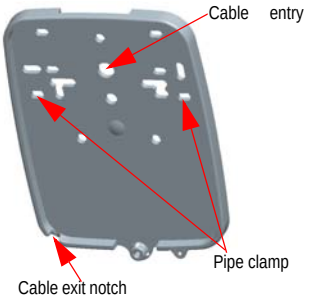

Figure 8 Mounting Adapter

A variety of holes in the mounting adapter allows for a quick and easy installation.

- The cable enters through the bottom or rear cable entry of the mounting adapter.
- When the MIU replaces a receptacle, use the appropriate holes to allow reuse of the receptacle's original mounting holes. SeeFigure 8.
- When mounting the MIU to a pipe, use the bolt hole for pipe mounting to bolt the mounting adapter to a pipe clamp.

Applying the Scotchloks

Figure 9 Gel Cap Connections

1 Using Scotchloks Gel Caps, connect the register wires to the pigtail from the MIU. SeeFigure 9.

2 Pair the wires according to the color diagram in Figure 10.

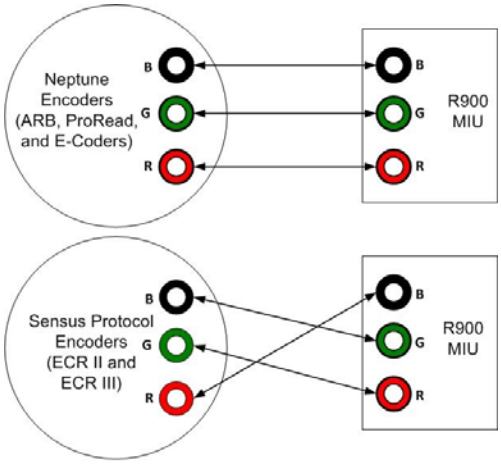

Figure 10 MIU Color Code for Wires

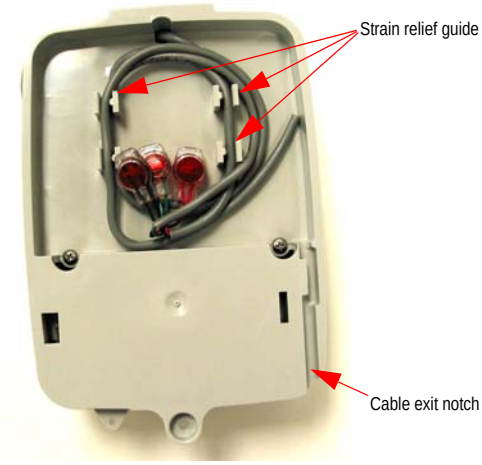

Figure 11 Cable in Back of Mounting Adapter

3 Slide the paired wires into the grooves provided until they seat into the back of the gel cap.

4 Using an appropriate crimping tool, firmly squeeze the gel cap to ensure a good connection.

5 Repeat this process until all connections are complete.

6 For rear cable entry, store excess wire and Scotchloks in the hollow cavity in the back of the MIU using the strain relief guides as shown inFigure 11.

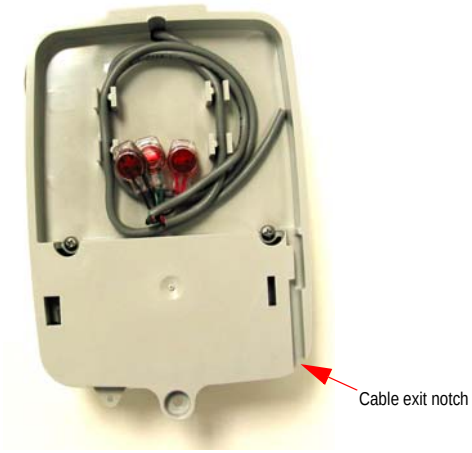

Figure 12 Cable Exit Notch

7 Continue to guide the remaining wire through the cable exit notch at the bottom right side of the MIU as shown inFigure 12.

Activating and Completing the Installation

Figure 13 Securing Mounting Adapter

1 Slide the tongue on the top of the MIU into the groove on the top of the mounting adapter.

2 Secure the MIU to the mounting adapter using the set screw. SeeFigure 13.

Figure 14 Activating the MIU

3 Position the magnet against the left side of the MIU directly in line with the Neptune logo, and swipe it bringing it from the side and around the corner to the top to activate the MIU. SeeFigure 14.

5 Contact Information

Within North America, Neptune Customer Support is available Monday through Friday, 7:00 AM to 5:00 PM Eastern Standard Time by telephone, email, or fax.

By Phone

To contact Neptune Customer Support by phone, complete the following steps.

1 Call (800) 647-4832.

2 Select one of the following options:

- Press **1** if you have a Technical Support Personal Identification Number (PIN).
- Press **2** if you do not have a Technical Support PIN.

3 Enter the six-digit PIN number and press #.

4 Select one of the following options.

- Press **2** for Technical Support.
- Press **3** for maintenance contracts or renewals.
- Press **4** for Return Material Authorization (RMA) for Canadian Accounts.

You are directed to the appropriate team of Customer Support Specialists. The specialists are dedicated to you until the issue is resolved to your satisfaction. When you call, be prepared to give the following information.

- Your name and utility or company name.
- A description of what occurred and what you were doing at the time.
- A description of any actions taken to correct the issue.

By Fax

To contact Neptune Customer Support by fax, send a description of your problem to (334) 283-7497. Please include on the fax cover sheet the best time of day for a Support Specialist to contact you/

By Email

To contact Customer Support by email, send your email message to hhsupp@neptunetg.com.

Notes:

Neptune Technology Group Inc.
1600 Alabama Highway 229
Tallassee, AL 36078
USA
Tel: (800) 633-8754
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

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