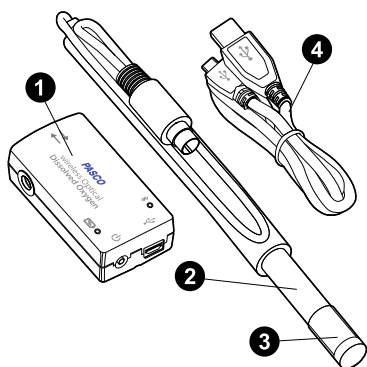


Wireless Optical Dissolved Oxygen Sensor (PS-3246)

Introduction

This device measures the concentration and saturation percentage of dissolved oxygen molecules in aqueous solutions. It also simultaneously measures temperature and oxygen gas concentration. The probe is waterproof to a depth equal to the length of the connective cable.

Equipment



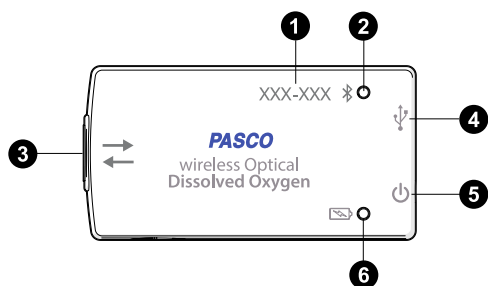
Included items:

- 1 Wireless Optical Dissolved Oxygen Sensor
- 2 Probe
- 3 Transparent rubber boot with sponge
- 4 Micro USB cable

Required items:

- PASCO Capstone or SPARKvue data collection software

Sensor features



1 Device ID

Use this to identify the sensor when connecting via Bluetooth.

2 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

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

Bluetooth Status LED is disabled when the sensor is connected to a computer via the micro USB cable.

3 Probe port

Connect the probe to this port when collecting data.

4 USB port

Use with the micro USB cable to connect the sensor to a USB wall charger to charge the battery. Can also be used to send measurement data to the data collection software when connected to a USB port or powered USB hub connected to a computer or mobile device. (NOTE: This connection method is not supported by iOS.)

5 Power button

Press to turn the sensor on. Press and briefly hold to turn the sensor off.

6 Battery Status LED

Indicates the battery level and charging status.

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

Getting started

Before using this device in the classroom, you will need to charge the battery, install data collection software, and check for a firmware update.

Charge the battery

The Wireless Optical Dissolved Oxygen Sensor's rechargeable battery should be charged before using the sensor for the first time, as the sensor is not shipped with a full charge. Charge the battery by connecting the micro USB port to any standard USB charger. The Battery Status LED is solid yellow while charging. When fully charged, the LED changes to solid green.

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**.

Check for a firmware update

SPARKvue

1. Press the power button until the LEDs turn on.
2. Open SPARKvue.
3. Select **Sensor Data** on the Welcome Screen.



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

PASCO Capstone

1. Press and hold the power button until the LEDs turn on.
2. Open PASCO Capstone.
3. Click **Hardware Setup**.



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

Set up the software

SPARKvue


Connecting the sensor to a tablet or computer via Bluetooth:

1. Turn on the Wireless Optical Dissolved Oxygen Sensor. 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 Wireless Optical Dissolved Oxygen Sensor.

Connecting the sensor to a computer via micro USB cable:


1. Open SPARKvue, then click **Sensor Data**.
2. Connect the provided micro USB cable from the micro USB 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 measurements you intend to record from the **Select Measurements for Templates** menu by clicking the check box next to the relevant measurements' names.
2. Click **Graph** in the **Templates** section to open the Experiment Screen. The graph's axes will auto-populate with the selected measurements.
3. When you are ready, click **Start**  to begin recording data.

PASCO Capstone



Connecting the sensor to a computer via Bluetooth:

1. Turn on the Wireless Optical Dissolved Oxygen Sensor. Make sure the Bluetooth Status LED is blinking red.
2. Open 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 Wireless Optical Dissolved Oxygen Sensor.

Connecting the sensor to a computer via micro USB cable:

1. Open Capstone. If desired, open **Hardware Setup**  to check the connection status of the sensor.
2. Connect the provided micro USB cable from the micro USB 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. To assign measurements to the graph's axes, click each **<Select Measurement>** box and select an appropriate measurement from the list.
3. When you are ready, click **Record**  to begin collecting data.

Collecting data

Taking measurements

Once the sensor is connected to PASCO Capstone or SPARKvue, create a display to measure **DO₂ Concentration**. Remove the rubber boot to uncover the sensor cap. Place the probe into a water sample to a depth of at least one inch. (For best temperature compensation, fully immerse the stainless steel portion of the probe.) When you are ready, begin collecting data.

Measure oxygen gas concentration in air

The Wireless Optical Dissolved Oxygen Sensor was specifically designed to be used in water. However, reasonably good qualitative results may be obtained in air. Oxygen gas concentration in air is calculated by taking the DO₂ Saturation value from the sensor and multiplying it by 20.9%, which is the assumed partial pressure contribution of O₂ in air. Best accuracy will be achieved in high humidity environments. Long-term measurements in dry air are not recommended, as this will dry out the probe sensor cap.



IMPORTANT: The probe should not be used in an environment with flammable, caustic, or corrosive gases.

To use the sensor in air, follow the same instructions as using the sensor in water, except select **O₂ Gas Concentration** as the measurement.

Calibration

The Wireless Optical Dissolved Oxygen Sensor is calibrated at the factory and does not need to be recalibrated under most circumstances. However, if needed, the sensor can be calibrated using one or two known standards. For more information on calibrating the sensor, see the PASCO Capstone or SPARKvue online help.

Care and maintenance

The sensor cap will degrade over time with use. The working life of the sensor can be extended by keeping the cap clean and properly stored between uses.

Storage

The sensor cap should not be allowed to dry out. Moisten the sponge inside the rubber boot with distilled water and cover the sensor cap with the boot. Gently push the rubber boot against the end of the probe to ensure that the sponge is in contact with the sensor cap. Do not store the probe in water, as that can encourage algae growth on the probe.

Cleaning

To clean the sensor cap, rinse it with clean water and dry it with a lint-free cloth. A mild detergent may be used if necessary. *Do not* use alcohols or other organic solvents that may deteriorate the sensing layer.

Sensor cap replacement

The sensor cap may need to be replaced if it is no longer responsive. It should also be replaced if it becomes cracked, scratched, or damaged. A Replacement Cap (PS-3250) can be purchased from PASCO. Contact Technical Support to determine whether a replacement sensor cap is needed.



NOTE: When installing a replacement cap, you must set the appropriate calibration coefficients for the cap in the software. For information on this, see the manual for the cap or the PASCO Capstone or SPARKvue online help.

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-3246 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-3246.

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
-  Phone 1-800-772-8700 x1004 (USA)
+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.

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.

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.