ION® Wireless Repeater

Installation Guide

POWER MEASUREMENT

Notices

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Danger

This symbol indicates the presence of dangerous voltage within and outside the product enclosure that may constitute a risk of electric shock, serious injury or death to persons if proper precautions are not followed.

Caution

This symbol alerts the user to the presence of hazards that may cause minor or moderate injury to persons, damage to property or damage to the device itself, if proper precautions are not followed.

Note

This symbol directs the user's attention to important installation, operating and maintenance instructions.

Installation Considerations

Installation and maintenance of the wireless repeater should only be performed by qualified, competent personnel that have appropriate training and experience.

FCC Notice

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 instruction manual, 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.

Modifications: Modifications to this device which are not approved by Power Measurement may void the authority granted to the user by the FCC to operate this equipment.

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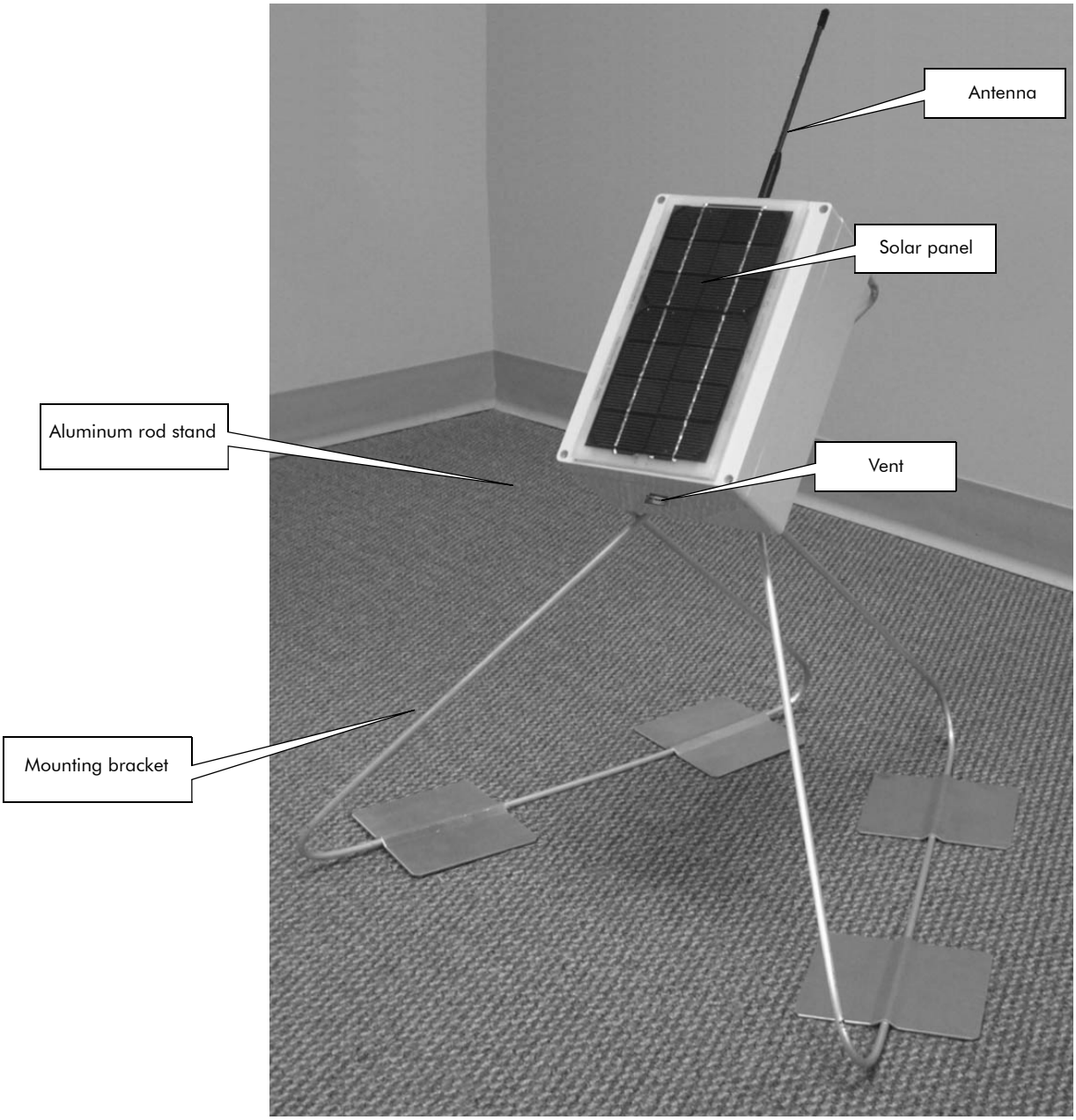
Covered by one or more of the following patents:

