

Wireless pH Sensor

PS-3204

Introduction

The Wireless pH Sensor measures the pH of a solution within a pH range between 0 and 14. The measurement is transmitted wirelessly via Bluetooth and displayed in PASCO Capstone or SPARKvue data collection software. The pH Sensor can also be used with alternative probes, such as the Oxidation Reduction Potential Probe (PS-3515) or a variety of Ion Selective Electrodes (ISEs).

Components

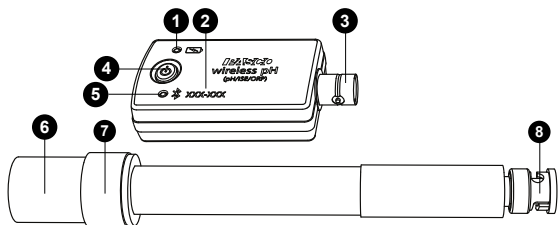
Included equipment:

- Wireless pH Sensor
- pH probe

Required equipment:

- PASCO Capstone or SPARKvue data collection software

Features:



1. Battery Status LED

Blinks red when the battery is near the end of its life.

2. Device ID

Use to identify the sensor when connecting via Bluetooth.

3. BNC connector (sensor)

Use to connect the sensor to the pH probe. Can also be used to connect the probe to various ion selective electrodes, the Oxidation Reduction Potential Probe (PS-3515), or the Flat pH Probe (PS-3514).

4. ON/OFF button

Press to turn the sensor on. Press and briefly hold to turn the sensor off. To preserve battery, the sensor automatically turns itself off after several minutes of inactivity if not connected.

5. Bluetooth Status LED

Indicates the status of the Bluetooth connection.

Bluetooth LED	Status
Red blink	Ready to pair
Green blink	Connected
Yellow blink	Logging data

For information on remote data logging, see the PASCO Capstone or SPARKvue online help.

6. Storage bottle

Contains pH storage solution, which keeps the probe hydrated while not in use. Remove the storage bottle from the probe before taking measurements.

7. Storage bottle cap

The cap can remain on the pH probe when the storage bottle is removed. Push the cap to the top of the pH probe when taking measurements.

8. BNC connector (pH probe)

Use to connect the pH probe to the sensor. Push and turn clockwise (when viewed with the probe connector facing away from you) until the connector locks into place.

Get the software

You can use the sensor with SPARKvue or PASCO Capstone software. If you're not sure which to use, visit [pasco.com/products/guides/software-comparison](https://www.pasco.com/products/guides/software-comparison).

SPARKvue is available as a free app for Chromebook, iOS, and Android devices. We offer a free trial of SPARKvue and Capstone for Windows and Mac. To get the software, go to [pasco.com/downloads](https://www.pasco.com/downloads) or search for **SPARKvue** in your device's app store.

If you have installed the software previously, check that you have the latest update:

SPARKvue: Main Menu > Check for Updates

PASCO Capstone: Help > Check for Updates

Check for a firmware update

SPARKvue

1. Press the power button until the LEDs turn on.
2. Open SPARKvue, then select **Sensor Data** on the Welcome Screen.



3. From the list of available devices, select the sensor that matches your sensor's device ID.
4. A notification will appear if a firmware update is available. Click **Yes** to update the firmware.
5. Close SPARKvue once the update is complete.

PASCO Capstone

1. Press the power button until the LEDs turn on.
2. Open PASCO Capstone and click **Hardware Setup** in the Tools palette.



- From the list of available wireless devices, select the sensor that matches your sensor's device ID.
- A notification will appear if a firmware update is available. Click **Yes** to update the firmware.
- Close Capstone once the update is complete.

Set up the hardware

Before taking measurements with the sensor, you must connect the pH probe to the sensor and remove the storage bottle from the probe.

