

pH Sensor (PS-2102)

Introduction

The pH Sensor measures the pH of a solution. The measurement is recorded and displayed by the connected computer or datalogger. The pH Sensor is well-suited for both continuous recording and discrete measurements.

Components



- 1 pH amplifier
- 2 pH electrode
- 3 Storage bottle containing storage solution

Required additional components:

- PASPORT-compatible interface
- PASCO Capstone or SPARKvue data collection software

Related products:

- Replacement electrode (PS-2573)
- pH Buffer Capsule Kit (SC-2321)

Quick start

1. Connect the amplifier to your PASPORT-compatible interface. If you are using a computer, connect the PASPORT interface to it.
2. Connect the pH electrode to the amplifier.
3. Start the PASCO data collection software.
4. Remove the electrode from the storage bottle.
5. Rinse the electrode with distilled water and blot dry.
6. Immerse the end of the electrode in the solution to be measured.
7. Begin recording data.

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

Go to Main Menu  > **Check for Updates**

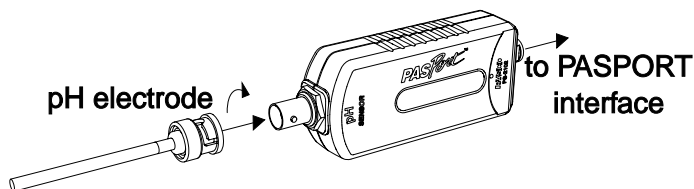
PASCO Capstone

Go to **Help** > **Check for Updates**.

Set-up

Connecting the components

1. Plug the sensor's PASPORT connector into any port of a PASPORT-compatible interface. Turn on the interface if needed.
2. Push the connector at the end of the electrode cable onto the sensor's electrode connector. Twist the connector to lock it into place.
3. If you are using a computer, connect the PASPORT interface to it and start PASCO Capstone or SPARKvue. (For more details, see the manual for the PASPORT interface.) The software should automatically recognize and connect to the pH sensor.



For more information on using SPARKvue or PASCO Capstone, consult the Capstone or SPARKvue online help.

Removing the storage bottle

1. Hold the electrode vertically to prevent the solution from spilling out of the bottle.
2. Unscrew the bottle cap and pull the bottle down to remove it. Keep the storage solution for later use.
3. Push the bottle cap up the electrode shaft to keep it out of the way of measurements.

Collecting data

Once you have connected your sensor to PASCO Capstone or SPARKvue, follow these steps to collect pH measurements from a solution.

1. Rinse the electrode with distilled water and blot dry.
2. Immerse the electrode in the solution to be measured. The bulb-shaped glass membrane should be entirely immersed.
3. Using the data collection software, create a display measuring **pH** and begin recording data.
4. Wait for the reading to stabilize.
5. Once you have collected your reading, remove the electrode from the solution. Rinse the electrode again before placing it in any other solutions.

Calibration

Calibration is not always necessary, especially if you are interested in measuring *changes* in pH rather than absolute pH values. However, the sensor can be calibrated using SPARKvue or PASCO Capstone to improve accuracy. For information on the calibration procedure, see the PASCO Capstone or SPARKvue online help and search for "**Calibrate a pH Sensor**".

Maintenance

Electrode storage

When storing the electrode, rinse the electrode with distilled water and place it back in the storage bottle filled with storage solution. If more storage solution is needed, you can order pH Storage Solution (SC-3507) from PASCO. You can also create your own storage solution using the instructions found on the pH Storage Solution product page. Do **not** store the electrode dry for any length of time, as this will reduce its responsiveness.

Restoring the electrode

Follow this procedure to improve the response of a slow electrode, or to rehydrate the membrane if it dries out.

- Clean the electrode using one or more of these methods:
 - If the electrode is contaminated with proteins, soak the electrode in a solution of 1% pepsin with 0.1 M hydrochloric acid (HCl).
 - If the electrode is contaminated with inorganic deposits, rinse the electrode with 0.1 M Ethylenediaminetetraacetic acid (EDTA) solution.
 - If the electrode is contaminated with oil or grease, wash the electrode with a mild detergent or solvent known to be effective for the particular film.
 - If the electrode is not responding quickly, soak the electrode alternately in 0.1 M sodium hydroxide (NaOH) and 1 M HCl (hydrogen chloride). Leave it in each solution for one minute. Rinse completely between soakings and end with HCl.
- Soak the electrode in 0.1 M hydrochloric acid (HCl) for 15 minutes.
- Soak the electrode in a pH 7 buffer solution for 30 minutes.

If this procedure fails to improve the response of the electrode, replace the electrode.

Replacement and alternative electrodes

A replacement pH Electrode (PS-2573) is available for purchase from PASCO. The PASPORT pH Sensor is also compatible with other PASCO combination pH electrodes that have BNC connectors, such as the Oxidation Reduction Potential Probe (PS-3515) or various Ion Selective Electrodes. See the PASCO website at www.pasco.com for more information.

Software help

The SPARKvue and PASCO Capstone Help provide additional information on how to use this product with the software. You can access the help 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-2102 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-2102.

Technical support

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

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|---|-------|---|
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+1 916 462 8384 (outside USA) |
|  | Email | support@pasco.com |

Regulatory information

Limited warranty

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

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