onset®

HOBO Wireless Data Node Setup Guide

This Setup Guide is intended to help you get a receiver and one data node up and running so you can get familiar with the hardware and software. You will supply power to the receiver and the data node, connect the receiver to your computer, and then add the data node to the network.

Once you are familiar with the basic setup tasks, you can go back and add additional data nodes and perform advanced configuration if required.

IMPORTANT

Do not install batteries into devices until you are instructed to in this guide.

Tools Required

- Wire paper clip

Task 1: Install HOBOware® and Start HOBOnode Manager

> **NOTE**: If you already have HOBOware installed, start it now and proceed to Step B.

A. Insert the HOBOware CD in your computer's CD drive and follow the prompts to install the software. HOBOware should open automatically when the installation is complete.

B. From the HOBOware Main Menu, select Device > Manage HOBO Data Node Network.
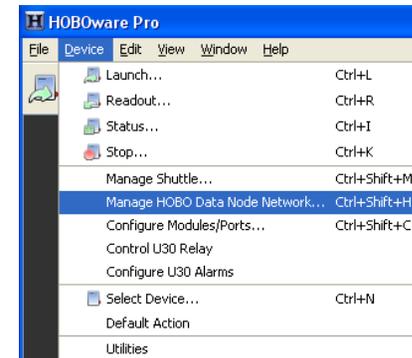
C. Click **Yes** when prompted by the following window:

Next Task: Supply Power to the Receiver

Task 2: Supply Power to the Receiver

Use the supplied power adapter to connect the receiver to a wall outlet.

A. Insert the connector into the **Pwr** jack on the receiver and plug the adapter into a wall outlet.

B. Insert 3 AAA batteries into the receiver for backup power.

Installing Batteries

IMPORTANT: Do not install batteries into the data nodes at this time; only install batteries in the receiver.

1. Twist cover counterclockwise to remove.

2. Insert 3 AAA batteries.

3. Replace the cover, aligning the threaded hole on the cover (a) just above the hole on the case (b).

4. Twist cover clockwise to secure. The mounting holes should be at the top and bottom of the case and the threaded screw hole should be aligned with the hole in the case.

Next Task: Supply Power to the Data Node

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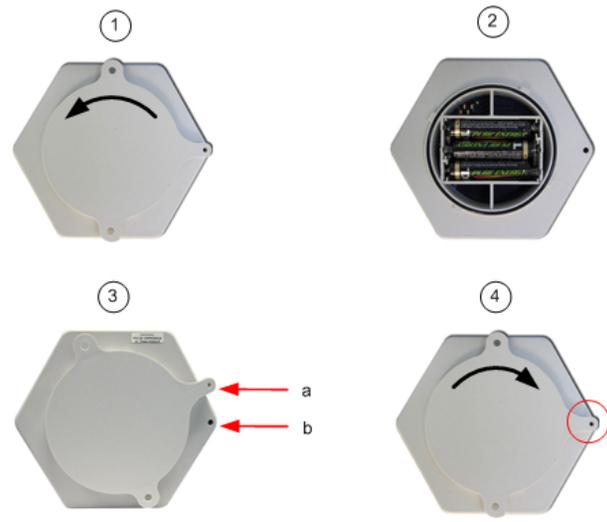
Task 3: Supply Power to the Data Node

Onset strongly recommends that you deploy data nodes where they can be plugged into a wall outlet, which allows them to route data from other data nodes. This optimizes your network reliability.

What to look for: To verify that you have powered the data node correctly, watch the LEDs when you connect power. Both the **RED** and **GREEN** LEDs flash for 5 seconds, then the **RED** LED blinks for 5 seconds, then both LEDs blink once, and then both LEDs go OFF. This confirms that the data node is powered using a wall outlet and can route data.

Use the supplied power cord to connect the data node to a wall outlet.

