Wireless Temperature Sensor with OLED Display

PS-4201

Introduction

The Wireless Temperature Sensor with OLED Display measures temperature over a range of -40 °C to 125 °C. The stainless steel temperature probe is more durable than a glass thermometer and is able to work in a wide variety of situations. The sensor is powered by a rechargeable battery, which can be charged using the included USB-C cable, and is designed to optimize the battery usage time. The mounting rod hole on the side of the sensor allows you to mount the sensor on a ¼-20 threaded rod.

The temperature measurement is displayed at all times on the built-in OLED display and can be toggled between three different units at any time. The measurement can also be transmitted (either wirelessly through Bluetooth or via the included USB-C cable) to a connected computer or tablet to be recorded and displayed by PASCO Capstone, SPARKvue, or chemvue. Since each sensor has a unique device ID number, more than one can be connected to the same computer or tablet at a time.

> ⚠ **CAUTION:** Do NOT immerse the body of the sensor in liquid! The casing is not waterproof, and exposing the sensor body to water or other liquids may cause electric shock or serious damage to the sensor. Only 1-2 inches of the probe need to be immersed in the liquid to obtain an accurate temperature measurement.

Components

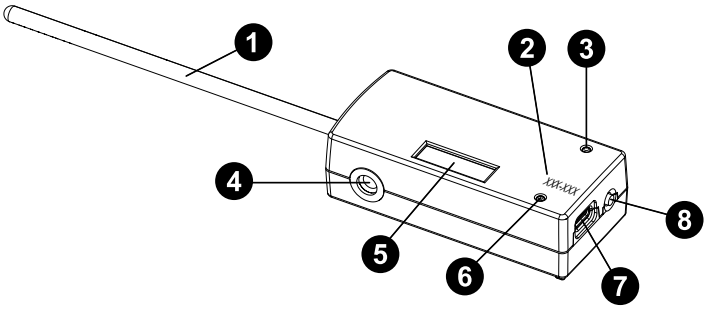
Included equipment:

- Wireless Temperature Sensor with OLED Display (PS-4201)
- USB-C cable

Recommended software:

- PASCO Capstone, SPARKvue, or chemvue data collection software

Features



❶ **Temperature probe**

Tolerates temperatures between -40 °C and +125 °C.

❷ **Device ID**

Use to identify the sensor when connecting via Bluetooth.

❸ **Battery Status LED**

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

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

❹ **Mounting rod hole**

Use to mount the sensor to a ¼-20 threaded rod, such as the Pulley Mounting Rod (SA-9242).

❺ **OLED display**

Displays the most recent temperature measurement at all times while the sensor is powered on.

❻ **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 and Capstone only)

See the PASCO Capstone or SPARKvue online help for information on remote data logging. (This feature is not available in chemvue.)

❼ **USB-C port**

Connect the included USB-C cable here to connect the sensor to a standard USB charging port. You can also use this port to connect the sensor to a computer via a standard USB port, allowing you to send data to SPARKvue, PASCO Capstone, or chemvue without using Bluetooth.

❽ **Power button**

Press to turn the sensor on. Quickly press twice to toggle the measurement units on the OLED display between degrees Celsius (°C), degrees Fahrenheit (°F), and Kelvin (K). Press and *hold* to turn the sensor off.

Initial step: Charge the battery

Charge the battery by connecting the included USB-C cable between the USB-C port and 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, PASCO Capstone, or chemvue software. If you're not sure which to use, visit 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 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

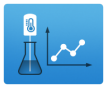
PASCO Capstone: Help > Check for Updates

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.

Using the sensor without software

The Wireless Temperature Sensor with OLED Display can be used without data collection software. To do so, simply turn on the sensor, place the probe onto the surface or into the liquid to be measured, and observe the OLED display. The display will record the temperature measurement from the probe, refreshing at one second intervals.

By default, the OLED display measures temperature in units of degrees Celsius (°C). However, if desired, you can change the display units using the power button. Quickly press and release the power button twice in succession to change the units from °C to degrees Fahrenheit (°F). From there you can quickly press the button twice more to change the units to Kelvin (K), and then twice more to return the units to °C. The display always cycles through the units in this order.

Use the sensor with software

SPARKvue

Connecting the sensor to a tablet or computer via Bluetooth:

1. Turn on the Wireless Temperature 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 Temperature 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 Temperature 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 temperature (in °C) 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 Temperature Sensor with OLED Display generally does not need to be calibrated, especially if you are measuring a change in temperature rather than absolute temperature values. However, if necessary, it is possible to calibrate the sensor using PASCO Capstone, SPARKvue, or chemvue. For information on calibrating the sensor, see the Capstone, SPARKvue, or chemvue online help and search for "**Calibrate a temperature sensor**".

Temperature probe maintenance

Before storing the sensor, rinse and dry the temperature probe. The probe is made of stainless steel, and the diameter (5 mm, or 0.197") is compatible with standard stoppers.

Sensor storage

If the sensor will be stored for several months, remove the battery and store it separately. This will prevent damage to the sensor in the event of a battery leak.

Replace the battery

The battery compartment is located on the back of the sensor, as shown below. 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.

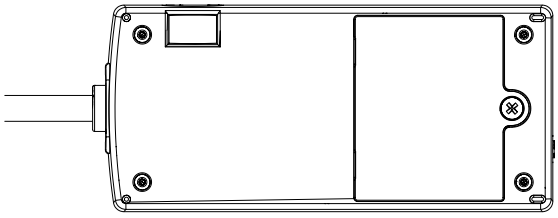


Figure 1: Location of battery compartment.

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

Troubleshooting

- If the sensor loses Bluetooth connection and will not reconnect, try cycling the ON button. Press and briefly *hold* the button until the LEDs blink in sequence, then release the button.
- If the sensor stops communicating with the computer software or tablet application, try restarting the software or application.
- If the previous step does not restore communication, press and *hold* the ON button for 10 seconds, then release the button and start the sensor as usual.
- If the previous steps do not fix a connection problem, turn Bluetooth off and back on for your computer or tablet, then retry.

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

PASCO Capstone

Software: Help > PASCO Capstone Help

Online: help.pasco.com/capstone

chemvue

Software: Main Menu > Help

Online: help.pasco.com/chemvue

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.

Copyright

Trademarks

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.