Connect the pH probe to the sensor

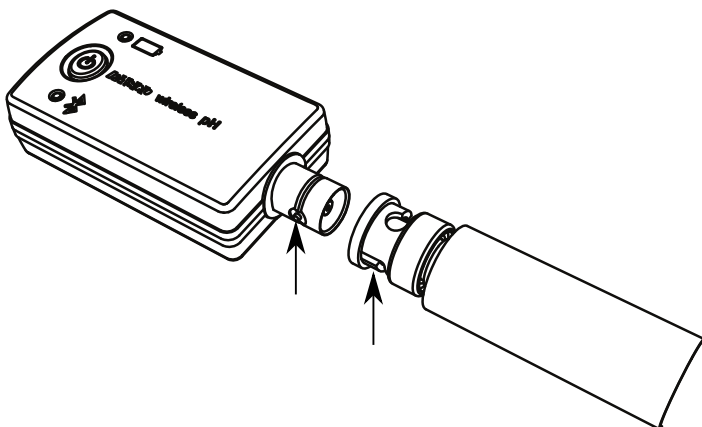


Figure 1. Aligning the tabs on the BNC connectors.

- Align the tabs on the sensor's BNC connector with the slots on the probe's BNC connector, as shown in Figure 1.
- Push the probe's BNC connector onto the sensor's BNC connector.
- Twist the probe's BNC connector clockwise (when viewed with the probe connector facing away from you) about one-quarter turn to lock it into place.

To disconnect the pH probe, push the probe BNC connector towards the pH sensor and turn the connector counterclockwise.

NOTE: The Wireless pH Sensor also works with several alternative electrodes available from PASCO, including various ion selective electrodes (ISEs), the Oxidation Reduction Potential (ORP) Probe (PS-3515), and the Flat pH Probe (PS-3514). See the **Buying Guide** on the product page for more information.

Remove the storage bottle

- Hold the pH probe vertically so that the solution will not spill out of the bottle.
- Unscrew the plastic cap and remove the bottle. Keep the storage solution for later use.
- Push the bottle cap and rubber washer up the pH probe to keep them out of the way of the solution to be measured. (See Figure 2.)



Figure 2. Removing the storage bottle from the pH probe.

Placing the sensor in a solution

When taking measurements, place the end of the pH probe in a solution. Make sure that the bulb at the end of the probe is completely immersed in the solution.

IMPORTANT: Do not immerse the BNC connectors in the solution! The connectors are *not* rust-proof and can corrode from direct exposure to liquid.

An Electrode Support (PS-3505) is recommended for holding the probe in place. The Wireless Drop Counter (PS-3214) can also be used to hold the probe.


Set up the software

SPARKvue

Connecting the sensor to a tablet or computer via Bluetooth:


- Turn on the pH Sensor. Check to make sure the Bluetooth Status LED is blinking red.
- Open SPARKvue, then click **Sensor Data**.
- From the list of available wireless devices on the left, select the device which matches the device ID printed on your sensor.

Collecting data using SPARKvue:



- Select the measurement you intend to record from the **Select measurements for templates** column by clicking the check box next to the relevant measurement's name.
- Click **Graph** in the **Templates** column to open the Experiment Screen. The graph's axes will auto-populate with the selected measurement versus time.
- Click **Start**  to begin collecting data.

PASCO Capstone

Connecting the sensor to a computer via Bluetooth:

1. Turn on the pH Sensor. Check to make sure the Bluetooth Status LED is blinking red.
2. Open PASCO Capstone, then click **Hardware Setup**  in the **Tools** palette.
3. From the list of **Available Wireless Devices**, click the device with a device ID which matches the one printed on your sensor.

Collecting data using Capstone:

1. Double-click the **Graph**  icon in the **Displays** palette to create a new blank graph display.
2. In the graph display, click the **<Select Measurement>** box on the y-axis and select an appropriate measurement from the list. The x-axis will automatically adjust to measure time.
3. Click **Record**  to begin collecting data.

Calibration

Calibration of the Wireless pH Sensor is not always necessary, especially if you are measuring a change in pH rather than absolute pH values. However, the sensor can be calibrated if more precise measurements are required. For instructions on calibrating the sensor, see the PASCO Capstone or SPARKvue online help.

Storage and maintenance

Cleaning the probe

For most applications, you can clean the probe using hot water with a domestic cleaning detergent. The following table contains specific cleaning recommendations for different types of solutions to which the probe may be exposed.