A. Insert the power cord connector into the **Pwr** jack on the data node.

B. Insert the power plug into a wall outlet.

C. Insert 3 AAA batteries for backup power.

Next Task: Connect the Receiver to your Computer

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Task 4: Connect the Receiver to your Computer

A. Connect the small end of the supplied USB cable to the **comm** port on the receiver.

B. Plug the large end of the USB cable into a USB port on your computer.

   IMPORTANT: Make sure you do not plug the receiver into a USB port that may be shut down due to your computer's power settings. Onset recommends that you do not enable Power Saving options such as *Turn off Hard Disks*, *Hibernation*, or *Shut Down* on your computer. If you connect the receiver to a USB port on your monitor, do not enable the Energy Saver option on your monitor.

The receiver will appear in the Device Table at the bottom of the HOBOnode Manager window.

Troubleshooting: If the receiver does not appear in the Device Table, make sure that the cable is completely plugged in at both ends. Try unplugging the receiver and plugging it back in.

The following message appears.

C. Click the **Form network now** button to put the receiver in Form Network mode, allowing you to add data nodes to the network. You can also click **Not yet**, and click the **Form Network** button located at the bottom of the HOBOnode Manager window when you are ready to add data nodes.

   LED Indication: When the receiver is in Form Network mode, the **RED** and **GREEN** LEDs will alternate blinking slowly.

Next Task: Add Data Node to the Network

Task 5: Add Data Node to the Network

Before you Begin: Make sure the receiver is in Form Network mode (**RED** and **GREEN** LEDs flashing continuously and Forming Network progress indicator appears on screen). If not, click the **Form Network** button at the bottom of the HOBOnode Manager window.

A. If there are any external sensors that will be used with this data node, connect them now.

B. To activate a data node and add it to the network, use a wire paper clip to **briefly** press the button located inside the small hole at the bottom of the case.

LED Indication: While the data node is searching for a receiver, the **RED** and **GREEN** LEDs will alternate blinking.

The node will appear in the Device Table at the bottom of the HOBOnode Manager window.

C. Exit Form Network Mode

Once the data node appears in the Device Table at the bottom of the HOBOnode Manager window, you can exit Form Network mode. Click the X on the Form Network Progress Indicator to exit Form Network Mode.
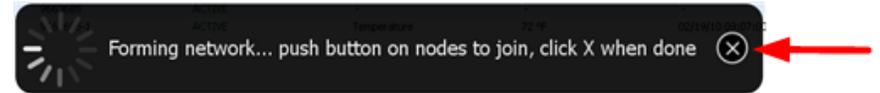
D. View Data Node Popup Balloon

When you first add a data node to the network, a popup balloon appears providing some configuration information about the data node.

1. To dismiss the popup balloon, click the red X in the top right corner.

2. To disable future popups, check the *Don't show popups for new devices* box.
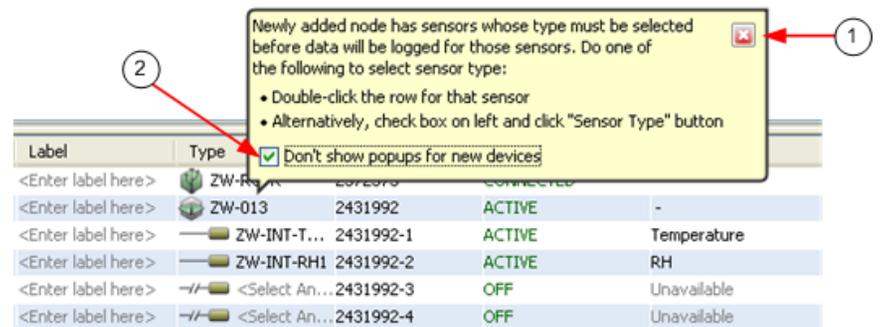
Note: If you have a ZW-005 or a ZW-007 and only have an External Temp/RH sensor installed, you do not need to select a sensor type.

E. View Device Table

The data node (1) will appear in the Device Table at the bottom of the HOBOnode Manager window, with additional rows for each internal sensor (2) and external sensor or sensor port (3).

The Status column for data nodes and internal sensors (4) will indicate ACTIVE.

