pHionics
Water Quality Sensors
Since 1982

RX3000 Setup with pHionics STs Series Devices

Contents

Required Equipment

1. pHionics pH, ORP, Dissolved Oxygen, or Conductivity Sensor
2. HOBO RX3000 with Analog Sensor Module (RXMOD-A1)
3. USB cable (Only necessary for RX3002 - WiFi Model)
    a. Also known as a mini-USB cable
    b. CABLE-USBMB from Onset
4. Ethernet Cable (Only necessary for RX3001 - Ethernet Model)
5. AC-U30 power supply
6. Freshly prepared Calibration Standards (Differs depending on transmitter parameter)
7. Deionized water for rinsing
8. Computer with HOBOware installed (This guide is being made with Version 3.7.21)
9. HOBOlink account and data plan
10. Small flathead screwdriver

Setting up the HOBO RX3000

Please see Onset's HOBO RX3000 Remote Monitoring Station Quick Start Instructions to set up your RX3000.

Connecting pHionics Sensors to the HOBO RX3000

pHionics sensors use two wires for each parameter along with a shared shield wire. The red and black wires correspond to the first parameter (pH, ORP, Dissolved Oxygen, or Conductivity) while the green and white wires are for the temperature output. The clear-coated wire is the shield wire. Each **pair** of wires is **reversible**, so it does not matter whether the red goes in Channel 1 and black in the power supply or vice versa.

Parameter 1 – Red and black wires (Reversible)

Parameter 2 – White and Green wires (Reversible)

Shield – Clear coated wire

1. Follow Onset instructions for installing the Analog Sensor Module.
2. Thread the pHionics sensor cable through the access slot at the bottom of the HOBO RX3000.

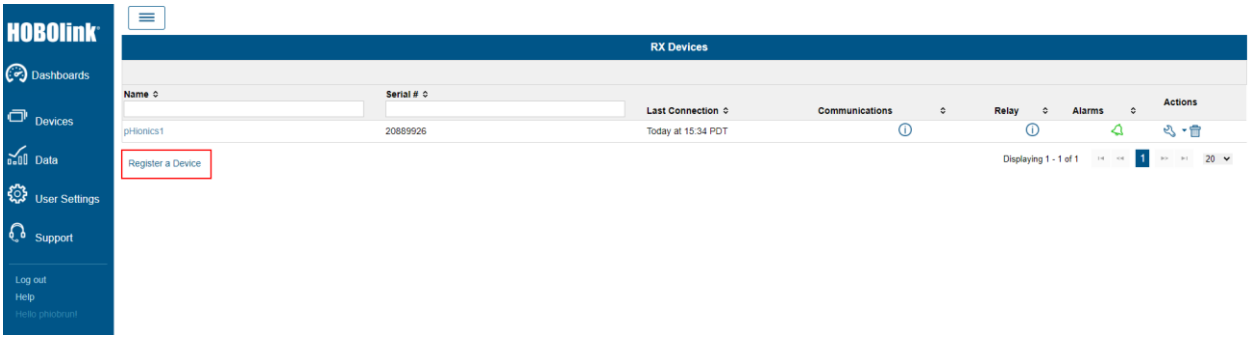
3. Insert one of the wires for the first parameter in the first available channel and screw it in tightly.
    a. If the wire is loose and falls out during logging, the entire system will require rebooting.
4. Insert the second wire into the +12V output and screw it in tightly.
5. *Optional but highly recommended*: Insert the clear-coated wire into a SHLD connection and screw it in tightly.
    a. The shield wire provides greater stability and accuracy of readings but is not required.

6. Repeat Steps 2 and 3 for the second parameter (green and white wires) if temperature was purchased.
7. Pull lightly on each wire to confirm they are held in place by the screws.

