



Badger Meter

ORION® SE
Gateway Transceiver



IMPORTANT:
This manual contains important information.
READ AND KEEP FOR REFERENCE.

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Overview

This manual contains installation and programming instructions for the ORION® SE Gateway Transceiver.

Proper performance and reliability of the ORION® SE Gateway Transceiver depends upon installation in accordance with these instructions.

Product Description

The ORION® SE Gateway Transceiver is an easy-to-install/deploy unit that collects metering data from the ORION meter endpoints in the area. The ORION® SE Gateway utilizes a Cellular, LAN or Wi-Fi network backhaul to send the requested metering data back to the utility where the data can be used to better manage the utility's operation and provide important data for improved customer service. The ReadCenter® Reading Data Management Software manages this data transfer process and includes a myriad of tools and standard reports, as well as the ability to create any user-defined reports.

Product Unpacking and Inspection

Upon receipt of the product, perform the following unpacking and inspection procedures:

NOTE: If damage to the shipping container is evident upon receipt, request the carrier to be present when the product is unpacked.

Carefully open the shipping package, follow any instructions that may be marked on the exterior. Remove all cushioning material surrounding the product and carefully lift the product from the package.

Retain the package and all packing material for possible use in reshipment or storage.

Visually inspect the product and applicable accessories for any physical damage such as scratches, loose or broken parts, or any other sign of damage that may have occurred during shipment.

NOTE: If damage is found, request an inspection by the carrier's agent within 48 hours of delivery and file a claim with the carrier. A claim for equipment damage in transit is the sole responsibility of the purchaser.

License Requirements

This device complies with Part 15 of FCC Rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

No FCC license is required by a utility to operate an ORION SE meter reading system.

Any changes made, but not approved by Badger Meter, can void the user's authority to operate the equipment.

In accordance with FCC Regulations, "Code of Federal Regulations" Title 47, Part 2, Subpart J, Section 1091, transmitters pass the requirements pertaining to RF radiation exposure. However, to avoid public exposure in excess of limits for general population (uncontrolled exposure), a 40 centimeter distance between the transmitter and the body of the user must be maintained during testing.

Installation

Transceiver Main Components

- Two antennas
- One mounting backplate
- One ORION SE Gateway Transceiver
- MMK bracket or banding and locking equipment for attaching a ORION SE Gateway Transceiver to a pole



Figure 1: Transceiver Components

Tools and Materials

- Philips #2 screwdriver
- Precision slotted screwdriver - 2.5mm/.094"
- Two 9/16" or adjustable wrenches for mounting MMK bracket (standard mounting)
- Band-IT® tool and instructions and a 1/2" wrench (large pole mounting)

Installation Procedure

NOTE: The utility is usually responsible for proper positioning of a the Transceiver. For optimum reception and transmission, locate the Gateway in line-of-site view of the desired endpoints.

1. Unpack the Gateway Transceiver.
2. Screw a receiving antenna into each side of the Gateway (as shown in Figure 1).
3. Tighten the antennas to the full o-ring compression by hand.

MMK Bracket Mounting

This mounting equipment is sized to mount the Gateway Transceiver on a 2-5/8-inch maximum diameter mast.

1. Open the two bags of mounting equipment.
2. Place two bolts (3/8-16 X 5 inches) through the holes in the top and bottom of the transceiver. Use the side holes for horizontal installation.
3. Place a clamp onto the bolts.
4. Place a lock washer and nut onto each bolt.