The Status column for configurable external sensors (5) will indicate OFF, and the Type column will be grayed out, until you select a Sensor Type in Task 6. This does not apply to the external Temp/RH sensor, which is automatically recognized by HOBOnode Manager.

Label	Type	S/N	Status	Meas. Type
<Enter label here>	ZW-RCVR	2372373	CONNECTED	-
<Enter label here>	ZW-013	2431992	ACTIVE	-
<Enter label here>	ZW-INT-T...	2431992-1	ACTIVE	Temperature
<Enter label here>	ZW-INT-RH1	2431992-2	ACTIVE	RH
<Enter label here>	<Select An...	2431992-3	OFF	Unavailable
<Enter label here>	<Select An...	2431992-4	OFF	Unavailable

Next Task: Select External Sensor Type (if applicable)

Task 6: Select External Sensor Type (if applicable)

IMPORTANT: Refer to the documentation that came with your sensor for connection information.

External Sensor Ports

External Temp/RH Sensor Port (1) (2) 2.5mm Stereo Ports for configurable external sensors
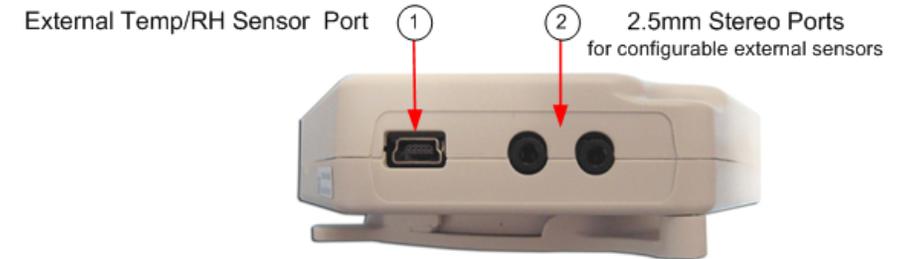
External Temp/RH sensor

The ZW-005 and the ZW-007 support the External Temp/RH sensor (Part #: CABLE-TEMP/RH), which plugs into the External Temp/RH Sensor Port (#1 in the photo above). This sensor is preconfigured and you do not have to select a sensor type.

Separate rows appear under the data node for the Temperature and RH channels with corresponding entries in the Type column.

Select	Label	Type	S/N	Status	Meas. Type
☐	<Enter label ...	ZW-RCVR	2372373	CONNECTED	-
☐	<Enter label ...	ZW-007	2431976	ACTIVE	-
☐	<Enter label ...	CABLE-TEMP/RH (Temp)	2431976-1	ACTIVE	Temperature
☐	<Enter label ...	CABLE-TEMP/RH (RH)	2431976-2	ACTIVE	RH
☐	<Enter label ...	<Select Analog Sensor>	2431976-3	OFF	Unavailable
☐	<Enter label ...	<Select Analog Sensor>	2431976-4	OFF	Unavailable

External Temp/RH Sensor

Configurable External Sensors

Some data nodes support up to four configurable external sensors, which plug into one of the 2.5mm Stereo Ports (#2 in the photo above). You must select a Sensor Type in HOBOnode Manager for these sensors.

When the data node appears in the Device Table, configurable external sensors will not have an entry in the Type column.

Steps

Follow these steps to select a Sensor Type for configurable external sensors.

A. Double-click the row for the sensor in the Device Table.

B. Select the Sensor Type from the drop-down list.

C. Add a label for the sensor (optional).

D. Click **OK**.

Configure Sensor window

Once you select a sensor type, the Status will change to ACTIVE and the appropriate measurement type will appear in the Measurement Type column.

Next Task: Verify Proper Operation

Task 7: Verify Proper Operation

View Readings

You should see values in the Reading column for internal sensors within a few minutes after the data node is added to the network. External sensor readings may take up to 10 minutes after you select a Sensor Type.

Troubleshooting: If you do not see readings for an external sensor, make sure it is securely plugged into the data node and that you have selected a sensor type.