Setting up pHionics STs Series Devices in HOBOlink

*To save time, put the pHionics sensor in the **freshly prepared** calibration solutions now so the sensor and solution can equilibrate to the same temperature. Stabilization should take approximately 5-10 minutes.* ***The metal housing of the sensor must contact solution for accurate measurements.***

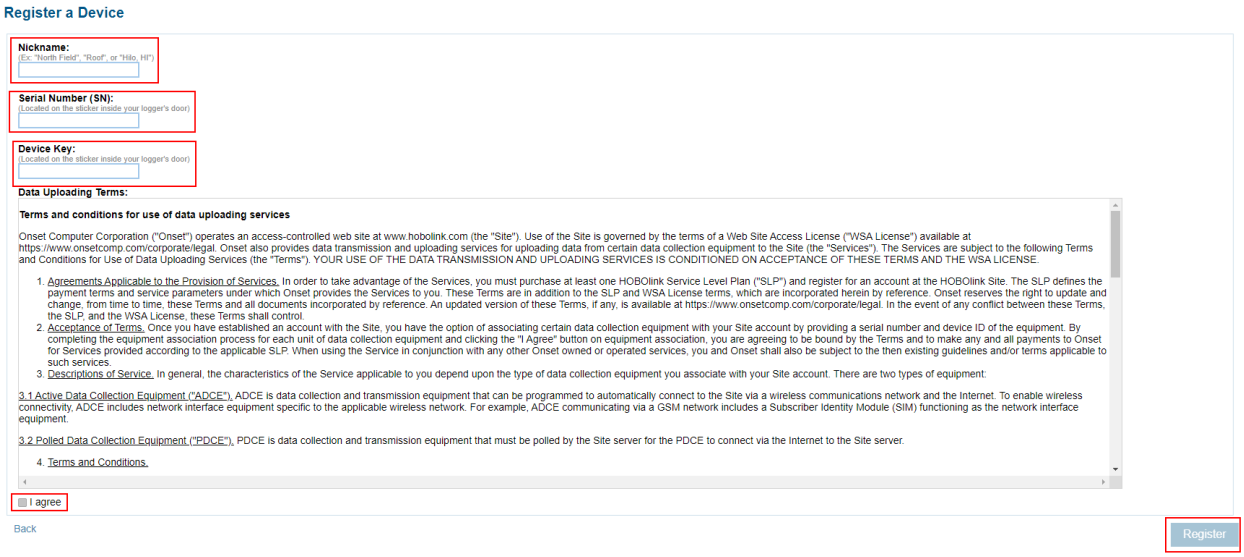
1. Sign into HOBOlink.com.
2. If the device has already been registered, skip to step 6, otherwise complete steps 3-5 to register the RX3000.
3. Click on "Register a Device".



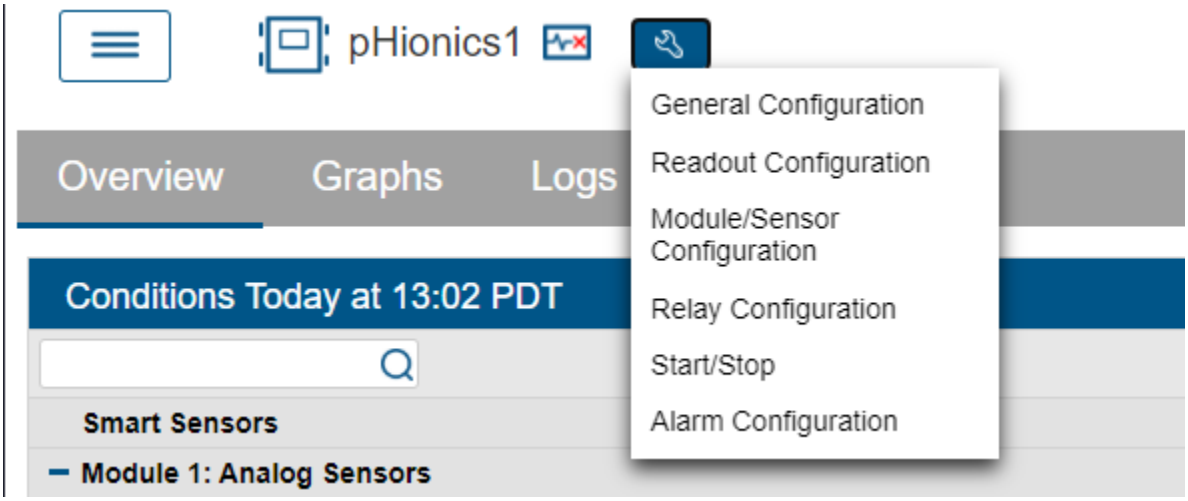
4. Enter the desired Nickname, Serial Number, and Device Key into the blank fields and read through the Data Uploading Terms.