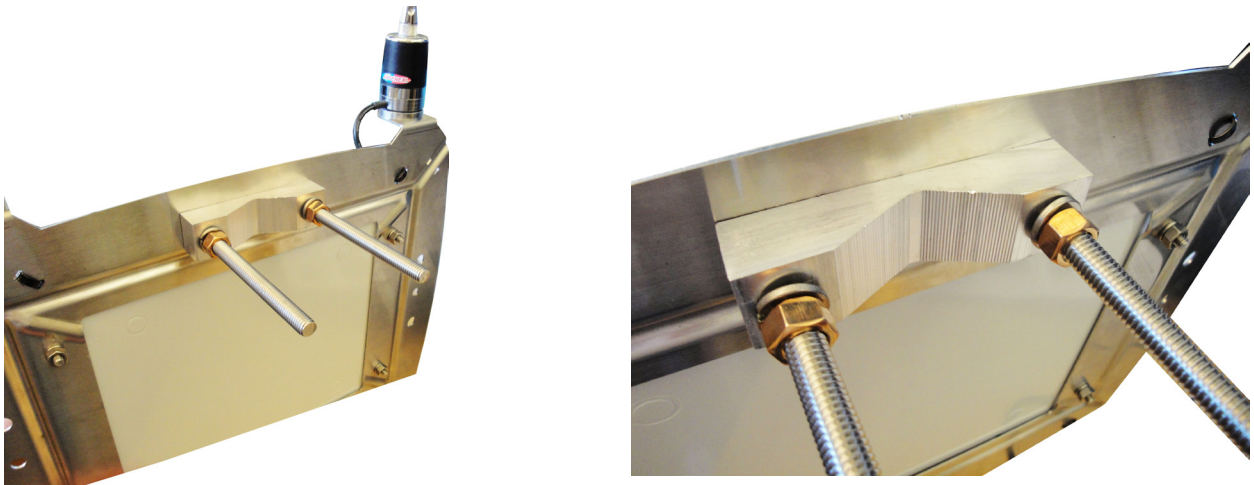


Figure 2: Attach Hardware

5. Tighten the two nuts with a 9/16" or adjustable wrench.

6. Position the Transceiver on the pole and place another clamp on the bolts.

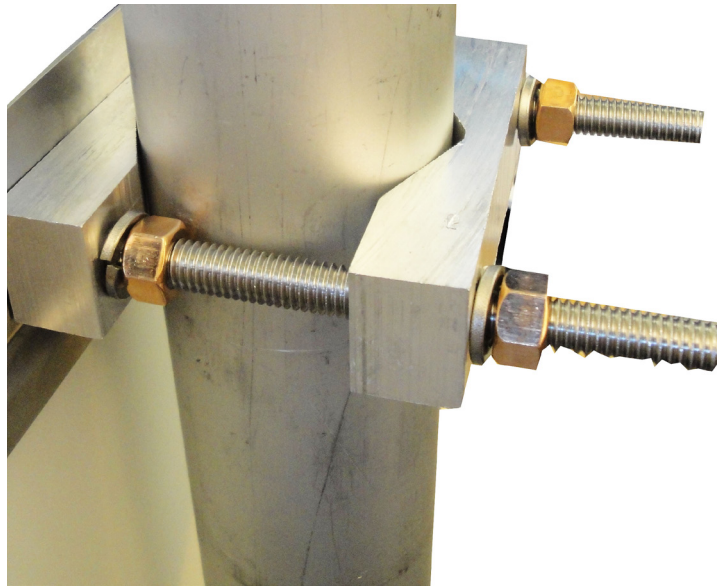


Figure 3: Transceiver Positioning and Clamp

7. Place another lock washer and nut on each bolt and tighten the bolts.
8. Repeat Steps 1 through 7 for attaching the same hardware to the bottom of the Transceiver.

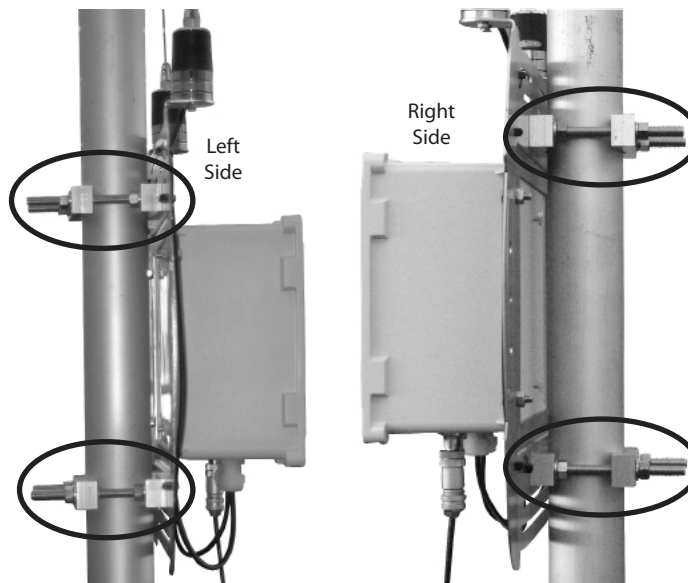


Figure 4: Completed Transceiver Mounting

BAND-IT® Mini-Brack-It Mounting

This mounting equipment is sized to mount the Gateway Transceiver on a 2½ inch to 24 inch diameter pole.

1. To mount the ORION SE Gateway Transceiver on a pole, gather the banding and locking equipment, Badger Meter part number: 66042-004.

