

# Wireless pH Sensor with OLED Display

PS-4204

## Introduction

The Wireless pH Sensor with OLED Display measures the pH of a solution within a pH range between 0 and 14. This measurement is displayed at all times on the OLED display on the front of the case. If desired, the measurement can also be transmitted (either wirelessly through Bluetooth or via the included USB-C cable) and displayed using PASCO Capstone or SPARKvue data collection software.

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

**⚠ CAUTION:** Do NOT expose the sensor body to the substance being measured! The casing is not waterproof, and exposing the body to water or other liquids may cause electric shock or serious damage to the sensor. Only the glass bulb at the end of the probe needs to be immersed in the liquid to obtain an accurate pH measurement.

## Components

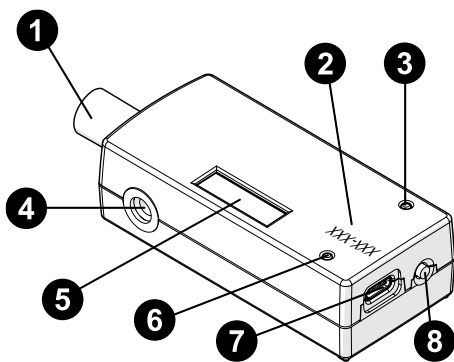
### Included equipment:

- Wireless pH Sensor with OLED Display
- pH probe
- USB-C cable

### Compatible software:

- PASCO Capstone, SPARKvue, or chemvue data collection software

## Features



### 1 BNC connector (sensor)

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

### 2 Device ID number

Use to identify the sensor when connecting via Bluetooth.

### 3 Battery Status LED

Indicates the charging status of the sensor's rechargeable battery.

Battery LED	Status
Red blink	Low battery
Yellow ON	Charging
Green ON	Fully charged

### 4 Mounting rod hole

Use to mount the sensor to a 1/4-20 threaded rod, such as the Mounting Rod (SA-9242).

### 5 OLED display

Displays the pH or voltage reading at any given moment.

### 6 Bluetooth Status LED

Indicates the status of the sensor's Bluetooth connection.

Bluetooth LED	Status
Red blink	Ready to pair
Green blink	Connected
Yellow blink	Logging data (SPARKvue or Capstone only)

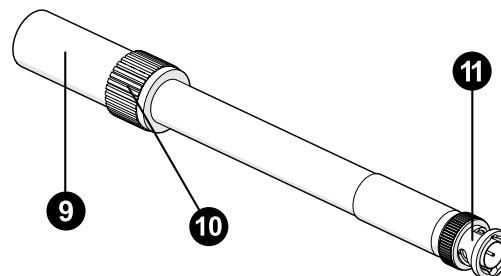
For more information on remote data logging, see the PASCO Capstone or SPARKvue online help. (This feature is not available in chemvue.)

### 7 USB-C port

Charge the sensor by connecting this port to a standard USB charger using the included USB-C cable. You can also use this port to connect the sensor to a computer via a USB port, allowing you to send and display data without the use of Bluetooth.

### 8 Power button

Press to turn the sensor on. Press twice in quick succession to toggle the measurement on the OLED display. Press and hold to turn the sensor off.



### 9 Storage bottle

Contains a storage solution that keeps the probe hydrated while not in use. Remove from probe before taking measurements.

**10 Storage bottle cap**

Can remain on the pH probe when the storage bottle is removed. To avoid affecting results, push the cap to the top of the probe when taking measurements.

**11 BNC connector (pH probe)**



Use to connect the pH probe to the sensor. Push in 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, PASCO Capstone, or chemvue software. If you're not sure which to use, visit [pasco.com/products/guides/software-comparison](https://www.pasco.com/products/guides/software-comparison).

A browser-based version of SPARKvue is available for free on all platforms. 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** or **chemvue** 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


 **chemvue:** See the download page.

## 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 wireless 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** from the Tools palette.
 
3. From the list of available wireless 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 Capstone once the update is complete.

**chemvue**

1. Press the power button until the LEDs turn on.
2. Open chemvue, then select the **Bluetooth**  button.
3. From the list of available wireless 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 chemvue 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

1. Align the tabs on the sensor's BNC connector with the slots on the probe's BNC connector.
2. Push the probe's BNC connector into the sensor's BNC connector.
3. 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, turn the connector counterclockwise, and pull the two components away from each other.

### Remove the storage bottle

1. Hold the pH probe vertically so that the solution will not spill out of the bottle.
2. Unscrew the plastic cap and remove the bottle. Keep the storage bottle and solution for later use.
3. 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 1.)



Figure 1: 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! These components are *not* waterproof, and directly exposing these parts to liquid can corrode them and cause damage to the sensor.

An Electrode Support (PS-3505) is recommended for holding the probe in place. You can also use the Wireless Drop Counter (PS-3214) or a ¼-20 threaded rod such as the Pulley Mounting Rod (SA-9242) for this purpose.

## Using the sensor without software

The Wireless pH Sensor with OLED Display can be used without data collection software. To do so, simply turn on the sensor, place the probe into the substance to be measured, and observe the OLED display. The display will record the pH measurement from the probe, refreshing at a rate of 2 Hz.

By default, the OLED display measures the pH as a unitless value. However, you can also set the sensor to display the voltage, in millivolts (mV), recorded at the tip of the probe. To toggle between these two measurements, quickly press and release the power button twice in succession.