a. These can be found on the inside of the RX3000 cover.

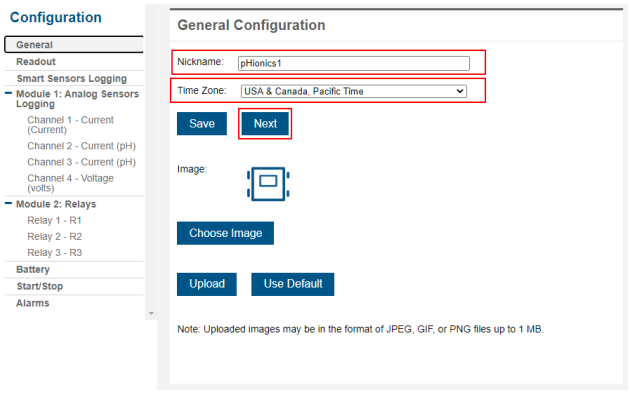
5. Check the box labeled “I agree” and click “Register” at the bottom right of the screen.



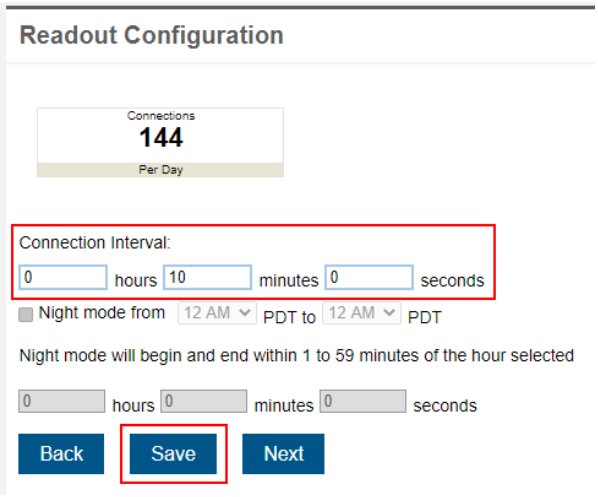
6. Click on the “Devices” page if not already there and click on the name you gave the RX3000 to open the device page.
7. Click on the wrench icon in the top middle of the screen to the right of the device name.



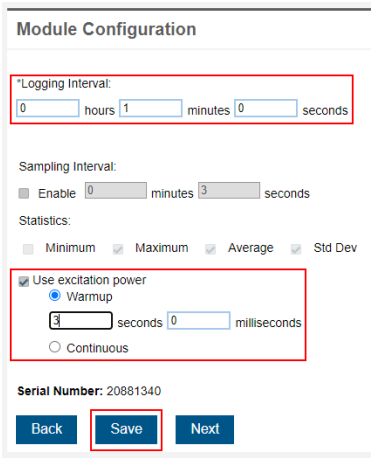
8. Click on “General Configurations”.
9. Input the correct time zone and press “Next”.
    a. “Next” automatically saves your input.



10. Click the “Next” button to move to the “Readout” page.
11. Set the desired Connection Interval and click “Save”.
    a. Your data plan will determine how short or long that interval can be.