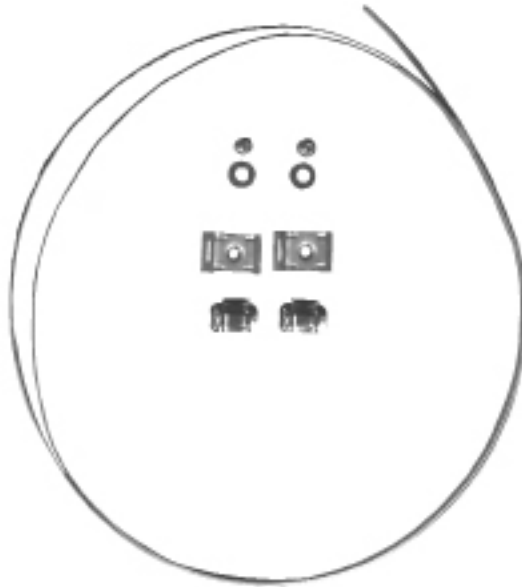


Figure 5: Banding and Locking Equipment

2. Locate the BAND-IT® tool and supplied installation instructions, Badger Meter part number: 66042-006.

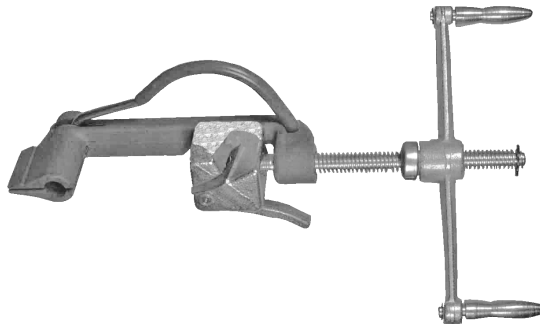


Figure 6: BAND-IT Tool

3. Follow the enclosed BAND-IT-supplied installation instructions for attaching the Gateway Transceiver to a pole.



Figure 7: Close up of right side Band-IT connection

Assembly Instructions for M12 Connector (Power Source)

NOTE: Use only approved Badger Meter cable, part numbers: 66233-015 (100 ft) or 66233-017 (300 ft) for this assembly.

Connector Part Names

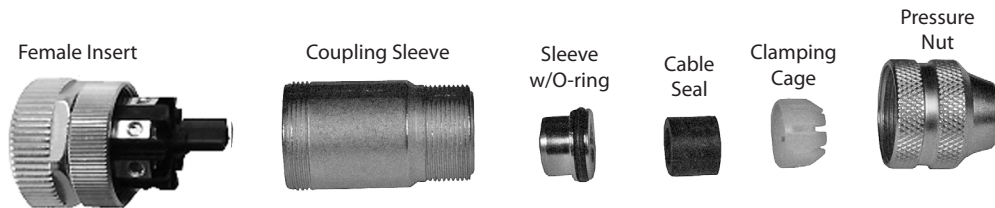


Figure 8: Connector Parts

1. Push the pressure nut, clamping cage, cable seal, sleeve with o-ring and coupling sleeve onto the cable.

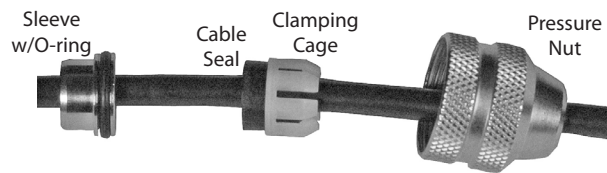


Figure 9: Connector Parts on Cable

NOTE: Align the female insert tab slot with the coupling sleeve slot:

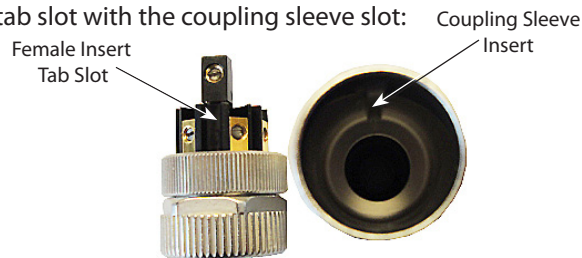


Figure 10: Slot Alignment

- Strip the cable outer jacket to a length of 1.1 inches. maximum.

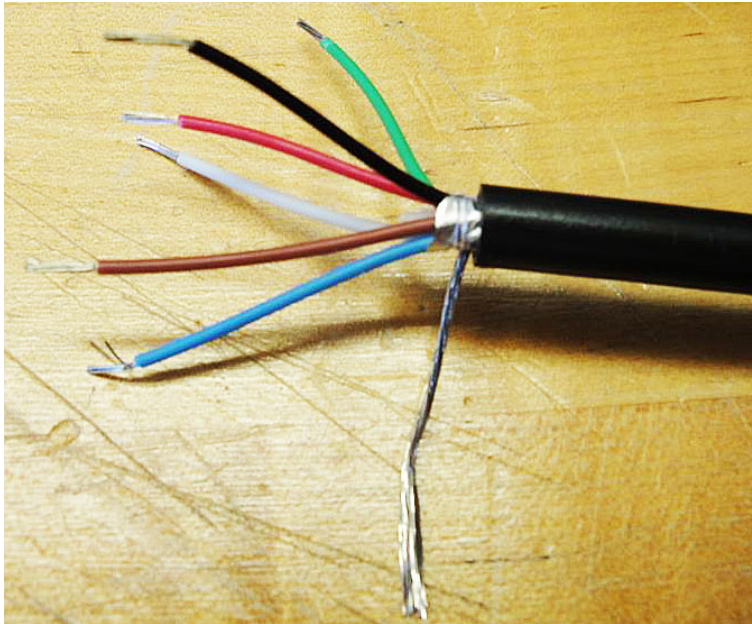


Figure 11: Stripped Cable Wires

- Shorten the foil shield flush with the outer jacket.
- Strip the ends of the six (6) wires to a length of 0.16 inch. Twist the conductors on each wire.
- Shorten the drain/bare wire (no insulation) to 0.65 inches.
- Insert the cable through the coupling sleeve.
- Attach the wires to the female insert:

WIRE	FEMALE INSERT CONNECTOR
White	4
Drain	8
Black	3
Blue	7
Red	1
Green	5
Brown	2

Electrical / Network Installations

GPRS / Wi-Fi Installation

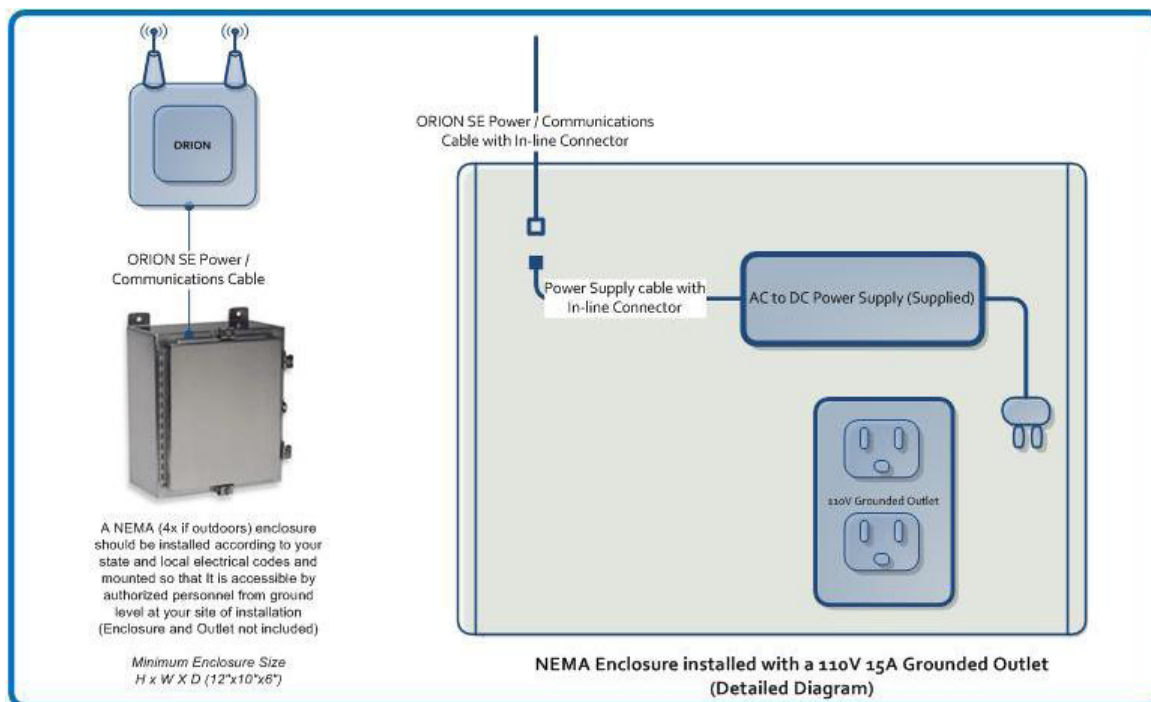


Figure 12: GPRS / Wi-Fi Connections

Install a NEMA (4x if outdoors) enclosure according to state and local electrical codes, installed to be accessible by authorized personnel from ground level.

Minimum Enclosure size: 12" x 10" x 6"

Your NEMA enclosure should contain a hole large enough to pass the ORION SE Gateway Transceiver power / communication cable through. The hole must be sealed with the appropriate NEMA 4x approved cord or conduit sealing device.

Outlets and enclosure not included.

