RXW Water Level Sensor Interface (RXW-WL-xxx) Quick Start


Adding a Sensor Node to the HOBOnet® Wireless Sensor Network

Important: Keep the sensor node near the station while completing these steps.

If you are setting up a new station, follow the instructions in the station quick start guide before setting up this sensor node (go to www.onsetcomp.com/resources/documentation/24380-man-rx2105-rx2106-qsg for RX2105 and RX2106 stations or www.onsetcomp.com/resources/documentation/18254-man-qsg-rx3000 for RX3000 stations).

1
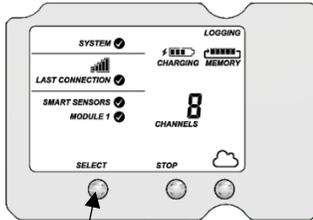
Press the Select button on the station to switch to the module with the manager (module 2 on RX2105 or RX2106 stations).

2
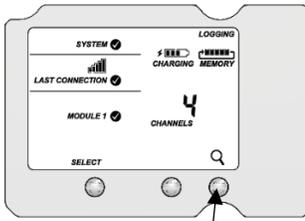
Press the Search button on the station. The magnifying glass icon blinks while the station is in search mode waiting for sensor nodes to join the network.

3 Connect the interface connector to the sensor with the direct-read cable in between as shown here. The end of the cable with the longer housing connects to the interface connector as shown below.

Plug this part of the cable with the longer housing into the interface connector and screw it to hand tighten.

Interface Connector
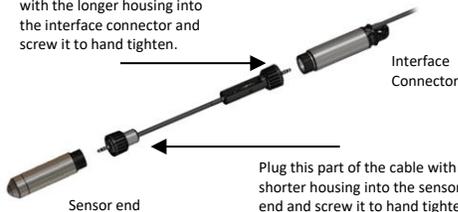
Sensor end

Plug this part of the cable with the shorter housing into the sensor end and screw it to hand tighten.

4
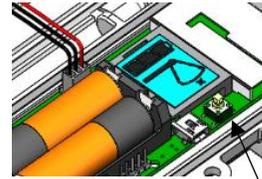
Open the door on the sensor node and install the rechargeable batteries. Press the button on the sensor node for 3 seconds.

5 Watch the sensor node LCD while it joins the network:

a.

This signal strength icon blinks while the sensor node searches for a network.

b.

Once the sensor node finds a network, the icon stops blinking and the bars cycle from left to right.
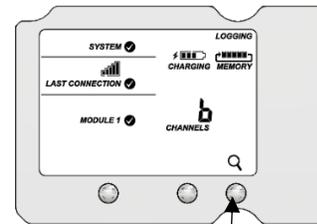
c.

This network connection "x" icon blinks while the sensor node completes the registration process, which may take up to five minutes.

d.

Once the sensor node has finished joining the network, the "x" icon no longer appears. The channel count on the station LCD increases by four.

6

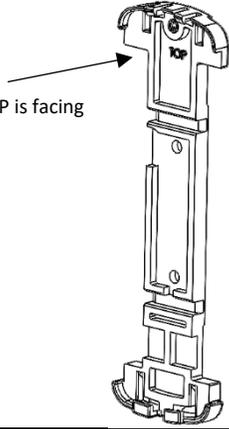Press the Search button on the station again to stop the search for sensor nodes.

7 **HOBOlink®** Go to www.hobolink.com to monitor the status and health of the sensor node. See the HOBOlink Help for details.
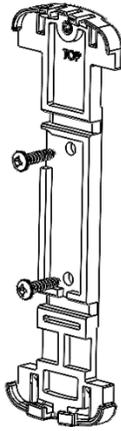
Installing the Bracket and Sensor Node

1

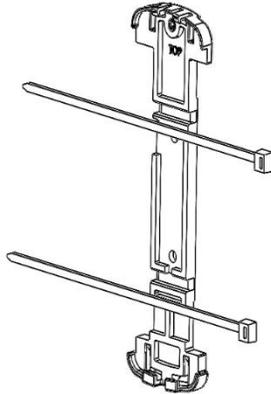Orient the bracket so the text TOP is facing upwards.