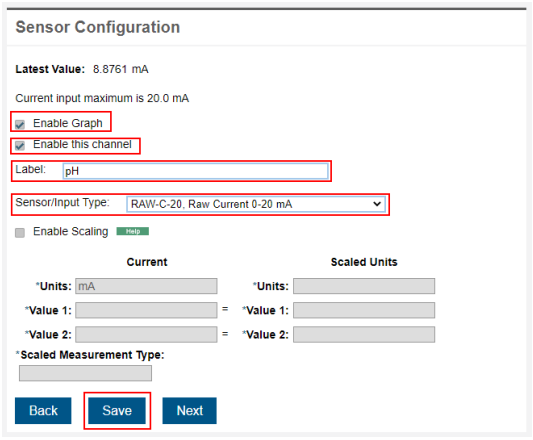
12. Click on “Module 1: Analog Sensors Logging” in the left menu.
13. Set the Logging Interval to 1 minute.
14. Ensure the box for “Use Excitation Power” is checked.
15. Ensure “Warmup” is selected with the time set to 3 seconds.



16. Click “Save” then click on the Channel that was selected for Parameter 1.
17. Ensure that the boxes next to “Enable Graph” and “Enable this channel” are checked and input the desired Label.

a. In this tutorial, we are connecting a pH sensor.

18. In the dropdown menu for Sensor/Input Type, select "RAW-C-20, Raw Current 0-20mA".
19. Click "Save".



20. Repeat steps 17-19 for the optional temperature parameter, if desired.
21. Click "Back to Device" in the lower left corner.

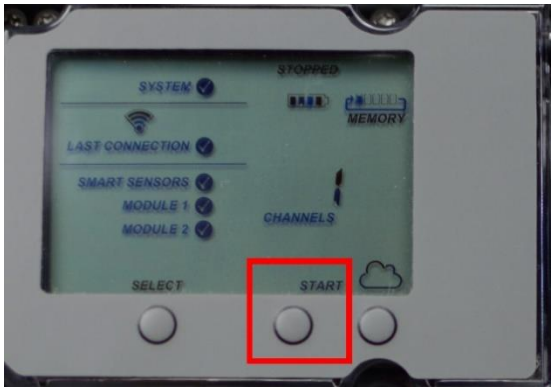
Calibrating pHionics Sensors with the RX3000

A pH sensor is being calibrated in this example. Other parameters require a similar process with different calibration buffers. For more information, please see our Quick Start Guides or STs Series Manual.

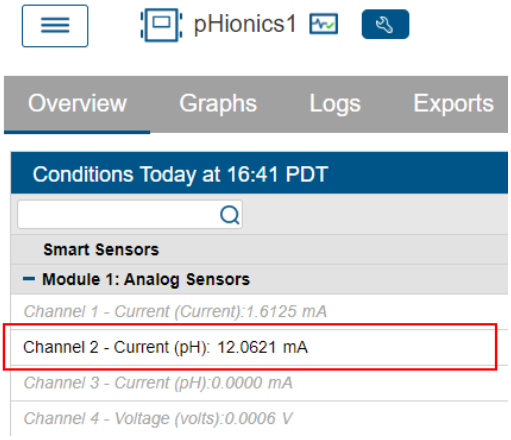
1. Submerse the pHionics sensor in ***freshly prepared*** 7 pH calibration buffer and allow to stabilize for approximately 5 minutes if this step was not done before sensor configuration. (Standard 50 ml centrifuge tubes work very well for this procedure if properly supported to prevent tipping).
    a. **Always ensure the metal housing is contacting the solution for accurate measurements.**

2. If the screen on the RX3000 is blank, press any button to wake it up.

3. Press the middle button under the word "Start" to begin logging.
    a. The word 'Connection' should start flashing along with a connection symbol on the LCD display of the RX3000.