U.S. Patent No's 6825776, 6813571, 6798191, 6798190, 6792364, 6792337, 6751562, 6745138, 6737855, 6694270, 6687627, 6671654, 6671635, 6615147, 6611922, 6611773, 6563697, 6493644, 6397155, 6186842, 6185508, 6000034, 5995911, 5828576, 5736847, 5650936, D459259, D458863, D443541, D439535, D435471, D432934, D429655, D429533, D427533.

Contents

ION® Wireless Repeater Installation

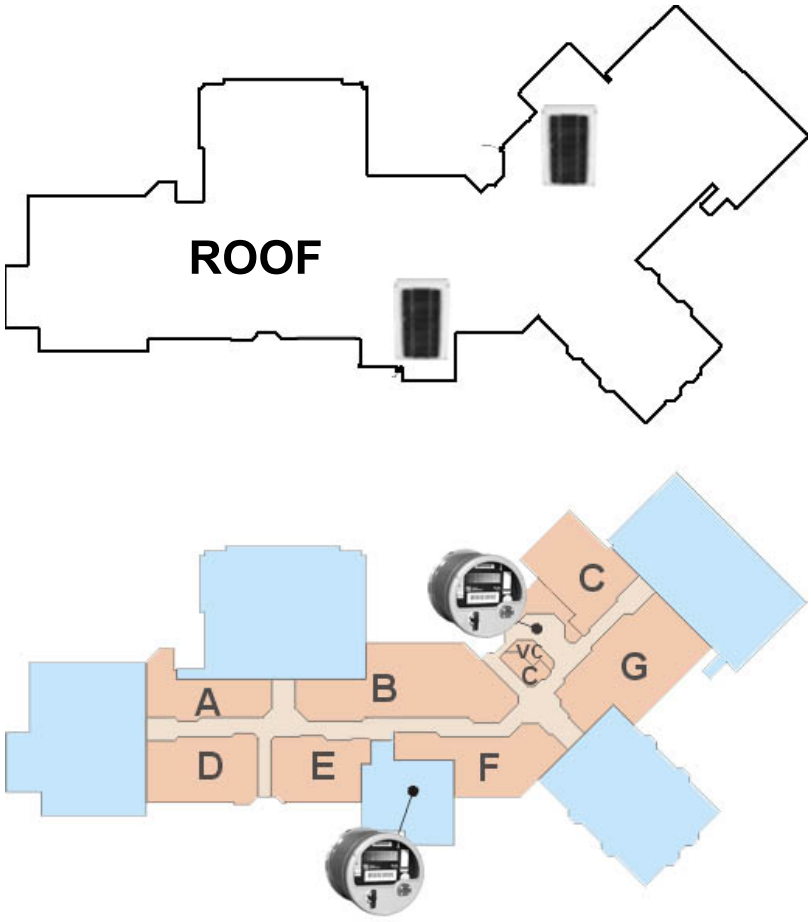
The ION Wireless Repeater extends the communication range of ION meters equipped with wireless communications, such as the ION 6300 Socket-Based Wireless Energy Meter. This repeater is powered by a solar-rechargeable battery pack, and communicates through a 1/4-wave internal fixed antenna.



Wireless Repeater Applications

Use the ION Wireless Repeater as a communications bridge between two ION 6300 meters if the physical distance between them is greater than the recommended operating range for wireless communications.

Operating frequency	License-free 900 MHz ISM radio band
Operating range	Typical 30 meter (100 ft) maximum distance between radios



Install the ION Wireless Repeater on the roof (or similar location that is exposed to plenty of sunlight) to ensure proper operation of the solar panel recharging circuitry.

