Wireless CO$_2$ Sensor
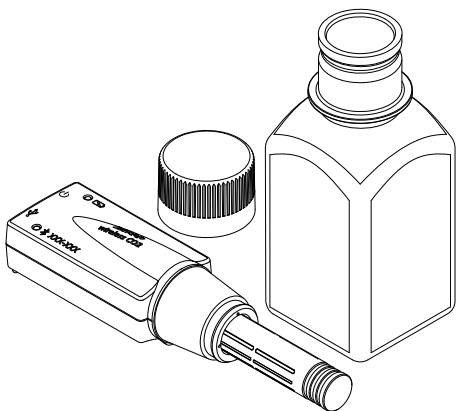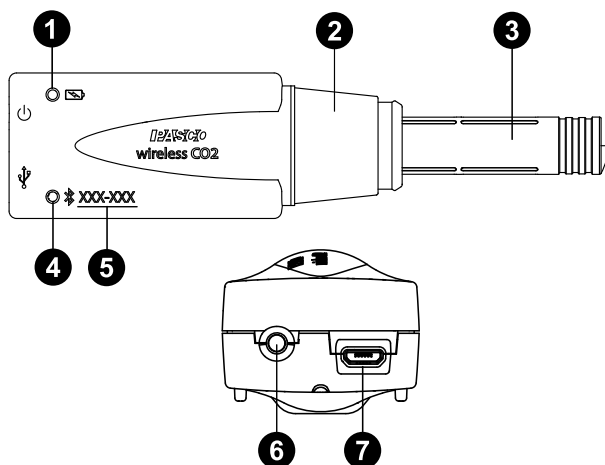## PS-3208

Components

- Wireless CO$_2$ Sensor
- Gas sampling bottle with cap
- Micro USB cable (not pictured)

Features

1 **Battery Status LED**

Indicates the battery level and charging status.

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

2 **Rubber collar**

Use to create an airtight seal when the probe is inserted into the sampling bottle.

3 **Probe**

Contains the infrared CO$_2$ gas sensing element.

4 **Device ID**

Use to identify the sensor when connecting via Bluetooth.

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

6 **ON/OFF button**

Press to turn the sensor on. Press and briefly hold to turn the sensor off. Note that the sensor automatically turns on if connected to a computer or tablet via micro USB cable. To preserve battery, the sensor automatically turns itself off after several minutes of inactivity if not connected.

7 **Micro USB port**

Use with the included micro USB cable to connect the sensor to a USB charger to charge the battery. The port and cable can also be used to send measurement data to software when connected to a USB port or powered USB hub connected to a computer or mobile device. Note that this connection method is not supported by iOS.

Getting started

Complete the steps in this section (**Get the software**, **Charge the battery**, and **Check for a firmware update**) before using this sensor in the classroom.

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.

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 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

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Charge the battery

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.

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** 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.

Set up the software

⌖ **SPARKvue**

Connecting the sensor to a tablet or computer via Bluetooth:

1. Turn on the Wireless CO₂ Sensor. 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 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.

Setting up a data display:

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 display will automatically be set to measure the selected measurement versus time.

◢ **PASCO Capstone**

Connecting the sensor to a computer via Bluetooth:

1. Turn on the Wireless CO₂ 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 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 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.

Setting up a data display:

1. Double-click the **Graph** 📈 icon in the **Displays** palette to create a graph display.

2. In the graph display, click the **<Select Measurement>** box on the y-axis and select an appropriate measurement from the list.

Hardware setup and data collection

After connecting the sensor to your software of choice and setting up a data display, follow the steps below to begin collecting data.

1. Insert the probe into the sampling bottle, using the rubber collar to form an airtight seal.

2. Allow the sensor to equilibrate for at least 3 minutes.

3. *Optional:* If desired, calibrate the sensor. For information on calibrating the Wireless CO₂ Sensor, see the PASCO Capstone or SPARKvue online help.

4. Place a sample into the bottle, then quickly reseal the bottle with the sensor.

5. Click **Start** 🟢 (SPARKvue) or **Record** 🔴 (Capstone) to begin collecting data.

Extended calibration

If there is significant drift or the concentration value is outside the expected range, even after performing the initial calibration, the extended calibration procedure should be used. (Note that the extended calibration procedure requires a longer warm-up time.) For more information on the extended calibration procedure, see the PASCO Capstone or SPARKvue online help and search for "**Calibrate a Wireless CO2 Sensor**".

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Storage and maintenance

- Do not use or store the sensor in a highly dusty environment.

- Avoid direct sunlight or heat radiation.

- Do not let the sensor get wet. Use a Dissolved CO_2 Waterproof Sleeve (PS-3545) if solution-based determination is required.

Software help

The SPARKvue and PASCO Capstone Help provide 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-3208 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-3208.

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

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.