LAN Installation

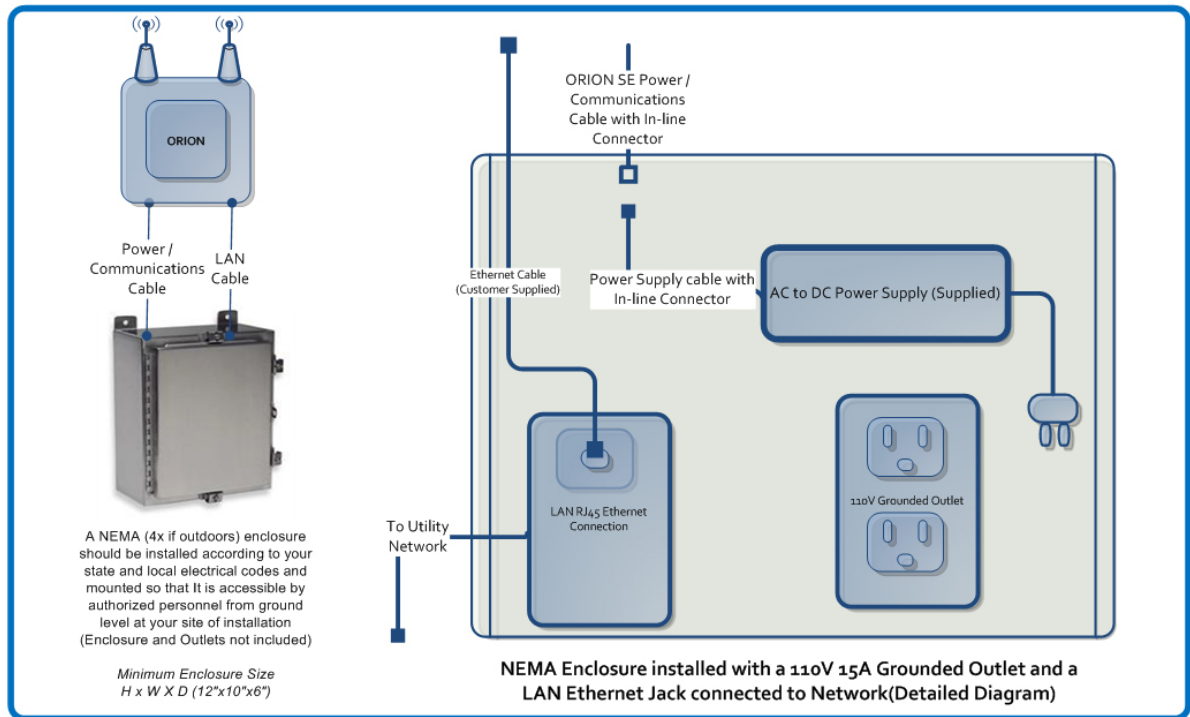


Figure 13: LAN Connections with Separate AC Power

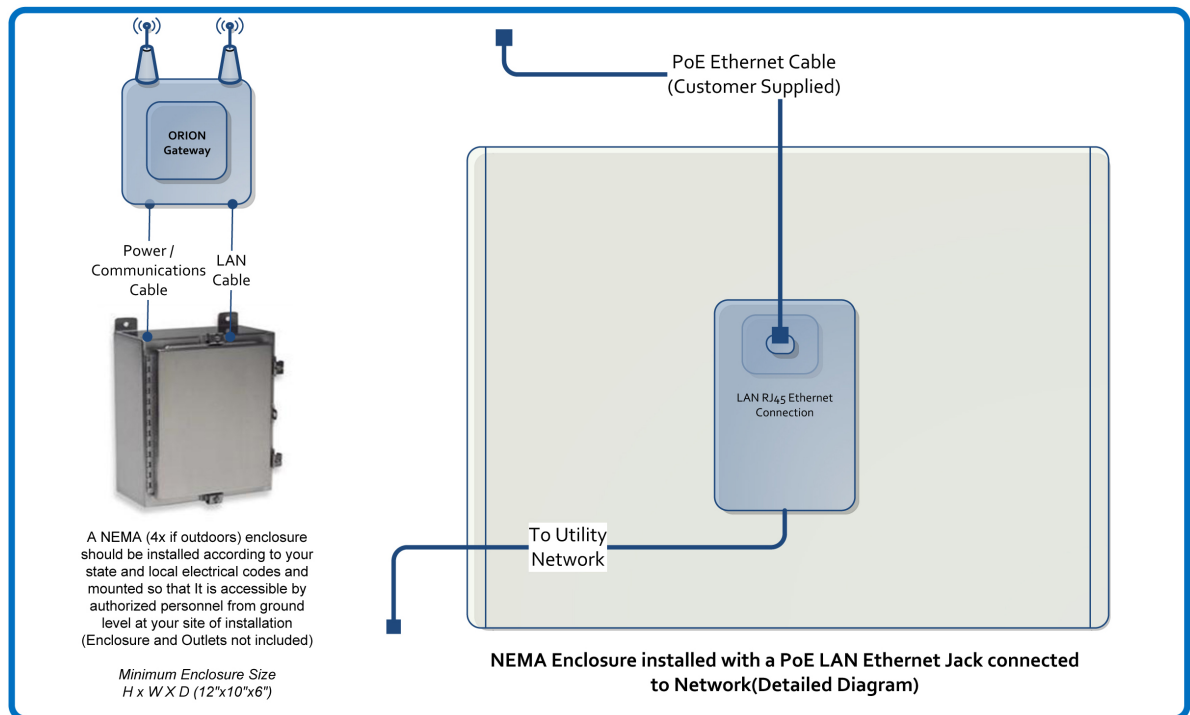


Figure 14: LAN Connections (POE)

ORION® SE Gateway Transceiver

Install a NEMA (4x if outdoors) enclosure according to state and local electrical codes, installed so as to be accessible by authorized personnel from ground level.

Minimum Enclosure size: 12" x 10" x 6"

Your NEMA enclosure should contain a hole large enough to pass the ORION SE Gateway Transceiver power / communication cable through. The hole must be sealed with the appropriate NEMA 4x approved cord or conduit sealing device.

Outlets and enclosure not included.

POWER REQUIREMENTS

AC Power

Badger Meter provides a DC to AC power supply which plugs into a standard three-prong 110VAC outlet. If you are powering the Gateway Transceiver directly via DC power, please refer to the DC power information.

Battery Installation/Replacement

In the event a battery replacement is required, please complete the installation steps as detailed below.

1. Remove enclosure cover by unscrewing four, corner cover screws and discard the cover (the cover will not be used again).