View Real-Time Data

1. Check the box in the **Plot** column for the sensor in the Device Table.

2. Verify that the plot appears. It may take up to 10 minutes after you add the data node to the network for data to begin appearing in the plot.

Next Task: Add More Data Nodes to the Network

Task 8: Add More Data Nodes to the Network

Now that you are familiar with the procedure for adding a data node to the network, you can add the rest of your data nodes.

A. Supply Power to Data Nodes (Task 3 on page 4).

   IMPORTANT: Make sure you are familiar with the power options, and the implications of using one or the other. See Powering Data Nodes on page 18.

B. Click the **Form Network** button at the bottom of the HOBOnode Manager window.

C. Add data nodes to the network by **briefly** pressing the button located inside the small hole at the bottom of the case, as shown in Task 5 on page 7.

D. When all data nodes are added to the network and they appear in the Device Table, exit Form Network mode by clicking the X on the Form Network progress indicator.

Next Task: Configure Advanced Features (Optional)

Task 9: Configure Advanced Features (Optional)

This section outlines a variety of features to help you set up and monitor your network, and to plot data in HOBOware or another application. You can configure these features now or at a later time.

For details on a specific feature, click the **Help** button located on the window related to the feature (if applicable), or open the entire Help by clicking the **Help** button at the bottom of the HOBOnode Manager window.

Add Labels

You can enter a descriptive label for each data node and sensor to help you identify them in the Device Table when configuring alarms and when plotting/exporting data.

To label a device, double-click the Label column where it says <Enter label here> and type in the label.
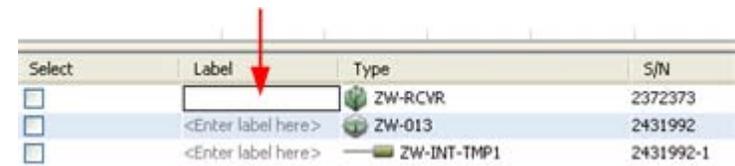
Select	Label	Type	S/N
☐		ZW-RCVR	2372373
☐	<Enter label here>	ZW-013	2431992
☐	<Enter label here>	ZW-INT-TMP1	2431992-1

Add Data Nodes to the Network Map

Place icons on the Network Map to help you keep track of your devices. You can expand Information Balloons on the device to view status information and sensor readings.

1. Check the Map box for the device in the Device Table.

2. Click on the map where you want to place the icon for the device.

3. Repeat steps 1 and 2 for each device you want to add to the map.

4. Click the **Refresh Network Paths** button to display updated connection paths.

For More Information: Click the **Help** button on the Network Map.

Edit Logging and Connection Intervals

By default, data nodes log data from sensors once per minute (Logging Interval), and connect to the receiver every 10 minutes (Connection Interval). To change the default Logging Interval and Connection Interval for a data node, double-click the row for the data node in the Device Table and change the values in the Configure Node window.

To change the default for all data nodes added going forward, click the **Actions** button at the bottom of the HOBOnode Manager window, select Edit HOBO Data Node Preferences and then change the values in the General preferences section.

Enable Alarms

There are two types of alarms that you can enable in HOBOnode Manager:

- Sensor Alarms - You can configure alarms to be notified if a sensor reading is out of a configured range.

- System Alarms - The Missing Node alarm notifies you if a data node has not connected to the receiver within a specified period of time. The Heartbeat alarm periodically notifies you that the receiver is active and communicating with data nodes. The Low Battery alarm alerts you when the batteries are low in data nodes and/or routers.

To configure a Sensor Alarm in HOBOnode Manager, click the button in the Alarm column in the Device Table. This opens the Add Sensor Alarm window. Enter alarm values as desired.

To quickly set up an alarm for now, just select either a Visual or Audible notification Action. To set up email or text message notifications, you will need to configure SMTP settings in the Alarm Preferences (see below).

For More Information: Click the **Help** button on the Add Sensor Alarm window.