2

To install the bracket onto a wall, use the two long screws included in the package. Screw the bracket to a wall using the two holes on the mid-section of the bracket.
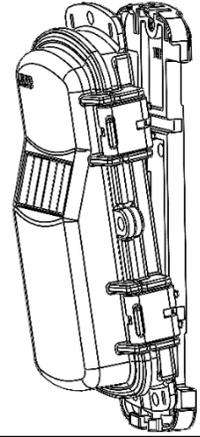
3

To install the bracket onto a pole, slip a cable tie through each of the channels on the bracket and fasten the tie around the pole.
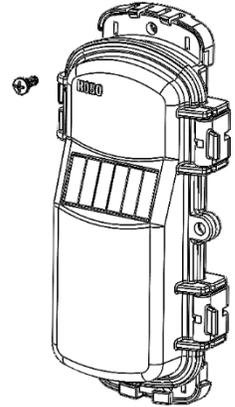
4

Insert the bottom of the sensor node into the retaining clips on the bottom of the bracket then press the top of the sensor node into the clips at the top of the bracket.

5

Use the short screw included in the package to fasten the sensor node to the bracket.

6

Close the sensor node and use a padlock to keep it secure. **Note:** Ensure that the node seal is clean from foreign debris.

Mounting and Positioning the Sensor Node

- Position the sensor node towards the sun, making sure the solar panel is oriented so that it receives optimal sunlight throughout each season. You may need to periodically adjust the position of the sensor node as the path of the sunlight changes throughout the year or if tree and leaf growth alters the amount of sunlight reaching the solar panel.

- Make sure the sensor node is mounted a minimum of 1.8 m (6 feet) from the ground or vegetation to help maximize distance and signal strength.

- Consider using plastic poles such as PVC to mount the sensor node as certain types of metal could decrease the signal strength.

- Place the sensor node so there is full line of sight with the next sensor node. Use a repeater if there is an obstruction between sensor nodes.

- There should not be more than five sensor nodes in any direction from a repeater or the manager. Data from sensor nodes travels or "hops" across the network and may not reach the station if the sensor node is more than five hops away.
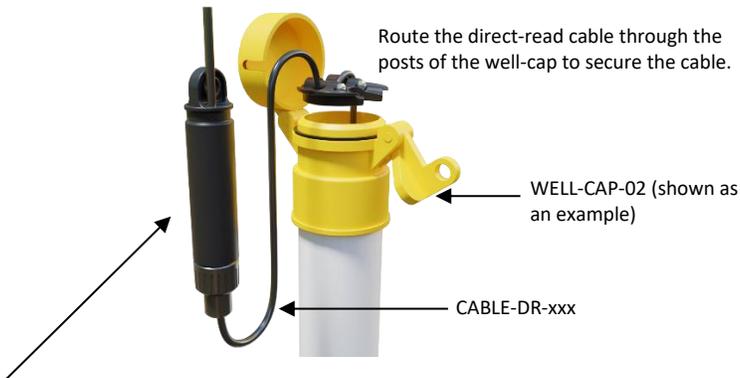
Deploying the Water Level Sensor

Warning: Do not suspend anything from the 6-foot cable. The 6-foot cable is not designed to support the weight of the direct-read cable and sensor.

6-foot cable
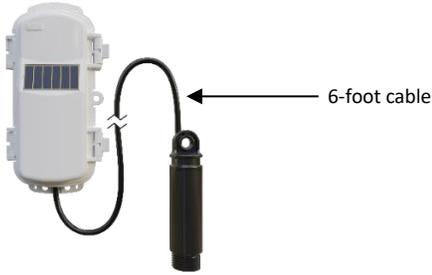
Suspending the direct-read cable and water level sensor

- **Option 1 (preferred): Using the long direct-read cable (CABLE-DR-xxx) and a compatible well-cap**

Route the direct-read cable through the posts of the well-cap to secure the cable.

WELL-CAP-02 (shown as an example)

CABLE-DR-xxx

<u>**Note:**</u> When this option is used, the interface connector is outside of the well.

- **Option 2: Using the mounting hole on the endcap**

    The endcap contains a loop that allows you to use a carabiner (rated to 50 lbs. or grater) or some other reliable method to suspend the interface connector.

Mounting Hole

Example using a carabiner with WELL-CAP-02

Water Level Scaling in HOBOlink

The following sections provide information on how to measure the reference water level and account for water density.

Scenario 1: Setting a Reference Water Level

1. Deploy the water level sensor in water and secure it in position (for example, hang it in a well).
2. Make sure your RX Station is logging and connecting fast enough for you to see the current water depth readings. (Press connect on the RX Station to see the latest logged value).
3. Enable Scaling for the HOBOnet water level sensor. In HOBOlink:
    a. Select Devices, RX Devices, then select your station.
    b. Select the wrench at the top of the page and select Module/Sensor Configuration from the menu.
    c. Select Water Level for the appropriate sensor. On the right side of the page, ensure that *Enable Scaling* is selected.

