HOBO® RX Wireless Sensor Network
HOBO RX3000 RXW Manager (RXMOD-RXW-xxx) Manual

HOBO
Data Loggers

The HOBO RX3000 RXW Manager is a module and mote designed to work with the HOBO RX Wireless Sensor Network. When the RXW Manager module is installed in an RX3000 station, data is transmitted wirelessly from sensor motes across the network to the RX3000 station and then uploaded to HOBOlink® web-based software. You can use HOBOlink to monitor the network, view graphs, set up alarms, download data, and more.

Specifications

Operating Temperature Range	-25° to 60°C (-13° to 140°F)
Radio Power	12.6 mW (+11 dBm) non-adjustable
Transmission Range	At least 304.8 m (1,000 ft) line of sight at 1.8 m (6 ft) from the ground, 457.2 m (1,500 ft) typical
Wireless Data Standard	IEEE 802.15.4
Radio Operating Frequencies	RXMOD-RXW-900: 904–924 MHz RXMOD-RXW-868: 866.5 MHz RXMOD-RXW-922: 916–924 MHz
Modulation Employed	OQPSK (Offset Quadrature Phase Shift Keying)
Data Rate	Up to 250 kbps, non-adjustable
Duty Cycle	<1%
Maximum Number of Motes	50 motes per one RX Wireless Sensor Network
Power Source	Powered by the RX3000 station
Dimensions	Mote: 16.2 x 8.59 x 4.14 cm (6.38 x 3.38 x 1.63 inches) Cable length: 2 m (6.56 ft)
Weight	Mote: 159 g (5.62 oz)
Materials	Mote: PCPBT, silicone rubber seal
Environmental Rating	Mote: IP67
Compliance Marks	FC RXMOD-RXW-900: See last page CE RXMOD-RXW-868: The CE Marking identifies this product as complying with all relevant directives in the European Union (EU). ⬚ RXMOD-RXW-922: See last page

HOBO RX3000 RXW Manager

Models:

- RXMOD-RXW-900 (US)
- RXMOD-RXW-868 (Europe)
- RXMOD-RXW-922 (Australia/NZ)

Items Included:

- Cable ties

Components and Operation

Manager Mote Closed

Manager Mote Opened
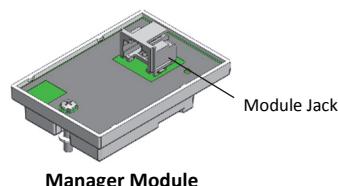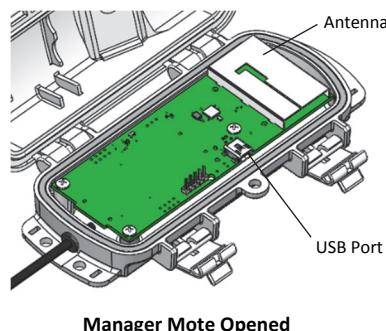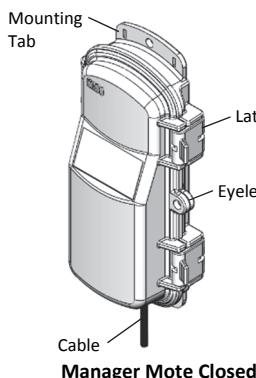
Manager Module

The RXW Manager consists of a mote with a cable attached that is plugged into a module, which is installed in the RX3000 station. These are the components of the mote and module.

Mounting Tab: Use the tabs at the top and bottom of the mote to mount it (see *Deploying and Mounting*).

Cable: Use this cable to connect the mote to the module.

Eyelet: Use this eyelet to attach a 3/16 inch padlock to the mote for security.

Latch: Use the two latches to open and close the mote door.

Antenna: This is the built-in antenna for the radio communications across the RX Wireless Sensor Network.

USB Port: Use this port to connect to the mote to a computer via USB cable if you need to update the firmware (see *Updating Mote Firmware*).

Module Jack: Use this jack to connect the mote to the module with the cable attached to the mote (see *Installing the Module*).

Installing the Module

The module must be installed in an RX3000 station before the motes in the RXW Wireless Sensor Network can join the network.

Important: If you have not already registered the RX3000 station with HOBOlink and set up the station communications, follow the instructions in the RX3000 Quick Start.

To add a module:

1. Stop the station if it is currently logging. Press the Connect button and wait for the station to connect to HOBOlink so that all the latest data is offloaded before adding a new module.
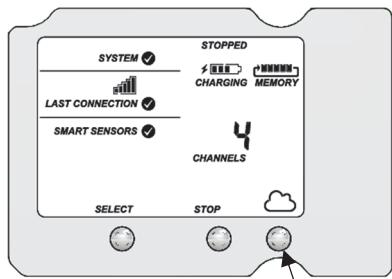
Press Connect if the station was logging to upload the latest data

2. Once the station is done connecting to HOBOlink, power it down by disconnecting the battery and unplugging any charging device.