To enable a **System** Alarm (Missing Node, Heartbeat, or Low Battery), click the Alarms tab at the top of the HOBOnode Manager window, click the System tab, and then click the **Enable** button for the desired alarm.

To quickly set up an alarm for now, just select either a Visual or Audible notification Action. To set up email or text message notifications, you will need to configure SMTP settings in the Alarm Preferences (see below).

For More Information: Click the **Help** button in the corresponding alarm window.

Email or Text Message Notifications

Before you can set up alarms with Email or Text Message notifications, you must set your Alarm Preferences. At the bottom of the HOBOnode Manager window click the **Actions** button and then select Edit HOBO Data Node Preferences.

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For More Information: See *Setting Alarm Preferences* in the HOBOware Help.

Configure Scaling on External Sensors (If Applicable)

If scaling is supported/required on an external sensor, double-click on the sensor row in the Device Table and then click the **Configure** button in the Scaling section to open the Configure Scaling window.

NOTE: Sensors that support scaling will have a scaling icon next to them in the Sensor Type drop-down list and in the Device Table once configured.

For More Information: Click the **Help** button on the Configure Scaling window.

Plot/Export Data

To plot data for viewing in HOBOware Pro, or to export data to a text file for use with a third-party application, click the **Plot/Export Data** button at the bottom of the HOBOnode Manager window to open the Plot/Export Wireless Data window.

For More Information: Click the **Help** button on the Plot/Export Wireless Data window.

Create Groups

You can create groups and then assign sensors to them, and then use groups to sort rows in the table, or to refine a list of sensors in the Plot/Export Wireless Data window.

For More Information: See *Using Groups to Sort Sensors*, in the HOBOware Help.

Powering Data Nodes

Onset strongly recommends that you deploy data nodes where they can be plugged into a wall outlet, which allows them to route data from other data nodes. This optimizes your network reliability.

Using a wall outlet also greatly reduces the frequency with which batteries will have to be replaced.

IMPORTANT: How a data node is **initially** powered determines if it will be able to route data from other data nodes. If you plug the data node into a wall outlet first, it will be able to route data. If you install batteries before you plug the data node into the wall, it will not be able to route data.

Data Nodes Plugged into Wall Outlet

IMPORTANT: If a data node will have access to a wall outlet when deployed, make sure you plug the data node into the wall outlet before installing batteries. If you install batteries before you plug it into the wall, it will not have routing capabilities.

If a data node will be plugged into a wall outlet when deployed:

1. Insert the power cord connector into the **Pwr** jack on the receiver.

2. Insert the power plug into an AC wall outlet.

   LED Indication: Both the **RED** and **GREEN** LEDs flash for 5 seconds, then the **RED** LED blinks for 5 seconds, then both LEDs blink once, and then both LEDs go OFF. This confirms that the data node is powered using a wall outlet and can route data.

3. After you have plugged the data node into the wall outlet, insert 3 AAA batteries for backup power.

If you are configuring data nodes at your desk, you can plug them into a wall outlet one at a time, add them to the network, and then unplug them until you move them to their deployment location.

Data Nodes with Battery Power Only

IMPORTANT: If a data node will not have access to a wall outlet when deployed, make sure you install batteries first. Data nodes that are initially powered using batteries will not have routing capabilities.

1. Insert 3 AAA batteries.

   LED Indications: Both **GREEN** and **RED** LEDs will flash for 5 seconds, then the **RED** LED will flash for 5 seconds, and then both LEDs will be OFF.

Verify Power Source in HOBOnode Manager

When you add a data node to the network and it appears in the Device Table in HOBOnode Manager, verify that the icon in the Type column indicates the correct data node type: router/data node, or data node.

	Router/Data Node	Data node can route data from other data nodes.
		IMPORTANT: If a data node appears as a router/data node but is not plugged into a wall outlet when deployed, the batteries will be drained very quickly. See *Switching from AC Power to Battery Power* in the HOBOware Help for information.
	Data Node	Data node cannot route data from other data nodes.
		IMPORTANT: If this data node is actually plugged into wall outlet and intended to be a router/data node, you may have installed batteries before plugging it into the wall. See *Switching from Battery Power to AC Power* in the HOBOware Help for information.