Environmental Conditions

Mounting location	Outdoor, exposed to sunlight
Operating temperature	14°F to 158°F (-10°C to 70°C)
Relative humidity	up to 90%, non-condensing
Gasket rating	NEMA

Required Tools and Materials

- Phillips screwdriver
- Fast-curing roof adhesive compound [insert recommended brand or specification here]

Before You Begin

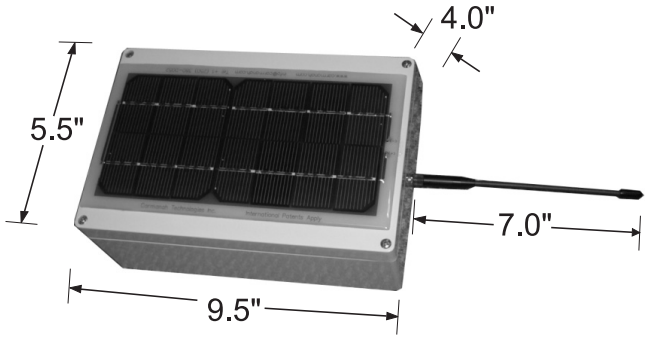
1. Read this document in its entirety.
2. Prepare drawings or sketches to indicate locations where the wireless repeaters need to be installed.
3. Plan ahead to install the repeaters on two consecutive sunny days.
4. Coordinate the installation of the wireless repeater with the installation of the wireless gateway and the ION 6300 meters. The gateway and ION meters should be installed first so that the meter can provide communications diagnostics immediately after installation.

Getting More Information

Additional material related to the wireless repeater and other Power Measurement products are available online at www.pwrm.com. This document is also available in PDF format and can be downloaded from our website.

Mechanical Dimensions

The four corner screws on the ION Wireless Repeater secure the lid to the unit, and to the aluminum rod stand. Four square aluminum mounting brackets secure the base of the stand to the roof surface.



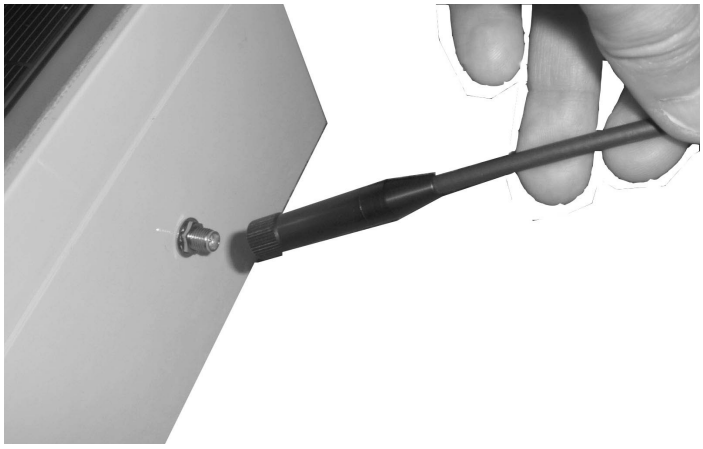
Installation

The ION Wireless Repeater is intended to be mounted on a flat roof surface. Installation of the solar repeater must be done under dry climate conditions. Make sure your wireless network (wireless gateway and devices) is operating properly before permanently securing the repeater assembly.

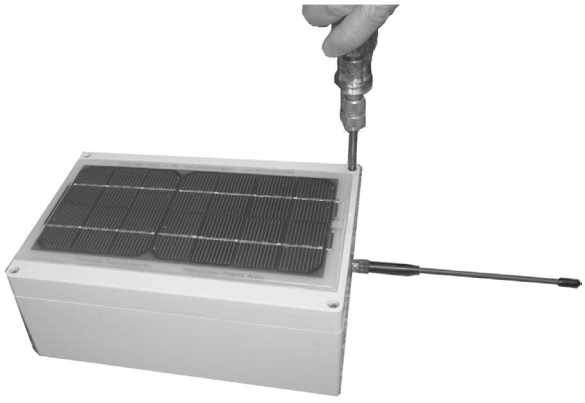
Step 1: Assemble the Repeater

Perform the following procedure near the ION Gateway in order to configure the A/D (analog-to-digital) circuitry that monitors the battery voltage.

1. Place the ION Wireless Repeater on a clean working surface. Apply liberal amounts of Dow Corning #4 electrical insulating compound to the threaded end of the antenna and to the threaded connector in the top of the repeater case. Screw the antenna into the connector until snug, but do not overtighten.

