



## INSTALLATION INSTRUCTIONS

### Invensys RadioRead® Meter Transceiver Unit (MXU) Model 510

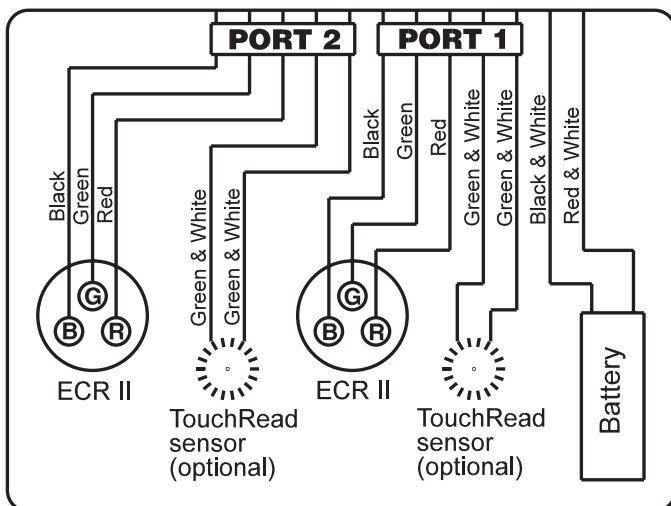
#### IMPORTANT

The following information contains installation instructions for the Invensys RadioRead® Meter Transceiver Unit (MXU). The wiring connections are the same for both inside and pit set installations. Techniques may be different for the actual MXU placement in each type of installation.

**Note:** This installation sheet is only for installation of the RadioRead MXU. For instructions on installing other AMR devices, please request and refer to the individual installation instructions for those devices.

#### RECOMMENDED TOOLS AND MATERIALS

- SR II® security screw socket with 1/4" nut driver or ratchet wrench
- 3M Scotchlok® UY-2 butt connector “gel-caps”
- 3M Scotchlok® E-9Y stepped jaw crimping tool with wire cutter
- Wire stripper tool
- Screwdrivers (Phillips and standard blade heads)
- Power drill and bit (1/4")
- 8 x 1" sheet metal screws
- 1/2" Electrical Metallic Tubing (EMT)
- Conduit cutting tool
- Hammer
- Conduit driver (available from Invensys)
- Three-conductor solid wire (Invensys specification)



MXU Model 510 - Installation Wiring Diagram

#### GENERAL INFORMATION

The Model 510 MXU incorporates a two-port interface design. Hard-wire connections to either port from a compatible utility meter or Multi-Read module is the same for each port.

**Note:** the wiring is different when connecting a Schlumberger Proread (ARB-VI) encoder to a port.

The MXU also requires proper programming of each port to match the device that is connected to the respective port. Refer to Invensys Programming Manual AMR-988.

#### INSTALLATION - WIRING INSTRUCTIONS

The MXU wiring instructions assume the utility meter with an encoder register or MultiRead module has been installed and the proper wire has been run to the MXU installation location. Three-conductor, 22 gauge, solid conductor cable is recommended. (For meter installation, refer to the installation information included in Invensys meter shipping cartons.)

1. Using the SR II security socket with ratchet wrench or nut driver, open the MXU enclosure by removing SR II type security screw. Bottom part of enclosure will contain the MXU battery and top part the electronics and connection wires. Connect the three wires from the encoder register or MultiRead module to the matching color wires on the MXU and the desired port. If not already done, strip approximately 2" off outer jacket of the encoder wire cable. The wire colors for each unit should be green, red, and black. Insert two matching color wire ends – red to red, green to green, and black to black into a UY-2 gel-cap with the color button of gel-cap facing away. (This provides a better view of wire positions inside the clear plastic gel-cap enabling the installer to see the wires are completely and properly inserted.)

**Note:** For the Schlumberger Proread encoder, the color coded wire connections are not standard – For Proread, connect the MXU red to Proread black, MXU green to Proread red, and MXU black to Proread green.

Using gel-cap pliers, squeeze the gel-cap. This will splice the two wires and release the waterproof gel to seal the connection. The splice can be checked by pulling gently on the gel-cap while holding the wires to be sure they are tight and secure. Repeat Step 2 instructions for the remaining two wire connections. Repeat connections to a second port, if required.

\* If any of the wire connections are not being used they should be capped at the end with a gel-cap. This is to prevent water intrusion via wicking through the exposed wire ends. The red, green, and black wires must be gel-capped individually. The green with white striped TouchRead sensor wires can be gel-capped together.

**Note:** A Schlumberger Proread (ARB VI) register must be connected directly to an MXU port. The Proread register will not work through a MultiRead module connected to an MXU.

2. Connect the battery to the MXU electronics. Using the gel-cap connecting technique described in Step 2 above, connect the red and white stripe wire from the battery to the red and white stripe wire from the MXU electronics. Repeat the procedure for the black and white stripe wire from the battery to the black and white stripe wire from the MXU.

**Caution:** DO NOT cross connect the black and white and red and white stripe wires of the MXU and battery pack as this may cause damage to the MXU electronics.

If using the optional TouchRead® connection, go to Step 3. If not, skip to Step 4.