4. Enter the scaling values:
    a. Enter the Scaled Units: for example meters or feet. This should match the units shown in Latest Value, or you will need to adjust the multiplier to convert.
    b. Enter the multiplier in the Multiplier field.

	Multiplier*
Fresh water	1
Brackish water	0.99
Salt water	0.9765

   c. Enter 0 in the Offset field for now.
    d. Enter the Scaled Measurement Type, for example "*Pond Water Level*".
5. Click save and note the Latest Value.
6. Take a reference water level measurement.
    - Note this as a negative number if the water level surface is *below* the reference point, such as groundwater level referenced to the top of the well (**Figure 1**).
    - Note this as a positive number if the water level surface is *above* the reference point, such as the bottom of the stream or the zero on a staff gauge (**Figure 2**).

7. Calculate the offset, which is equal to the reference water level reading (from step 6) minus the current water depth reading (from HOBOlink in step 5).
8. Enter the calculated offset in the Offset field.
9. Click save.
10. Verify latest value matches the correct water level.

Latest Value: -100.0000 feet

Label: _____

☐ Enable Graph

☑ Enable Scaling

*Scaled Units		*Multiplier		*Offset
feet	=	1	x Value +	-99.8964

*Scaled Measurement Type:
Water Level at Pump 1

Scenario 2: Measuring Water Depth (Figure 3)
1. Ensure the water level sensor is in the air.
2. Make sure your RX Station is logging and connecting fast enough for you to see the current water depth readings. (Press connect on the RX Station to see the latest logged value).
3. Enable Scaling for the HOBOnet water level sensor. In HOBOlink:
   a. Select Devices, RX Devices, then select your station.
   b. Select the wrench at the top of the page and select Module/Sensor Configuration from the menu.
   c. Select Water Level for the appropriate sensor. On the right side of the page, ensure that *Enable Scaling* is selected. (Refer to the screen shot in step 3 of the previous section.)
4. Enter the scaling values:
   a. Enter the Scaled Units: for example meters or feet. This should match the units shown in Latest Value, or you will need to adjust the multiplier to convert.
   b. Enter the multiplier in the Multiplier field.

	Multiplier*
Fresh water	1
Brackish water	0.99
Salt water	0.9765

   c. Enter 0 in the Offset field for now.
   d. Enter the Scaled Measurement Type, for example "*Pond Water Level*".
5. Click save and note the Latest Value.
6. Calculate the offset, which is equal to zero minus the current water depth reading (from step 5).
7. Enter the calculated offset in the Offset field.
8. Click save. Latest value should be zero.
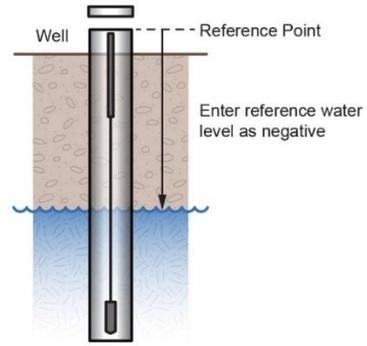9. Deploy the water level sensor in water and secure it in position (for example, hang it in a well).

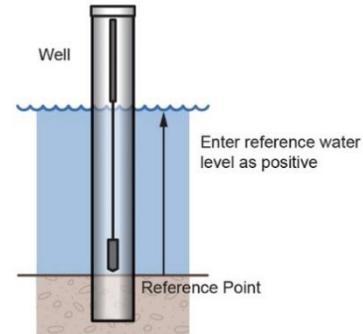

Figure 1: Water level is below reference point

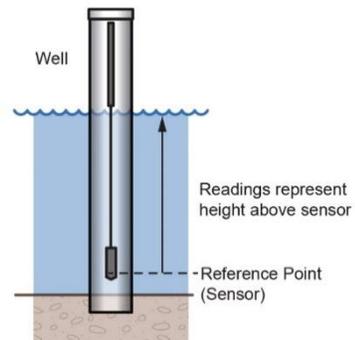Figure 2: Water level is above reference point

Figure 3: Water level is above pressure sensor

For specifications, complete mounting guidelines, and other details about this sensor node, refer to the full product manual. Scan the code at left or go to:
www.onsetcomp.com/resources/documentation/28084-User-Guide-RXW-WL

*The **Multiplier** represents the density of the water, which is a function of its salinity. This is equal to 1 divided by the true density of the water in g/cm^3 (e.g., 1/1.025 for typical salt water).

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