3. Insert the connector on the back of the module into the receptacle in the left or right module slot.

Insert the connectors on the module here
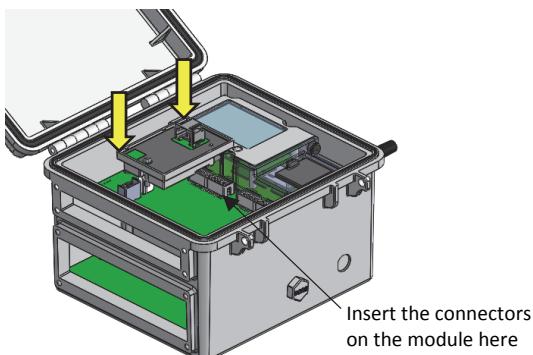
4. Using a Phillips-head screwdriver, tighten the screw at the bottom of the module.

5. Plug the cable from the RXW Manager mote into the jack on the module.
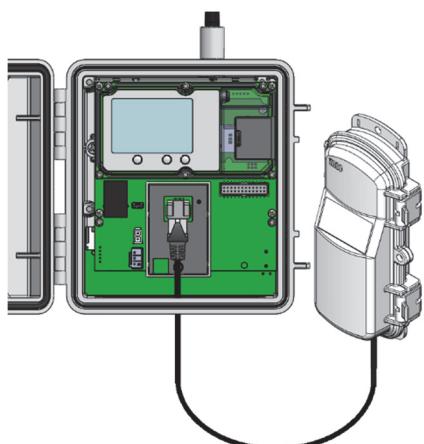
6. Plug in the battery and charging device, and wait for the device to power up. Verify that the new module is listed on the LCD screen with a checkmark. Because the module was installed in the left slot in this example, it is listed on the LCD as module 1.

The module is added to the LCD
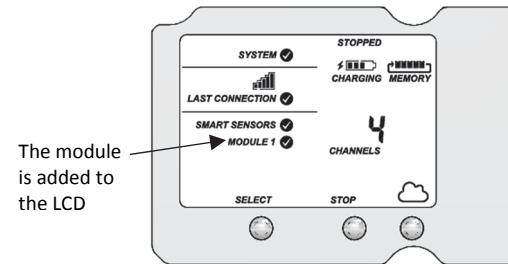
7. The station should automatically connect to HOBOlink (press the Connect button on the station if it does not). Check your station's page in HOBOlink to make sure the new module is listed.

8. Set the logging interval for the module in HOBOlink. Go to Devices > List, select the 🔧 icon next to your station, and select Module/Sensor Configuration. Select Module <1 or 2>: Wireless Sensors Logging, enter a logging interval (how often the sensor motes will record data), and click Save.

WARNING: If you inadvertently install modules while the power is on, you must disconnect and then reconnect the battery and charging device to guarantee proper operation.

The station is ready for motes to be added to the network. Refer to the specific sensor mote or repeater manual for details on adding motes. See the HOBOlink Help for details on how to change the logging and connection intervals, view data, check mote status, add the mote to a map, and more.

Deployment and Mounting

*   Use cable ties to mount the mote via the holes on the mounting tabs.

*   Mount the manager higher than the RX3000 station and any associated solar panels so that the radio signal is not blocked.

*   Avoid mounting the mote near metal, which can cause interference with the signal. Consider using a PVC pipe or other non-metal surface to mount the mote.

*   Make sure the mote door is closed, with both latches fully locked to ensure a watertight seal.

*   Consider using a 3/16 inch padlock to restrict access to the mote. With the mote door closed, hook a padlock through the eyelet on the right side of the door and lock it.

*   To maximize the communication between motes, place the mote within 304.8–457.2 m (1,000–1,500 feet) and full line of sight with the next mote in the network and at least 1.8 m (6 feet) from the ground.

*   If there is an obstruction between the mote and a sensor mote, then use an RXW Repeater (RXW-RPTR-xxx) mounted higher than the two motes. For example, if there is a hill between the RXW Manager mote and the sensor mote, place a repeater at the top of the hill between the two.

- There should not be more than five motes in any direction from a repeater or the RXW Manager. Data logged by a wireless sensor must travel or "hop" across the wireless network from one mote to the next until it ultimately reaches the RXW Manager at the RX3000 station. To make sure the data can successfully travel across the network, the sensor mote should not be more than five hops away from a repeater or manager.

- The RX Wireless Sensor Network can support a maximum of 50 motes.

- Make sure the mote remains in a vertical position once it is placed in its deployment location for optimal network communications.

Maintenance

The mote is designed for outdoor use, but should be inspected periodically. When inspecting the mote, do the following:

- Verify the mote is free of visible damage or cracks.

- Make sure the mote is clean. Wipe off any dust or grime with a damp cloth.

- Wipe off any water before opening the mote.

- Make sure the interior seal is intact and the latches are fully locked when the mote door is closed.

Updating Mote Firmware

If a new firmware version is available for the mote, use HOBOlink to download the file to your computer. Connect the mote to the computer with a USB cable (open the mote door and use the USB port to the right of the LCD). The mote appears as a new storage device in the computer's file storage manager. Copy the downloaded firmware file to the new storage device (the mote). After the file is copied, eject the storage device from the computer and disconnect the cable from the mote. The file will be installed automatically on the mote. **Note to Mac® users:** A message may appear indicating the disk has not ejected properly. The mote is operational and you can ignore the message.

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