Wireless Absolute Pressure-Temperature Sensor with OLED Display

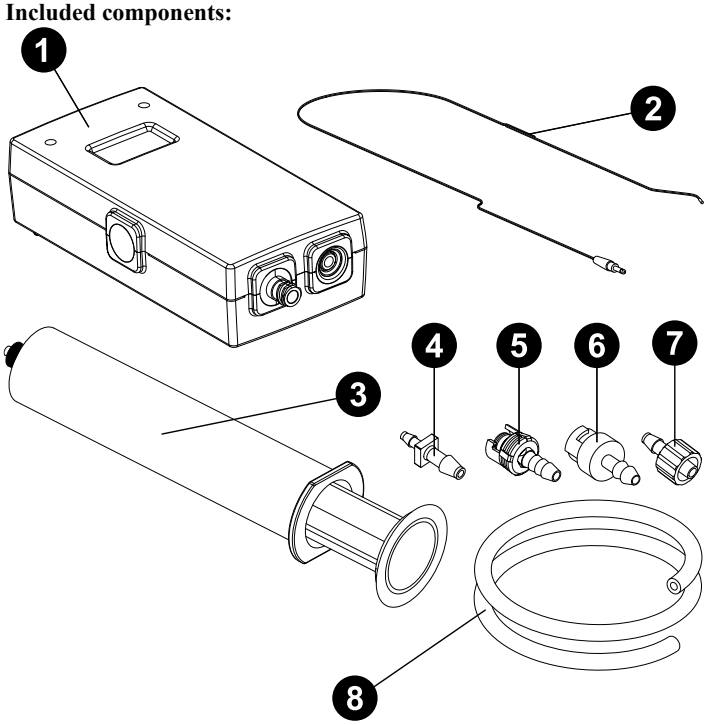
PS-4257

Introduction

The Wireless Absolute Pressure-Temperature Sensor with OLED Display simultaneously measures the pressure and temperature of a gas. The sensor can measure pressures in the range of 0 kPa to 700 kPa. The included Fast Response Temperature Probe plugs into the temperature port and can measure temperatures in the range of -10 °C to 70 °C. The sensor includes tubing and four types of connectors.

Components

Included components:



1. Sensor
2. Fast Response Temperature Probe (PS-2135)
3. Syringe, 60 cm^3
4. In-line connector
5. Male quick-release connector
6. Female quick-release connector
7. 2× male barbed Leur lock connectors
8. Polyurethane tubing, 2 m
9. USB-C cable (not pictured)

Required software:

- PASCO Capstone, SPARKvue, or Chemvue

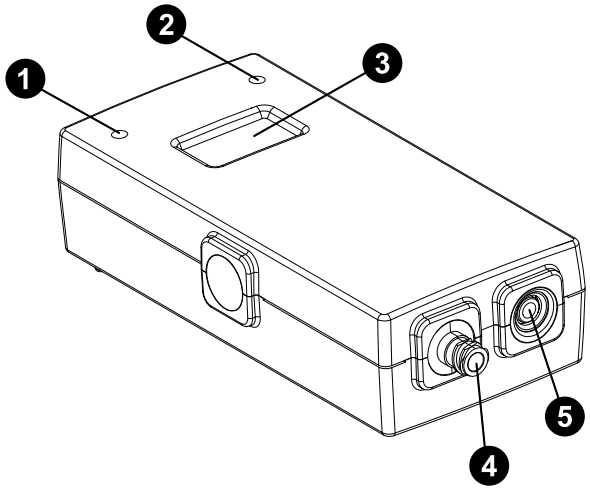
Recommended equipment:

- Ideal Gas Law Experiment (EX-5527)
- Heat Engine and Gas Law Apparatus (TD-8572A)
- Absolute Zero Sphere (TD-8595)
- Ideal Gas Law Apparatus (TD-8596A)

Compatible equipment:

- PASPORT Skin/Surface Temperature Probe (PS-2131)
- PASPORT Stainless Steel Temperature Probe (PS-2153)

Features



1 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	Remotely logging data

For information about remote data logging, see the PASCO Capstone or SPARKvue online help. (Remote data logging is not supported by Chemvue.)

2 Battery Status LED

Indicates the status of the sensor's rechargeable battery.

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

3 OLED display

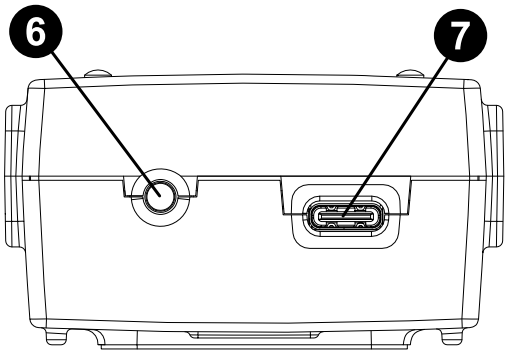
Displays the pressure and temperature measurements while the sensor is powered on.

4 Pressure port

Use to connect the sensor to a closed volume via the included plastic tubing, allowing pressure measurements to be collected.