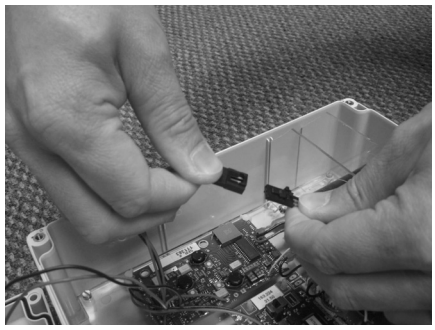


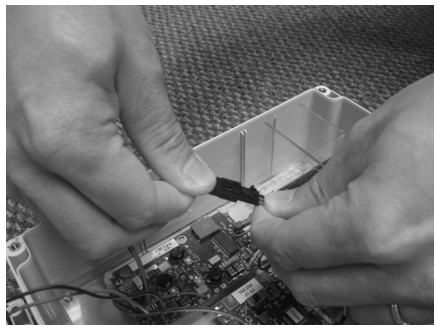
2. Remove the four screws from the front of the unit.



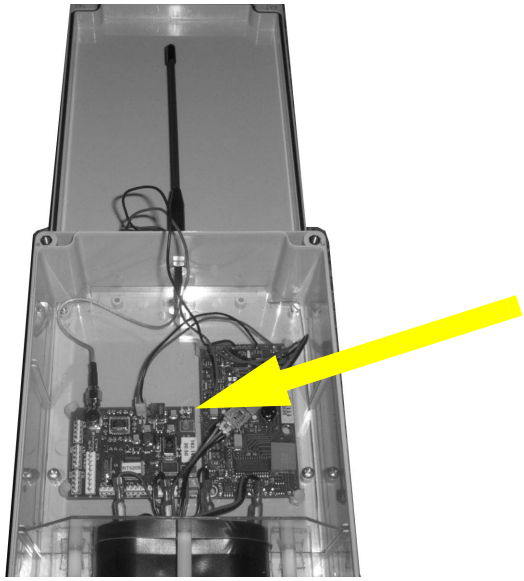
3. Lift the solar panel (lid), taking care not to damage the wiring. Disconnect the wire connectors that secure the wiring between the solar panel (lid) and the charging circuit board (in the chassis). Rest the lid on the ground.

4. Locate the battery power connectors (the mating connectors with three wires) inside the unit and connect them.





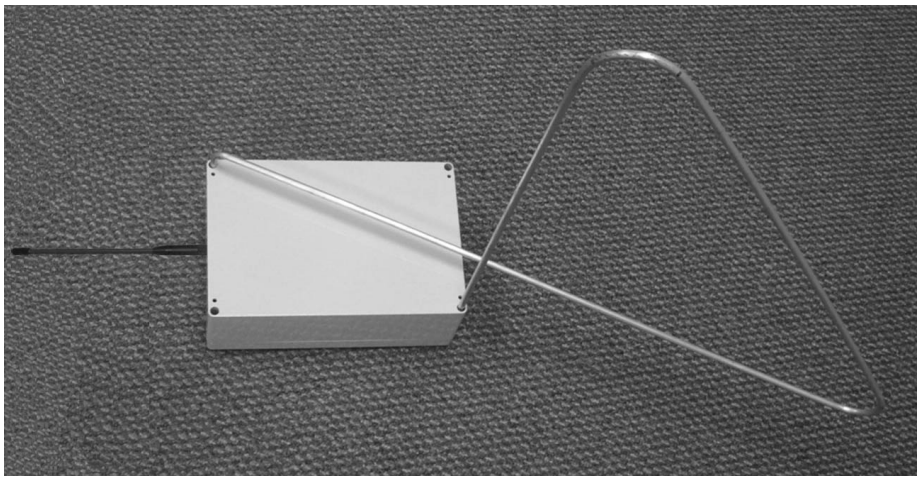
5. Observe the LEDs light up to verify the unit is receiving power from the battery pack.