3. (Optional) TouchRead® Connection (available for Invensys register encoders only) – The MXU includes a built-in TouchRead splitter connection to allow the encoder register to be interrogated by both RadioRead equipment and a remote TouchRead System sensor.

**Wall Mount TouchPad** – Using two-conductor or three-conductor wire cable and gel-caps, connect wires to each of the *green* and *white stripe* wires from the MXU.

**Note:** If three-conductor wire cable is used, the third wire is not utilized for the TouchRead Connection.

At the TouchPad connection, connect the same two wires to the terminal screws on the back of the TouchPad.

**Caution:** Be sure there is no bare wire-to-wire contact. (The TouchRead connection is non-polarity sensitive and will work as long as the same color wires are used at both ends of the connection. If three-conductor wire is used, be sure the third “dead” wire is not mistakenly connected at either end.) Repeat the connections for a second port if required.

**Pit-set Mount Sensor** – The TouchRead pit-set sensor includes a factory-sealed three-conductor wire cable. Proper wire connections are therefore important. To activate the pit-set TouchRead sensor, use only the *red* and *black* wires from the sensor. Approximately 2” of the cable’s outer jacket must be stripped from its end to access these wires. Then, using gel-caps, connect the *black wire* from the sensor to one of the *green and white stripe* wires from the MXU. Next, connect the *red wire* from the sensor to the other *green and white stripe wire* from the MXU. Repeat the connections for a second port if required.

**Note:** When connecting a Schlumberger Proread (ARB VI) register directly to an MXU port, the TouchRead splitter feature is not available.

- Verify MXU operation prior to final assembly: To verify RadioRead reading, use Radio Frequency Solid State Interrogator (RFSSI) or Vehicle Transceiver (VXU) to display the register odometer reading(s), register ID number(s), and MXU ID number. (For AMR troubleshooting, refer to bulletin AMR-309.)

-To verify TouchRead reading, use a TouchRead visual reader to display register odometer reading(s) and register ID number(s). If MXU does not function, check all wire connections, re-do the connections or change battery pack. (For complete TouchRead installation and troubleshooting, see installation bulletins: TR-728, TR-997, and TR-998.)

- After wiring connections are completed and MXU operation is verified, align guides of top and bottom parts of MXU and close, bringing the connection wire(s) out the front side, using the wire pass-thru guides located on either side of the security screw. Secure the top and bottom parts of the MXU using the security screw.

**Caution:** DO NOT over-tighten security screw.

## MXU MOUNTING INSTRUCTIONS

*For Wall Mounting: (Indoors and Outdoors)*

- Using MXU mounting bracket, find a convenient location for the MXU mounting. It is recommended that the MXU be mounted in an upright position so the top part with the Invensys logo is facing up. The MXU mounting bracket can be mounted to a wall using screws or fastened to an object using heavy duty wire ties. Grooves have been placed in the back of the bracket for mounting on either horizontal or vertical (existing) pipes.
- After mounting MXU bracket, snap the MXU (which should already be wired as noted in the preceding wiring instructions) into the bracket. Be sure the locating tabs on either side of the MXU have snapped into position in the mounting bracket. The installation is now complete.

- TouchPad Mounting (Optional) – If mounting the MXU outdoors and a TouchRead TouchPad connection is to be included, mounting holes can be drilled in the side of the MXU bracket. Using short screws or plastic rivets, mount the TouchPad to the side of the MXU bracket.

**Caution:** When using screws, be sure they do not penetrate the MXU enclosure when mounting the TouchPad. The TouchPad can also be mounted in a location away from the MXU. Be sure to use screws that are designed for and applicable to the mounting surface.

*For Pit Set Mounting:*

- Use 1/2” EMT. Select a location for the conduit where the MXU’s installed position will not interfere with the meter and allow the MXU to be located as high as possible inside the meter box. The MXU should be kept approximately 1” from the sides of the meter box and positioned so the meter register odometer remains visible for visual confirmation readings. Conduit mounting method calls for driving a length of conduit into the ground at the bottom of the meter box. (If the bottom of the meter box does not have an opening sufficient for driving the conduit vertically into the ground below, a different mounting method may need to be developed.) Place driver on conduit and strike with hammer, driving conduit downward until it is at the desired height. The correct height should be at the point the driver is level with the top of the meter box in most cases. When completely installed, the top of the MXU should be about 1” below the meter box lid.
- After installation of conduit, position the opening located in the bottom of MXU over the conduit and press into place. Place meter box cover (lid) into position. Pit set installation is now complete.
- TouchRead Sensor Mounting (Optional) – If installing a TouchRead pit-set module follow the TR/PL mounting instructions on Invensys bulletin TR-997 for mounting in the meter box lid. Place meter box cover (lid) into position with the TR/PL sensor in place.

## FCC COMPLIANCE

**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

**WARNING:** No party shall make any modifications or changes to the MXU Model 510 (the equipment) without the express written consent of Invensys Metering Systems. Doing so could result in the equipment becoming non-compliant with the requirements of the Federal Communication Commission Rules CFR47 Part 15 and could void the user’s authority to operate the equipment.



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