

Gas Pressure Sensor

(Order Code GPS-BTA)



The Vernier Gas Pressure Sensor is used to monitor pressure changes in gas-law experiments in chemistry, biology, and physics.

Note: Vernier products are designed for educational use. Our products are not designed nor are they recommended for any industrial, medical, or commercial process such as life support, patient diagnosis, control of a manufacturing process, or industrial testing of any kind.

What's Included

- two tapered valve connectors inserted into a No. 5 stopper
- one tapered valve connector inserted into a No. 1 stopper
- one two-way valve
- two Luer-lock connectors connected to either end of a piece of plastic tubing
- one 20 mL syringe
- two transpiration tubing clamps

Compatible Software and Interfaces

See www.vernier.com/manuals/gps-bta for a list of interfaces and software compatible with the Gas Pressure Sensor.

Quick Start

1. Plug the sensor into the interface (LabQuest 3, LabQuest Mini, etc.).
2. Connect the interface to your device.
 - If using USB, connect to the USB port on your computer.
 - If using Bluetooth[®] wireless technology, click your interface type and then select your device.
3. Prepare for data collection:
 - Vernier Graphical Analysis[®]: Launch the app, if necessary, and click Sensor Data Collection.
 - LabQuest[®] App: Choose New from the File menu.

The software will identify the sensor and load a default data-collection setup. You are now ready to collect data.

Need Additional Information?

Visit the following link:

www.vernier.com/start-lq-sensor

Using the Product

Connect the sensor following the steps in the Quick Start section of this user manual.

Important: The Gas Pressure Sensor sensing element will be damaged with direct contact to liquid.

Videos

View videos related to this product at www.vernier.com/gps-bta

Calibration

You do not have to perform a new calibration when using the Gas Pressure Sensor. The sensor is calibrated prior to shipping. If you do choose to calibrate, a one-point calibration at atmospheric pressure is adequate for most applications.

To perform a one-point calibration

1. Connect the Gas Pressure Sensor to an interface following the steps in the Getting Started section of this user manual.
2. Initiate the calibration procedure and make sure the one-point calibration check box is selected. This should be the default option.
3. Enter the actual pressure as the known value for Reading 1.
4. When the voltage reading stabilizes, click Keep.
5. If you want to use the calibration for the current session only, click Done to complete the calibration process. To save the calibration onto the sensor, click the storage tab and save to the sensor.

The Gas Pressure Sensor has been calibrated to read station pressure. Station pressure is the true atmospheric pressure at your location, or station. If you prefer it to read sea-level pressure for conducting weather studies, you can perform a one-point calibration to correct for elevation, using the sea-level corrected pressure value for your location obtained from a reputable source (e.g., NOAA, Weather Underground, etc.). Sea-level pressure is the pressure after the station pressure has been adjusted to its equivalent pressure at sea level. This is commonly done to normalize pressures at various altitudes for weather forecasts.

To further improve accuracy, you may want to perform a two-point calibration.

1. Connect the Gas Pressure Sensor to an interface following the steps in the Getting Started section of this user manual. Change the units first, if desired.
2. Initiate the calibration procedure and select the one-point calibration option check box to clear it.
3. For the first calibration point, allow the sensor to equilibrate to atmospheric pressure. When the voltage reading stabilizes, enter the atmospheric pressure for Reading 1. When the voltage reading stabilizes, click Keep.
4. For the second calibration point, apply pressure with an external pump, measuring it at the same time with a pressure gauge. Enter the gauge reading into the calibration dialog box in your data-collection program. When the voltage reading stabilizes, click Keep.
5. If you want to use the calibration for the current session only, click Done to complete the calibration process. To save the calibration onto the sensor, click the storage tab and save to the sensor.

Specifications

Pressure range	0 to 210 kPa (0 to 2.1 atm or 0 to 1600 mmHg)
Maximum pressure that the sensor can tolerate without permanent damage	405 kPa
Accuracy using factory calibration	±4 kPa
Accuracy using one-point custom calibration at atmosphere	±3 kPa
Response time	10 ms
Internal Volume	0.8 mL
Default calibration values*	kPa: slope = 51.71, intercept = -25.86 atm: slope = 0.5103, intercept = -0.25 mm Hg: slope = 387.8, intercept = -190.4

*For units purchased prior to October 2011, see www.vernier.com/til/2583

How the Sensor Works

The sensor in this unit has a membrane that flexes as pressure changes. This sensor is arranged to measure absolute pressure. One side of the membrane is a vacuum, while the other side is open to the atmosphere. The sensor produces an output voltage that varies in a linear way with absolute pressure. It includes special circuitry to minimize errors caused by changes in temperature.

Troubleshooting

For troubleshooting and FAQs, see www.vernier.com/til/1406

Repair Information

If you have watched the related product video(s), followed the troubleshooting steps, and are still having trouble with your Gas Pressure Sensor, contact Vernier Technical Support at support@vernier.com or call 888-837-6437. Support specialists will work with you to determine if the unit needs to be sent in for repair. At that time, a Return Merchandise Authorization (RMA) number will be issued and instructions will be communicated on how to return the unit for repair.

Accessories/Replacement Parts

Item	Order Code
Pressure Sensor Accessories Kit	PS-ACC
#1 1-Hole Rubber Stopper	PS-STOP1
#5 2-Hole Rubber Stopper	PS-STOP5
Luer Lock Connector	PS-LUER
Plastic 2-Way Valve	PS-2WAY
Plastic Tubing	PS-TUBING
Stopper Stem	PS-STEM
Syringe	PS-SYR
Plastic Tubing Clamps (pkg. of 100)	PTC

Warranty

Warranty information for this product can be found on the Support tab at www.vernier.com/tmp-bta

General warranty information can be found at www.vernier.com/warranty



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