**NOTE:** Other measurements with the pH Sensor, such as those used for ISEs, require data collection software to determine and cannot be tracked on the OLED display at this time.

## Use the sensor with software

### SPARKvue

#### Connecting the sensor to a tablet or computer via Bluetooth:

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

#### Connecting the sensor to a computer via USB-C cable:

1. Open SPARKvue, then click **Sensor Data**.
2. Connect the provided USB-C cable from the USB-C port on the sensor to a USB port or powered USB hub connected to the computer. The sensor should automatically connect to SPARKvue.

#### Collecting data using SPARKvue:

1. 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.
2. Click **Graph** in the **Templates** column to open the Experiment Screen. The graph's axes will auto-populate with the selected measurement versus time.
3. Click **Start** to begin collecting data.

## PASCO Capstone

#### Connecting the sensor to a computer via Bluetooth:

1. Turn on the Wireless pH Sensor with OLED Display. 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 which matches the device ID printed on your sensor.

#### Connecting the sensor to a computer via micro USB cable:

1. Open PASCO Capstone. If desired, click **Hardware Setup** to check the connection status of the sensor.
2. Connect the provided USB-C cable from the USB-C port on the sensor to a USB port or powered USB hub connected to the computer. The sensor should automatically connect to Capstone.

#### 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.

## chemvue

#### Connecting the sensor to a computer via Bluetooth:

1. Turn on the Wireless pH Sensor with OLED Display. Check to make sure the Bluetooth Status LED is blinking red.
2. Open chemvue, then click the **Bluetooth** button at the top of the screen.
3. From the list of available wireless devices, click the device which matches the device ID printed on your sensor.

#### Connecting the sensor to a computer via USB-C cable:

1. Open chemvue. If desired, click the **Bluetooth** button to check the connection status of the sensor.
2. Connect the provided USB-C cable from the USB-C port on the sensor to a USB port or powered USB hub connected to the computer. The sensor should automatically connect to chemvue.

#### Collecting data using chemvue:

1. Open the **Graph** display by selecting its icon from the navigation bar at the top of the page.
2. The display will automatically be set to plot pH versus time. If a different measurement is desired for either axis, click the box containing the default measurement's name and select the new measurement from the list.
3. Click **Start** to begin collecting data.

## Calibration

The Wireless pH Sensor with OLED Display does not always need to be calibrated, 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 and search for "Calibrate a pH Sensor".

## Storage and maintenance

### Cleaning the probe

For most applications, you can clean the probe with hot water and 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 it to lose responsiveness. If needed, probe restoration instructions are provided online on the product page.

Replacement pH Storage Solution (SC-3507) can be purchased if any solution is spilled or evaporates. If you wish to make your own storage solution instead, instructions for doing so are available at [www.pasco.com/support/knowledge-base/21](http://www.pasco.com/support/knowledge-base/21).

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.

## Replace the battery

The battery compartment is located on the back of the sensor, as shown in Figure 2. If needed, you can replace the battery with the 3.7V 300mAh Lithium Replacement Battery (PS-3296). To install the new battery:

1. Use a Phillips screwdriver to remove the screw from the battery door, then remove the door.
2. Unplug the old battery from the battery connector and remove the battery from the compartment.
3. Plug the replacement battery into the connector. Make sure the battery is properly positioned inside the compartment.
4. Place the battery door back in place and secure it with the screw.

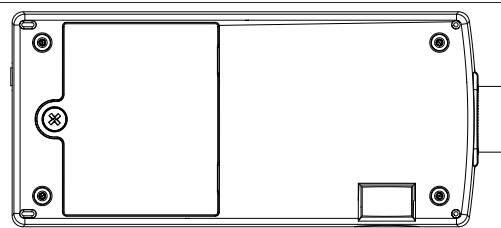


Figure 2: Location of battery compartment.

After replacing the battery, make sure to dispose of the old battery properly per your local laws and regulations.

## Software help

The SPARKvue, PASCO Capstone, and chemvue 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](http://help.pasco.com/sparkvue)

### PASCO Capstone

Software: Help > PASCO Capstone Help

Online: [help.pasco.com/capstone](http://help.pasco.com/capstone)

### chemvue

Software: Main Menu  > Help

Online: [help.pasco.com/chemvue](http://help.pasco.com/chemvue)

## Specifications and accessories

Visit the product page at [pasco.com/product/PS-4204](http://pasco.com/product/PS-4204) 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-4204](http://pasco.com/freelabs/PS-4204).

## 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](http://pasco.com)

 Phone 1-800-772-8700 x1004 (USA)  
+1 916 462 8384 (outside USA)

 Email [support@pasco.com](mailto:support@pasco.com)

## Limited warranty

For a description of the product warranty, see the Warranty and Returns page at [www.pasco.com/legal](http://www.pasco.com/legal).

## Copyright

This document is copyrighted with all rights reserved. Permission is granted to non-profit educational institutions for reproduction of any part of this manual, providing the reproductions are used only in their laboratories and classrooms, and are not sold for profit. Reproduction under any other circumstances, without the written consent of PASCO scientific, is prohibited.

## Trademarks

PASCO and PASCO scientific are trademarks or registered trademarks of PASCO scientific, in the United States and in other countries. All other brands, products, or service names are or may be trademarks or service marks of, and are used to identify, products or services of, their respective owners. For more information visit [www.pasco.com/legal](http://www.pasco.com/legal).

## 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.