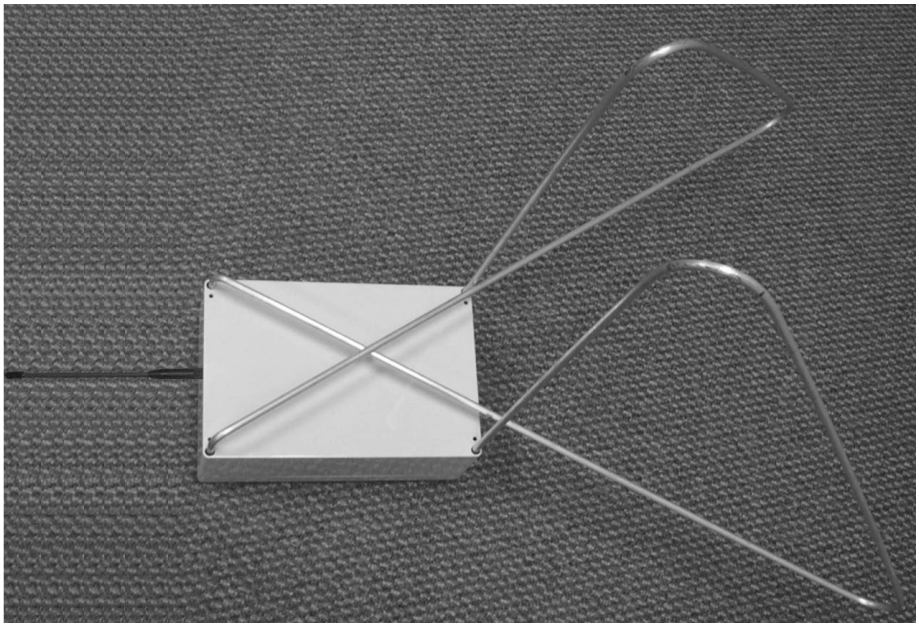
6. Place the lid back on the unit. Thread in the four screws halfway (about 1/2" of the screw remaining).
7. While holding the lid securely to the unit, flip the unit over and rest it on a clean working surface.
8. Insert one leg (aluminum rod stand) into back of unit, making sure it is oriented correctly, i.e. with the vent closest to the base of leg.

NOTE

The vent (hole) indicates the bottom of the unit.



9. Insert the other leg into the back of unit.



10. Holding the top (lid) securely to the unit, lift and move the entire assembly to the intended mounting location. Stand the unit up on its legs.

Step 2: Position the Repeater

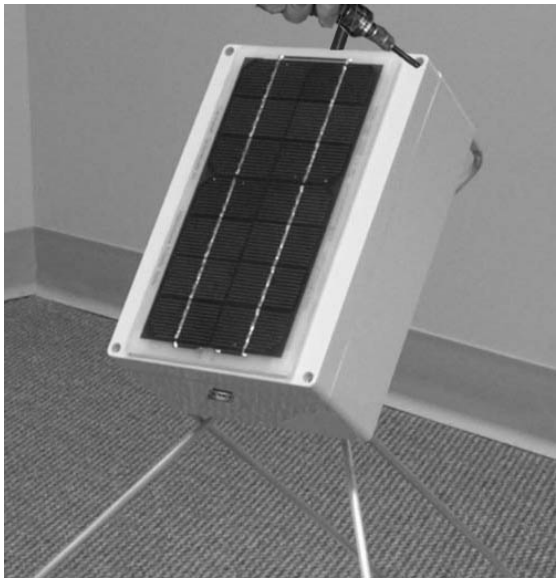
Position the repeater on the roof so the solar panel faces south (i.e. towards the sun at noon).

Step 3: Verify Operation and Communications

1. Carefully remove the lid, then verify wireless communications by observing the LED behavior.

LED Activity	Description
Steady Red (continuously ON)	Radio is properly identified in the wireless network
Blinking Red (once per second)	Radio is not identified in the wireless network
Flashing Green	Radio is transmitting/receiving information (the Green LED flashes once per packet received)

2. Replace the lid. Attach one of the screws to the unit, pushing the end of the legs towards the base while screwing down to secure it (do not over-tighten). Repeat with the 3 remaining screws.



3. Temporarily secure the base of the legs to the roof. Leave the unit for a day, so it is exposed to a cycle of sunlight and darkness.

Step 4: Verify Wireless Repeater Properties

NOTE

Verification of the solar charging circuitry is performed at the factory before the repeater is shipped out.

1. The following day, use ION Enterprise to verify that the wireless repeater is still properly detected in the network. Note the repeater's location ID and radio ID on the floor plan.
2. After verifying that the unit is charging properly, replace the lid and secure with the screws.

Step 5: Install Mounting Brackets

1. Make sure the roof surface is clean of debris.
2. Apply roof adhesive compound to the underside of the square bracket.
3. Position the bracket so its flange is aligned over the base of the leg. Press down and hold for the recommended time, according to the directions on the adhesive container.

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