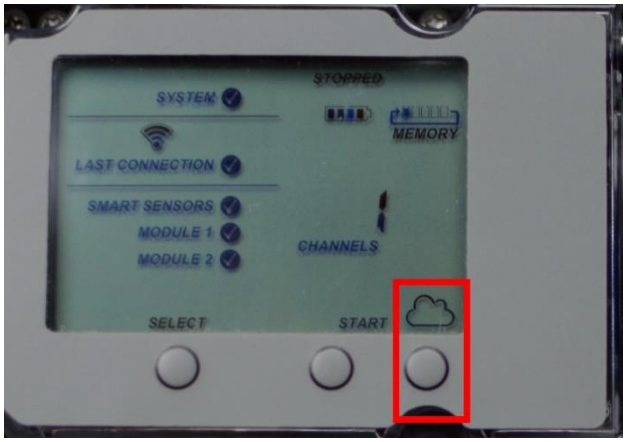


4. Refresh the HOBOlink webpage once Connection stops blinking and has a checkmark next to it.

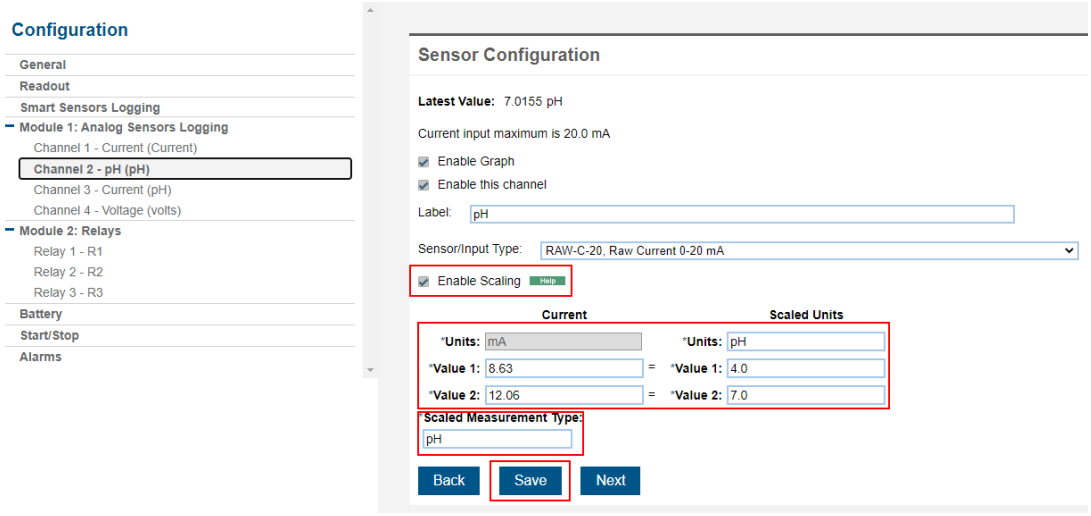


5. Record the mA value in the chosen channel of your device on a piece of paper.
    a. For 7 pH buffer, the mA reading should be 11.50-12.50 mA.
    b. If the reading is less than 4mA, wait one sampling period (1 minute if following this guide) then press the far-right button on the RX3000 (below the cloud icon). This will initiate a connection to HOBOlink. Once the Connection icon stops blinking and has a checkmark next to it, refresh the HOBOlink page and the updated mA reading should be present.
    c. If the reading is greater than 4mA but outside of the expected range, it is possible the electrode requires cleaning. Follow pHionics Sensor Maintenance Guidelines for cleaning instructions.
6. Remove the sensor from the 7 pH calibration buffer and rinse with deionized water.
7. Submerse the sensor in the second calibration buffer and wait for the sensor to stabilize (Approximately 5 minutes for greatest accuracy).
    a. 4 pH buffer is being used in this example.

8. Initiate a connection to HOBOlink by pressing the far-right button on the RX3000.



9. Wait for the Connection icon to stop flashing and show a checkmark next to it before refreshing the HOBOlink page.
10. Record the mA value for 4 pH on the same piece of paper used to write down the 7 pH output.
11. Press the blue wrench icon for the Configuration dropdown menu and select "Module/Sensor Configuration".
12. Click on the channel for the sensor under "Module 1: Analog Sensors Logging".
13. Click on the box next to "Enable Scaling".
14. Enter in the recorded values. Ensure that the Units are set to pH and the Scaled Measurement Type is also set to pH.



15. Click "Save" the click "Back to Device" in the lower left corner.
16. The pHionics pH sensor is now set up.
17. Repeat this calibration process for any other pHionics sensors.