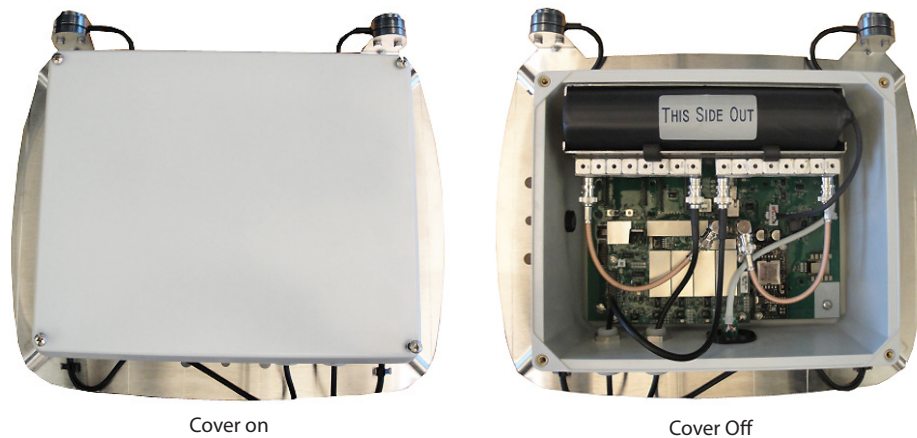


Figure 15: Enclosure Cover Removal

2. Squeeze the connector latch on the battery connector on the circuit board and carefully pull on the connector to remove it from the circuit board pins contacts. Do NOT pull on the connector wires. If the connector is stuck, it may need to be gently rocked back and forth while pulling.

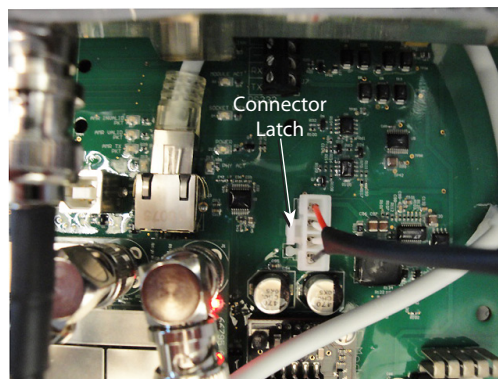


Figure 16: Battery Connector

3. Remove battery from unit and safely discard (see "Battery Disposal" on page 16).

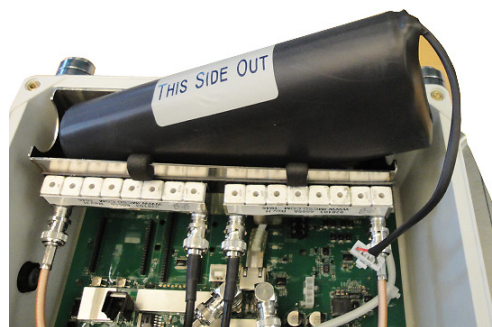


Figure 17: Battery Removal

4. Place new battery in unit with the battery label ("This Side Out") visible and upright (see "Figure 17: Battery Removal" on page 15).
5. Carefully install the battery connector onto the circuit board. Connector needs to be inserted only far enough so that the connector latch engages. Verify proper connector polarity is observed (see "Figure 16: Battery Connector" on page 15).
6. Install the new enclosure cover provided with the battery kit. Tighten each of the four cover screws (DO NOT over-tighten).

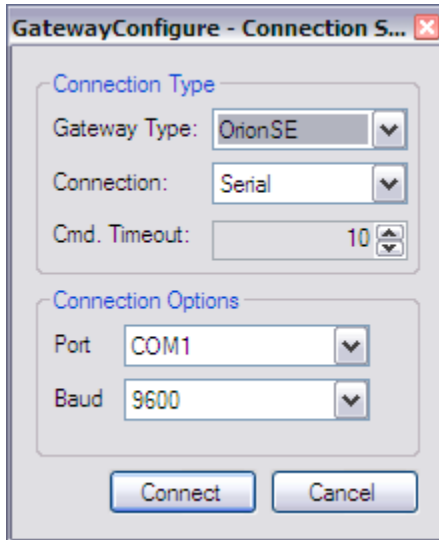
Battery Disposal

Dispose of the used battery per the local environmental standards for non-spillable, lead acid batteries. Badger Meter does not perform battery disposals unless per mutual contractual agreement.

Software Configuration

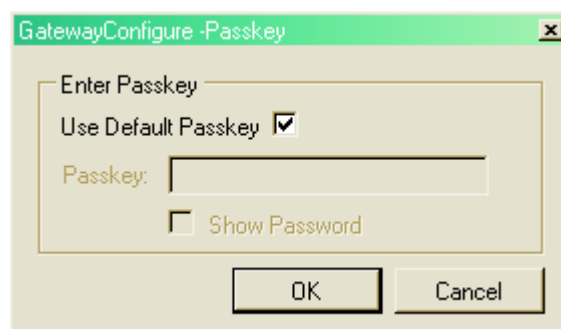
The ORION SE Gateway Transceiver software configuration settings were preset prior to delivery. The following instructions supply a basic overview for changing the network and gateway settings. Badger Meter suggests contacting customer service, technical support at 1-800-876-3837, to verify proper settings during (re)configuration.

