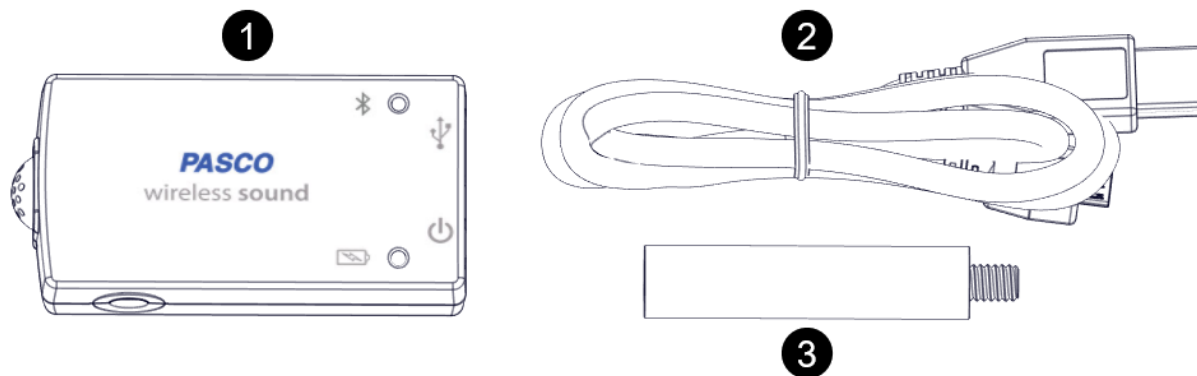


Wireless Sound Sensor

PS-3227



Included Equipment

- 1 Wireless Sound Sensor**
Includes a sound wave and sound level sensor.
- 2 Micro USB cable**
For connecting the sensor to a USB charger to charge the battery or a USB port to transmit data.
- 3 Sensor Mounting Rod**
For mounting the sensor to a rod stand by attaching it to the threaded hole on the sensor.

Required Equipment

PASCO Capstone or SPARKvue software are required for data collection.

Suggested Equipment

Below are some suggested equipment that can be used with the sensor. Further information about each product can be found at the PASCO website (www.pasco.com).

- SE-7728 Tuning Fork Technical Set
- WA-9606 Resonance Air Column
- WA-9495 Economy Resonance Tube

Sensor Measurements

Warning: Do not place the sensor under vacuum (such as in a bell jar). This will result in permanent damage to the sensor battery.

The Wireless Sound Sensor is two sensors in one package: a sound wave sensor and a sound level sensor. The active sensor can be selected using PASCO software. Note that it is only possible to take measurements with one sensor at a time. The sound wave sensor is selected by default.

Sound Wave Sensor

The sound wave sensor measures relative changes in sound pressure as a function of time. Since the sensor does not measure absolute changes, the measurement is unitless.

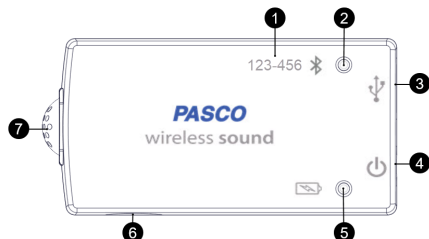
Use a scope display to analyze the frequency, wavelength, and relative amplitude of sound waves. Use the FFT display to analyze the harmonics of sound waves.

Sound Level Sensor

The sound level sensor can measure sound level in decibels using the dBA or dBC scales. The dBA scale filters out low frequencies, modeling human perception of sound. It is the scale used by OSHA for regulatory measurements. The dBC scale measures sound level in a wide range of frequencies within and outside the frequency range of human hearing.

The dBA scale is recommended for most classroom applications. Use a graph, digits, meter, or table display to observe sound level data.

Components



1 Sensor ID

Use this ID when connecting the sensor to software.

2 Bluetooth status LED

Red blink Ready to be paired with software.
Green blink Paired with software.
Yellow blink Remotely logging data.

3 Micro USB port

- For charging the battery when connected to a USB charger.
- For transmitting data when connected to the USB port of a computer.

4 Power button

Press and hold for one second to turn on or off.

5 Battery status LED

Red blink Battery needs to be recharged soon.
Green solid Battery is fully charged.
Yellow solid Battery is charging.

6 Threaded hole

For attaching the sensor mounting rod. Also accepts any 1/4-20 screw.

7 Microphone

Location of the sound sensing element.