LED Indications

LED Pattern > Indication

Refer to this table to interpret an LED pattern on a device.

LED Pattern	Indication
GREEN blinks every 5 seconds	Data node is on the network
RED blinks every 5 seconds	Data node is off the network
Alternating **RED** and **GREEN**	Device is in Form Network mode or is joining a network
Alternating **RED** and **GREEN** twice, then **RED** stays ON	Data node cannot find network
Alternating **RED** and **GREEN** for 2 minutes, then **RED** stays ON	Data node could not join network because the receiver is out of range, or there is interference.
GREEN blinks rapidly 10 times, then **RED** blinks rapidly 10 times, then both stay OFF.	You pressed the button to add the data node to the network, but the data node did not enter Join Network mode. Try pressing the button again.
RED and **GREEN** blink simultaneously for 5 seconds, then **RED** for 5 seconds, then both blink once, then both go OFF	Powering a data node using a wall outlet. **NOTE**: If you unplug the data node and then plug it back in within 30 seconds, there will be no LED indication.
GREEN blinks for 5 seconds, then **RED** blinks for 5 seconds, then both go OFF	Powering a data node using batteries only

Action > LED Pattern

Use this table to verify actions that you are performing.

Action	LED Pattern
Powering a data node using a wall outlet	RED and GREEN simultaneously for 5 seconds, then RED for 5 seconds, then GREEN once, then OFF
Powering a data node using batteries only	GREEN for 5 seconds, then RED for 5 seconds, then OFF
Forming a network	Receiver: Alternating RED and GREEN continuously ZW-ROUTER or Router/Data Node: Alternating RED and GREEN continuously, then blink GREEN twice, then resume alternating. Data Node: Alternating RED and GREEN continuously, then GREEN every 5 seconds.
Removing a data node from the network	RED 10 times, then RED and GREEN on for several seconds, then off

Device Status

Use this table to verify the status of a device.

Status	LED Pattern
Data node is ACTIVE	GREEN every 5 seconds
Data node is off the network	RED every 5 seconds
Data node is transmitting data	RED and GREEN twice simultaneously
Data node is in Form Network mode	Alternating RED and GREEN continuously

Troubleshooting

Receiver will not connect to HOBOnode Manager

Make sure the USB plug is secure on both ends. Try unplugging and plugging the receiver back in.

Data node will not connect to the receiver

Try the following:

- Make sure the receiver is in Form Network mode (RED and GREEN LEDs alternating)

- Make sure you have pressed the button on the bottom of the data node (Task 5 on page 7) and that the RED and GREEN LEDs are alternating. Try pressing the button again.

Data node did not join as the right type (router/data node or data node)

See *Switching from AC Power to Battery Power* or *Switching from Battery Power to AC Power* in the HOBOware Help for instructions on changing a data node's power source/data node type.

No readings for a sensor

For external sensors, make sure the connection to the data node is secure and that you have assigned a Sensor Type (does not apply to the External Temp/RH Sensor). See Task 6 on page 10.

No plot appears for a sensor

Make sure you have checked the **Plot** box in the Device Table for the sensor.

Extreme external Temp/RH readings

Make sure that there is actually a sensor plugged into the data node and the connection is secure.

More Information

HOBOware Help

For more complete information on HOBOnode Manager and setting up data nodes, click the **Help** button at the bottom of the HOBOnode Manager window to open the HOBOware Help. When the Help opens, click the *Open topic with navigation* link at the top of the page to open the Table of Contents for the entire Help.

HOBO Data Node Deployment Guide

For diagrams showing deployment scenarios and troubleshooting, see the Deployment Guide topics in the HOBOware Help or as a standalone PDF document on the Onset web site at:

http://www.onsetcomp.com/indoor-wireless-hobo-data-nodes

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This document may be available in other languages, on the Onset Web site. Please go to:

> http://www.onsetcomp.com/support/manuals

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