1. Open The GatewayConfigure.exe software.

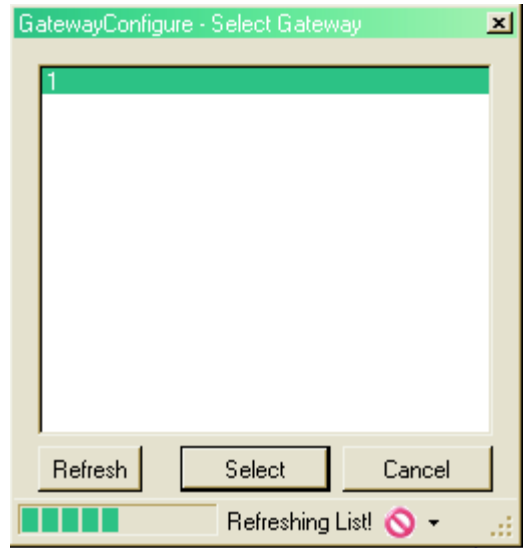


2. Select from the Gateway Type drop-down menu.
3. Select Serial from the Connection menu.
4. Leave the Cmd. Timeout set to 10.
5. Select the appropriate COM Port.
6. Select the appropriate Baud rate (9600 for serial, 115200 for USB).
7. Click on the **Connect** button.

For the TCP Connection:



8. On the GatewayConfigure -Passkey window, leave the Use Default Passkey checkbox checked - or uncheck the box and then type a new passkey in the Passkey field.
9. Click the **OK** button.

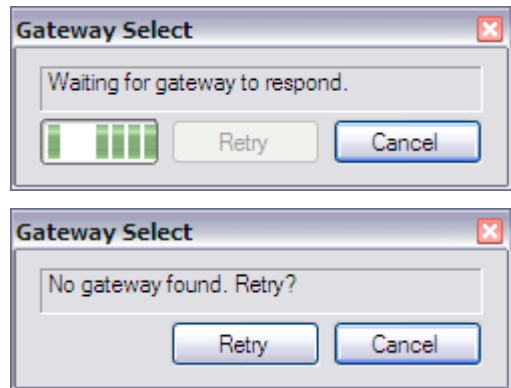


(TCP Connection)

10. Click on the gateway ID number when it appears and then click the **Select** button.

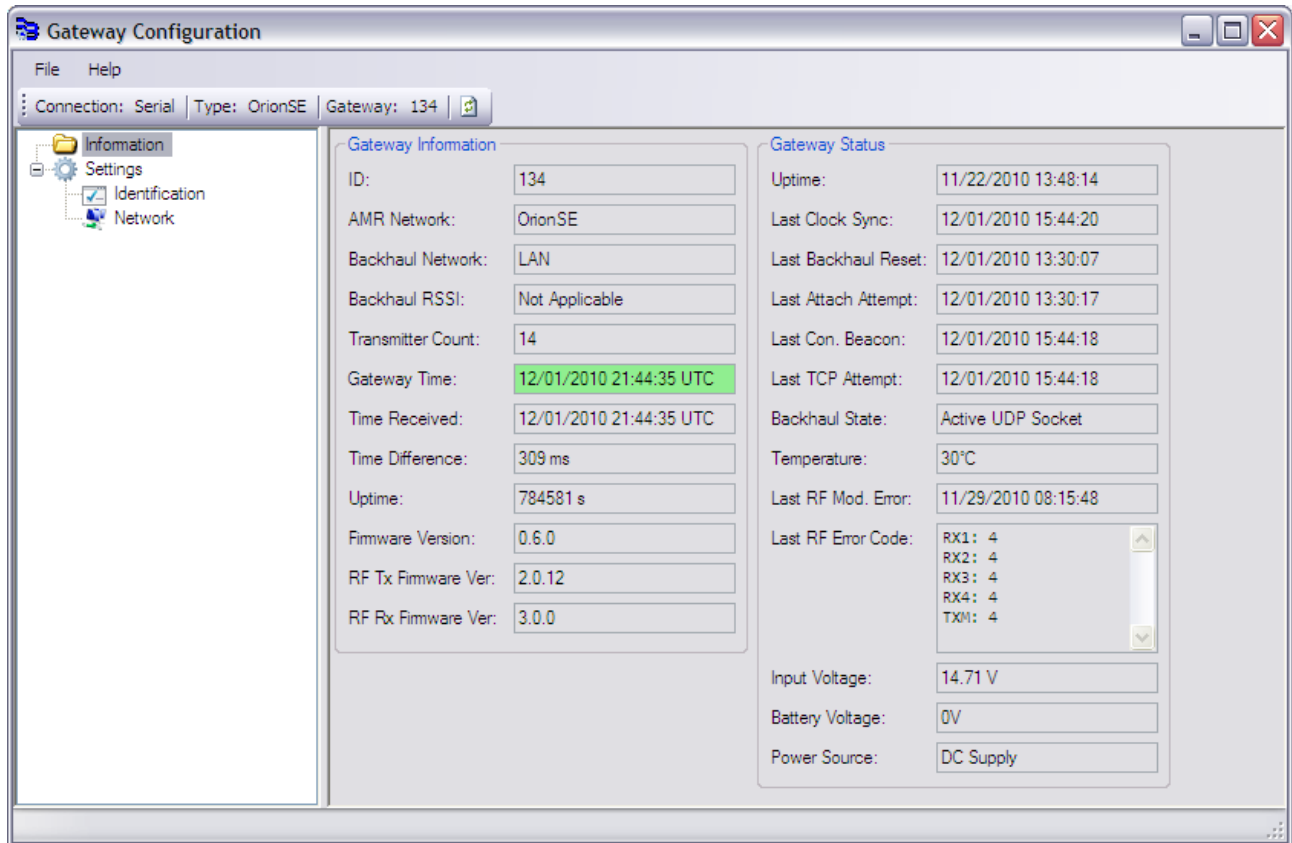
For the Serial Connection:

11. View the Gateway Select screen:

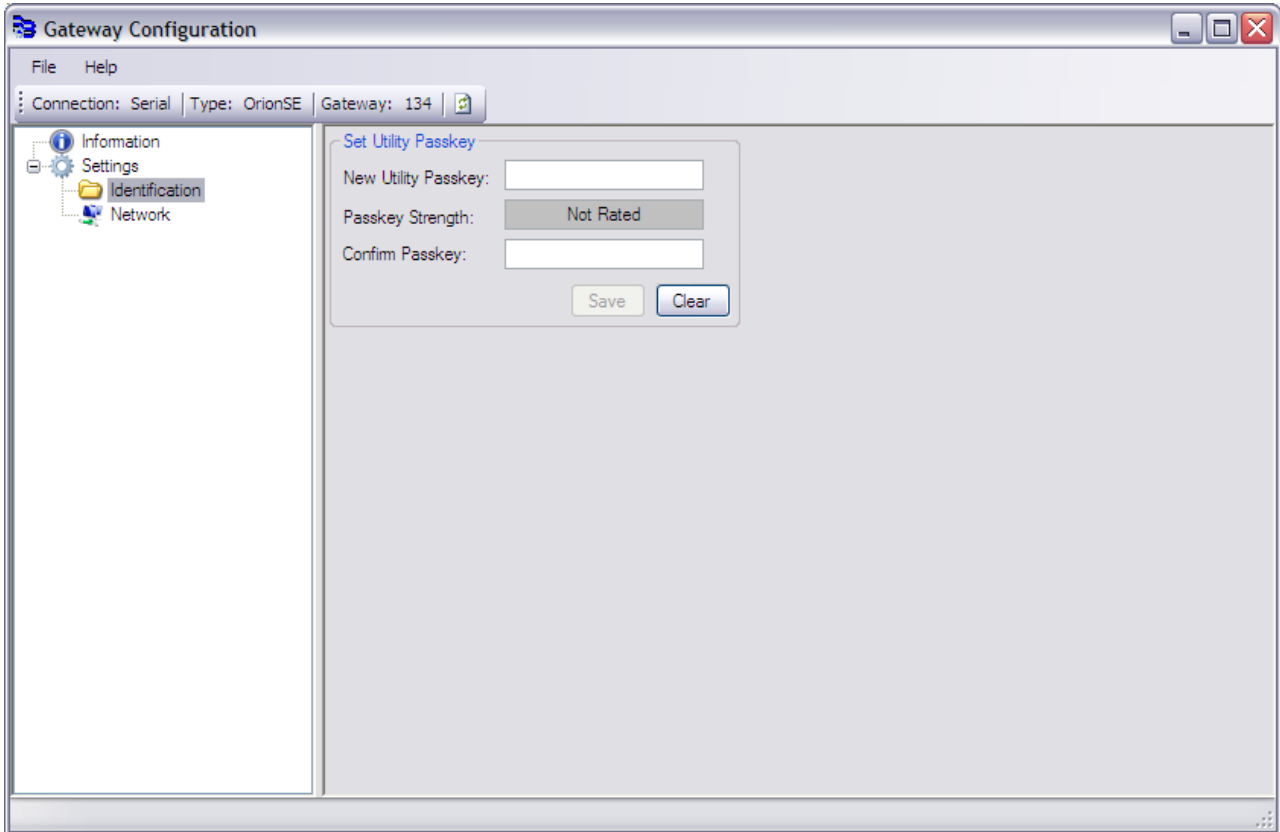


Note: If the Gateway Select screen indicates an error due to an unsuccessful gateway connection, click the **Retry** button.

12. Click the **Select** button to open the Gateway Configuration screen.



13. View the Identification Menu:



14. Click on the Network icon on the left side of the screen.

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