

Required Tools

- ▶ Philips #2 screwdriver
- ▶ Wire stripper and wire cutter
- ▶ Crimper (18-22 AWG insulated spade terminals)
- ▶ Voltmeter
- ▶ 7/16" hex socket wrench
- ▶ Drill and assorted bits
- ▶ Adjustable wrench
- ▶ Zip ties
- ▶ Bullhorn Tools Mobile App



WARNING: Turn off rectifier input power prior to installation. Use a digital voltmeter to confirm that rectifier output voltage is less than 5 V DC.

For a complete list of safety warnings and requirements, refer to the **RM5 Series User Guide** available at <https://support.aiworldwide.com>

Hardware Installation Steps

Refer to the installation diagram on page 3 for connection and wire routing details

1 Install the External Enclosure

IMPORTANT: The external enclosure without relay includes the RM5 I/O 4 Module and the RM5 power supply. An external REL2510 relay is required to interrupt the rectifier.

- Use the provided hardware to attach the external enclosure to a pole near the rectifier. Use the screws for a wooden pole, or the u-bolts for a metal pole.
- The installation location should allow easy access to the RM5 components via the enclosure door.

2 Connect the RM5 Power Supply and Install a REL2510 Relay

IMPORTANT: The REL2510 Relay is rated for 70 Volts RMS Maximum. For installations requiring higher voltage, an alternate relay should be used.

- Before turning off the rectifier, use a digital voltmeter to identify a 10-30 V AC power source across the rectifier's secondary taps (separate from the taps bridged by the bus bar to deliver rectifier output voltage).
- Turn off the rectifier's input power.** Connect the color-coded RM5 power supply input cables to the 10-30 V AC power source identified in **step a**. Secure connections with the provided nuts.
- Feed the input cables through the right-hand hole in the bottom of the external enclosure, secure them with the included grommet, and connect them to the appropriate terminal block inputs as per the diagram on page 3.
- Replace the bus bar on the the rectifier's secondary taps with the REL2510 relay's output cables. Secure the connections with the provided nuts. The bus bar **SHOULD NOT** be reinstalled.
- Secure the REL2510 relay to a ferrous metal surface using the integrated magnetic mounts, or to a non-ferrous metal surface using the included screws. **DO NOT** use adhesives or other materials between the relay and the metal surface it contacts.

3 Connect the RM5 I/O 4 Module

IMPORTANT: On the Bullhorn website, channels 1 and 2 are preconfigured to read rectifier amps and volts, respectively.

- Connect color-coded wires to the rectifier's shunt & DC voltage output lugs, feed them through the left-hand hole in the bottom of the external enclosure, and secure them with the included grommet.
- Connect the color-coded channel input cables to the appropriate terminal block inputs as per the diagram on page 3. See the RM5 I/O 4 module label for maximum channel input ratings.
- Ensure all system connections make solid contact and are protected from moisture and dirt to prevent shorting or corrosion.

4 Install the RM5 Series Dome

IMPORTANT: The RM5 Series dome must be mounted outside of the rectifier cabinet with a clear view to the sky.

- Mount the RM5 Series dome in the desired location using the included screws. Use the provided mounting bracket if necessary.
- The RM5 Series dome should be mounted facing straight up with no obstructions between it and the sky. Surrounding structures may adversely impact the quality of cellular or satellite signal reception.
- Feed the included M8 cable through the center hole in the the bottom of the external enclosure and secure it with the included grommet. To avoid damaging the M8 cable, hand tighten connections at the RM5 Series dome and RM5 I/O 4 module.
- Confirm the green **Dome Status** LED is lit on the RM5 I/O 4 module.

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WARNING: If wires are to be buried or covered, use conduit to protect the wires.



Download Bullhorn
Tools Mobile App

IMPORTANT: Restore input power and confirm the rectifier is functioning normally before proceeding with testing and validation steps.

For configuration details, refer to the **Bullhorn Tools Mobile User Guide** available at <https://support.aiworldwide.com>

Bullhorn Tools Mobile
Training Video



Testing & Validation Steps

Complete the following steps before leaving the installation location

1 Activate Bluetooth and Connect to the Unit

IMPORTANT: To complete testing and validation, you must install the Bullhorn Tools Mobile App on your Bluetooth enabled mobile device.

- Activate Bluetooth on the RM5 I/O 4 Module by swiping a magnet across the access point (marked with a Bluetooth logo on the label). A blue flashing LED on the RM5 I/O 4 Module indicates that unit is ready to pair with a Bluetooth enabled mobile device.
- Launch the Bullhorn Tools Mobile App on your Bluetooth enabled mobile device. Nearby RM5 Series units in pairing mode will appear on the screen. If your RM5 Series unit does not appear, swipe down to refresh the screen.
- Tap the name of the unit you want to connect with. Tap **OK** in the confirmation dialog box.

2 Send a Test Message

IMPORTANT: Wait for the *Unit Info* screen to display valid RSSI, Lat, and Lon values before attempting to send a test message.

- Tap the menu icon in the upper left corner of the screen and select **TestMessage**.
- Enable **Auto Refresh** on the *Test Message Status* screen and tap the **Send Test Message** button. Depending on factors including RSSI, network traffic, and/or satellite coverage, it may take several minutes for a test message transmission to complete.
- The test message transmission has completed successfully when the *Test Message Status* screen shows a **Transmission Successful** notification.

3 Validate Interruption

IMPORTANT: Follow these steps if you have installed a relay and are using the RM5 Series unit to interrupt your rectifier.

- Tap the menu icon in the upper left corner of the screen and select **Interruption**.
- Configure the *Interruption* screen settings as follows:
 - ▶ Interruption Mode - set to **Interruption On**
 - ▶ Output Mode - set to match your relay (**Normally Closed** for the REL2510 relay)
 - ▶ On/Off Times - set On Time to **3s**, set Off Time to **1s**
 - ▶ Cycle Begins With - set to **On**
- Tap the **Update** button. Using a digital volt meter, read the rectifier's current output to verify that interruption is occurring.
- Set Interruption Mode to **Interruption Off** and tap the **Update** button before exiting the Bullhorn Tools Mobile App.

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Installation Diagram