Specifications

Microphone Frequency Range	100 – 15,000 Hz
Max Sampling Rate (Sound Wave)	100 kHz
Max Sampling Rate (Sound Level)	20 Hz
Sound Level Range	50 – 110 dB
Sound Level Accuracy	± 2 dB

Experiments

Copy-ready experiment worksheets for classroom use are available on the PASCO website. Download the experiments for free at:

www.pasco.com/resources/lab-experiments

Technical Support

For assistance with PASCO products, contact PASCO at:

Address: PASCO scientific
10101 Foothills Blvd.
Roseville, CA 95747-7100

Phone: 916-462-8384

Chat: www.pasco.com

Email: support@pasco.com

Product End of Life Disposal Instructions

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/disposal service, or the place where you purchased the product.

The European Union WEEE (Waste Electronic and Electrical Equipment) symbol (to the right) and on the product or its packaging indicates that this product must not be disposed of in a standard waste container.



Battery Disposal Instructions

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 International symbols to indicate the need for the separate collection and recycling of batteries.



FCC Statement

This Class A digital 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.

CE Statement

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

Warranty, Copyright, and Trademarks

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

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Using the sensor for the first time

The following instructions are intended for SPARKvue users. If you are using PASCO Capstone, follow the instructions on the opposite side of this page.

Before using the sensor in the classroom, do the following: (1) charge the battery, (2) install the latest version of SPARKvue, (3) update the sensor firmware. Installing the latest version of SPARKvue and sensor firmware is necessary to have access to the latest features and bug fixes. Detailed instructions for each procedure are provided below.

Update the sensor firmware

Sensor firmware is installed using SPARKvue. You must install the latest version of SPARKvue in order to have access to the latest version of the sensor firmware. When you connect the sensor to SPARKvue, you will automatically be notified if a firmware update is available. Click Yes to update the firmware when prompted. If you do not receive a notification, the firmware is up to date.



Tip: Connect the sensor using USB for a faster firmware update.

Charge the battery

The sensor contains a rechargeable battery. A fully charged battery will last an entire school day. To charge the battery:

1. Connect the USB cable to the USB port located on the sensor.
2. Connect the other end of the cable to a USB charger.
3. Connect the USB charger to a power outlet.

As the device is charging, the battery indicator light will be yellow. The device is fully charged when the light is green.

Install the latest version of SPARKvue

Follow the instructions below for your device to download and install the latest version of SPARKvue.

Windows and macOS

Go to www.pasco.com/downloads/sparkvue then click Download Update.

iOS and Android

Search for SPARKvue in the App Store (iOS) or Google Play Store (Android).

Chromebook

Search for SPARKvue in the Chrome Web Store.

Connect the sensor to SPARKvue

The sensor can be connected to SPARKvue using a USB or Bluetooth connection.

Note: Connecting using USB is not available with iOS devices and some Android devices.

To connect using USB:

1. Connect the USB cable to the USB port of the sensor.
2. Connect the other end of the cable to your device.

3. Open SPARKvue.

To connect using Bluetooth:

1. Turn on the sensor by pressing and holding the power button for one second.
2. Open SPARKvue.
3. Select Sensor Data.



4. Select the wireless sensor that matches the ID labeled on your sensor.

Using the sensor for the first time

The following instructions are intended for PASCO Capstone users. If you are using SPARKvue, follow the instructions on the opposite side of this page.

Before using the sensor in the classroom, do the following: (1) charge the battery, (2) install the latest version of Capstone, (3) update the sensor firmware. Installing the latest version of Capstone and the sensor firmware is necessary to have access to the latest features and bug fixes. Detailed instructions for each procedure are provided below.

Update the sensor firmware

Sensor firmware is installed using Capstone. You must install the latest version of Capstone in order to have access to the latest version of the sensor firmware. When you connect the sensor to Capstone, you will automatically be notified if a firmware update is available. Click Yes to update the firmware when prompted. If you do not receive a notification, the firmware is up to date.



Tip: Connect the sensor using USB for a faster firmware update.

Charge the battery

The sensor contains a rechargeable battery. A fully charged battery will last an entire school day. To charge the battery:

1. Connect the USB cable to the USB port located on the sensor.
2. Connect the other end of the cable to a USB charger.
3. Connect the USB charger to a power outlet.

As the device is charging, the battery indicator light will be yellow. The device is fully charged when the light is green.

Install the latest version of PASCO Capstone

PASCO Capstone is available for computers running Windows or macOS. To download the latest version, go to www.pasco.com/downloads/capstone then click Download Update.

Connect the sensor to PASCO Capstone

The sensor can be connected to Capstone using a USB or Bluetooth connection.

To connect using USB:

1. Connect the USB cable to the USB port of the sensor.
2. Connect the other end of the cable to your device.
3. Open Capstone.

To connect using Bluetooth:

1. Turn on the sensor by pressing and holding the power button for one second.
2. Open Capstone.
3. Click Hardware Setup in the Tools panel on the left side of the screen.



4. Click the wireless sensor that matches the ID labeled on your sensor.