5 Temperature port

Use to connect the sensor to a PASCO temperature probe, allowing temperature measurements to be collected.



6 Power button

Press and briefly hold to turn the sensor on or off. Press twice in quick succession to change the units of the displayed measurements.

7 USB-C port

Use with the included USB-C cable to connect the sensor to a USB charger. The port and cable can also be used to directly connect the sensor to a computer without the use of Bluetooth. (This connection method is not supported by iOS.)

Initial step: 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.

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. 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** in 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 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.

Set up hardware

To set up the sensor for temperature measurements, simply insert the included Fast Response Temperature Probe into the temperature port on the sensor. To set up the sensor for pressure measurements, follow the steps below:

1. Cut a piece of tubing to the desired length.
2. Insert one of the male barbed Leur lock connectors into one end of the tubing.
3. Insert the other end of the Luer connector onto the pressure port. Turn the connector clockwise until it locks into place.
4. Connect the other end of the tubing to the tip of the syringe, as shown in Figure 1.

IMPORTANT: Do NOT immerse the sensor in liquid or allow it to get wet! The sensor is not waterproof, and moisture will cause damage to its internal components.

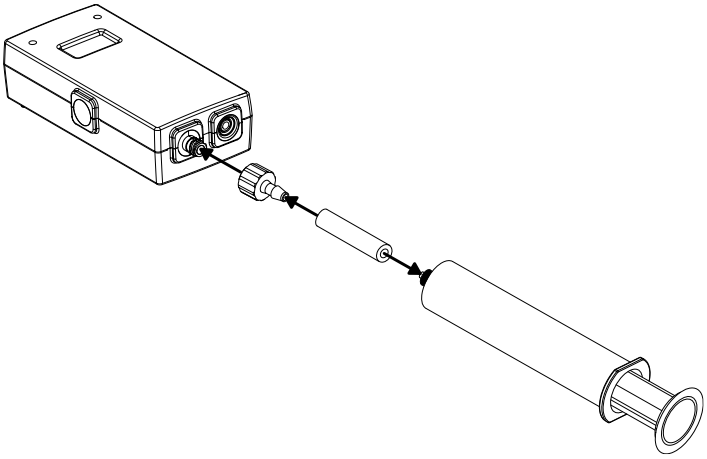


Figure 1

If you are using the Ideal Gas Law Apparatus (TD-8596A), the Heat Engine and Gas Law Apparatus (TD-8572A), or the Absolute Zero Sphere (TD-8595), the setup process is slightly different. For the Heat Engine and Gas Law Apparatus, after connecting the temperature probe to the sensor, use a male Luer connector, tubing, and a female quick release connector to connect the apparatus to the sensor's pressure port. For the Ideal Gas Law Apparatus or Absolute Zero Sphere, plug the apparatus's mini stereo jack into the temperature port, then connect the sensor's pressure port to the apparatus using a male Luer connector, tubing, and a male quick release connector (for the Absolute Zero Sphere) or a second male Luer connector (for the Ideal Gas Law Apparatus, as shown in Figure 2).

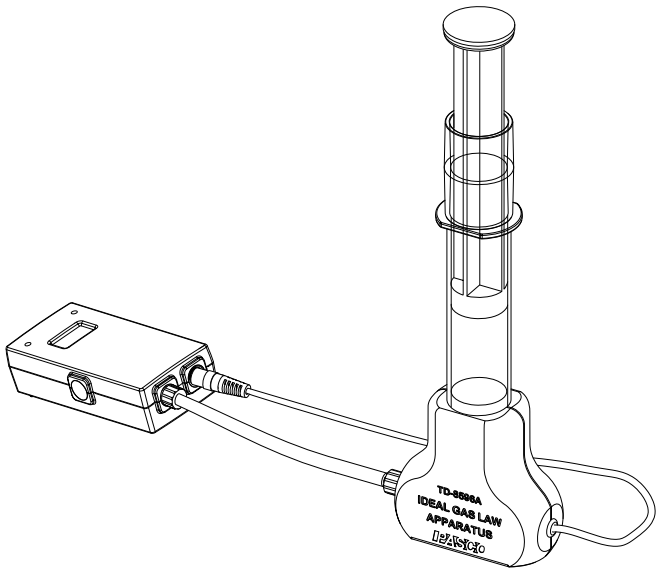


Figure 2

Use the sensor without software

The OLED display can be used to monitor measurement data without connecting the sensor to the software, or to view measurements while the computing device's screen is not visible. By default, the display shows the measurements of pressure in kPa and temperature in °C, refreshing at a constant rate.

To change the units of the displayed measurements, press and release the power button twice in quick succession. This will cause the sensor to enter a mode in which you can select which unit of temperature or pressure to display. Press and release the power button once to navigate between measurements. To select a unit, allow the sensor to remain inactive on a unit for a few seconds until it returns to the measurement display with the new unit enabled. The unit of temperature will remain unaltered when you select a unit of pressure and vice versa.

Use the sensor with software

SPARKvue

Connecting the sensor to a tablet or computer via Bluetooth:

1. Turn on the 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 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 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 USB-C 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 sensor. 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 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.

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.