Solution type	Recommended cleaning solution
Lime and hydroxides	5-10% hydrochloric acid
Organic fouling agents (fats, oils, etc.)	Rubbing alcohol or liquid dish soap
Algae and bacteria	Diluted chlorine bleach

Storing the sensor and probe

After each use, place the pH probe in the storage bottle filled with the storage solution. The bulb at the end of the probe must be fully immersed in the storage solution. Do not store the probe dry, as this will cause the probe to lose responsiveness. If needed, probe restoration instructions are provided online on the Wireless pH Sensor product page.

Replacement pH Storage Solution (SC-3507) can be purchased if any solution is lost due to spillage or evaporation. If you wish to make your own storage solution, instructions are provided online on the Wireless pH Sensor storage page.

When storing the sensor long-term, remove the battery from the sensor to avoid risk of damage to the sensor in the event of battery leakage.

Replacing the battery

When the Battery Status LED blinks red, the battery is low on charge and will soon need to be replaced.

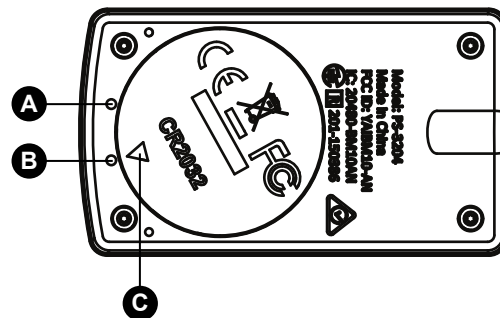


Figure 3. pH Sensor battery compartment. **A:** First mark. **B:** Second mark. **C:** Indicator.

To replace the battery, follow the steps below. The components are labeled in Figure 3.

1. Insert a coin into the battery compartment door. Turn the door counterclockwise until the indicator (C) is aligned with the second mark (B).
2. Remove the battery compartment door, O-ring gasket, and battery.
3. Insert a new CR2032 battery into the compartment, with the positive (+) side facing upward toward the door.
4. Insert the O-ring gasket into the compartment.
5. Place the door on the sensor, aligning the indicator with the second mark. Turn the door clockwise until the indicator is aligned with the first mark (A).

Software help

The SPARKvue and PASCO Capstone Help provide information on how to use this product with the software. You can access the help from within the software or online.

SPARKvue

Software: Main Menu > Help

Online: help.pasco.com/sparkvue

PASCO Capstone

Software: Help > PASCO Capstone Help

Online: help.pasco.com/capstone

Specifications and accessories

Visit the product page at pasco.com/product/PS-3204 to view the specifications and explore accessories. You can also download experiment files and support documents from the product page.

Experiment files

Download one of several student-ready activities from the PASCO Experiment Library. Experiments include editable student handouts and teacher notes. Visit pasco.com/freelabs/PS-3204.

Technical support

Need more help? Our knowledgeable and friendly Technical Support staff is ready to answer your questions or walk you through any issues.

-  Chat [pasco.com](https://www.pasco.com)
-  Phone 1-800-772-8700 x1004 (USA)
+1 916 462 8384 (outside USA)
-  Email support@pasco.com

Limited warranty

For a description of the product warranty, see the Warranty and Returns page at www.pasco.com/legal.

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Product end-of-life disposal



This electronic product is subject to disposal and recycling regulations that vary by country and region. It is your responsibility to recycle your electronic equipment per your local environmental laws and regulations to ensure that it will be recycled in a manner that protects human health and the environment. To find out where you can drop off your waste equipment for recycling, please contact your local waste recycle or disposal service, or the place where you purchased the product. The European Union WEEE (Waste Electronic and Electrical Equipment) symbol on the product or its packaging indicates that this product must not be disposed of in a standard waste container.

CE statement

This device has been tested and found to comply with the essential requirements and other relevant provisions of the applicable EU Directives.

FCC statement

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.

Battery disposal



Batteries contain chemicals that, if released, may affect the environment and human health. Batteries should be collected separately for recycling and recycled at a local hazardous material disposal location adhering to your country and local government regulations. To find out where you can drop off your waste battery for recycling, please contact your local waste disposal service, or the product representative. The battery used in this product is marked with the European Union symbol for waste batteries to indicate the need for the separate collection and recycling of batteries.