

HOBO RX3000 RXW Manager

Models:

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

Items Included:

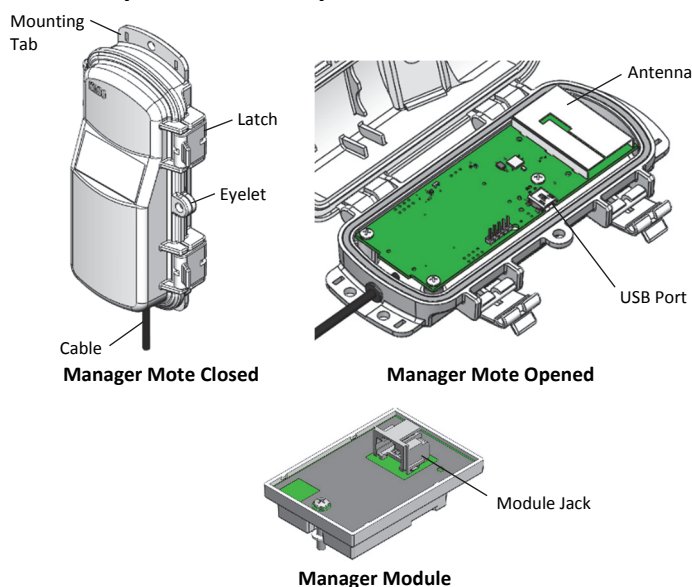
- Cable ties

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	 RXMOD-RXW-900: See last page  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

Components and Operation



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*).

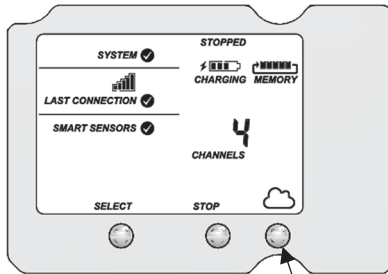
Installing the Module

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.

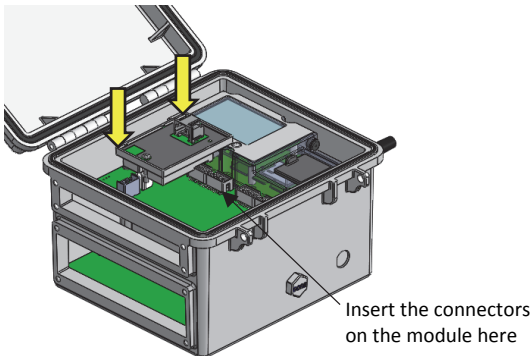
To add a module:

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.

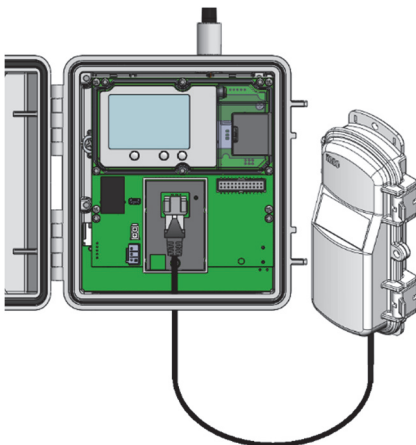


Press Connect if the station was logging to upload the latest data

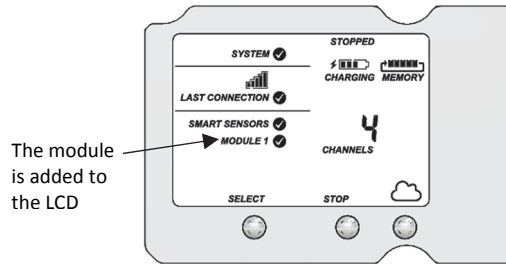
2. Once the station is done connecting to HOBOLink, power it down by disconnecting the battery and unplugging any charging device.
3. Insert the connector on the back of the module into the receptacle in the left or right module slot.



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.



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 hops 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.

Federal Communication Commission Interference Statement

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 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 for help

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Statements

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Avis de conformité pour l'Industrie Canada

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

To comply with FCC and Industry Canada RF radiation exposure limits for general population, the logger must be installed to provide a separation distance of at least 20cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.