Absolute Pressure Sensor

PS-2107

Included Parts

- Absolute Pressure Sensor
- Syringe
- Quick-release Connectors (4 pieces)
- Tubing Connectors (4 pieces)
- Polyurethane Tubing (length 0.6 m or 2 ft)

Additional Parts Required

- PASPORT interface or datalogger

Quick Start

1. Connect the Absolute Pressure Sensor to your PASPORT interface.
2. If you are using a computer, connect the PASPORT interface to it and start DataStudio.
3. Connect the syringe to the sensor using the tubing and one of the quick-release connectors.
4. Press or click the start button to begin recording data.
5. Move the syringe plunger to vary the pressure.

Introduction

The Absolute Pressure Sensor measures gas pressure from 0 kPa to 700 kPa. It can be connected to the included syringe, or other device, using the included connectors and tubing. The pressure measurement is recorded and displayed by the connected computer or datalogger.

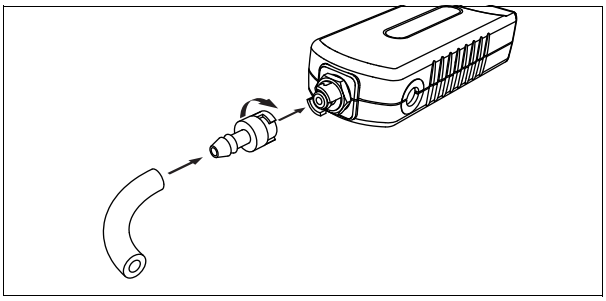
Set-up

Connecting the Sensor to an Interface

1. Connect the sensor's plug to any port of a PASPORT interface or datalogger.
2. If you are using a computer, connect the PASPORT interface to it and start DataStudio.

Connecting the Syringe or Other Device

1. Cut a piece of tubing to the desired length.
2. Insert a quick-release connector into one end of the tubing.
3. Connect the tubing to the sensor by inserting the quick-release connector into the pressure port and twisting clockwise.



4. Connect the free end of the tubing to the syringe or other device using connectors supplied with the apparatus or the tubing connectors include with the Absolute Pressure Sensor. You can use the included tubing connectors to connect to a 5 mm (3/16 inch) hole in a rubber stopper.

About the Measurement

Sample Rate

By default, the sensor collects 10 samples per second. It can collect data as fast as 200 samples per second and as slow as one sample every four hours. Change the sample rate in the software or on the datalogger.

Units

The measurement can be displayed in units of kPa, N/m^2, pounds per square inch (psi), atmospheres (atm), and torr. Select the desired units in the software or on the datalogger.

Calibration

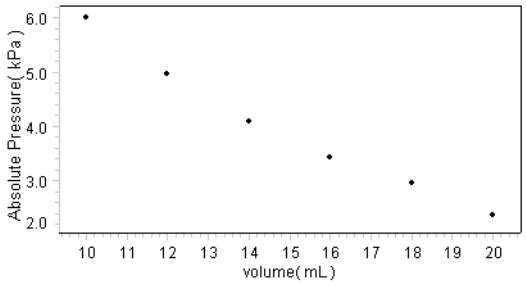
Though it is usually not necessary, a one-point or two-point calibration can be performed to make the measurement more accurate. To do so, you must have a very accurate, independent means of measuring pressure such as a barometer. For calibration instructions, refer to the documentation for your software or datalogger.

Sample Experiment: Boyle's Law

Follow these steps to investigate the relationship between pressure and volume at constant temperature.

1. Put the software or datalogger into manual-sampling mode. Set the keyboard-entered data to be volume measured in units of mL. Prepare a graph to plot pressure (measured by the sensor) versus volume (entered manually). Refer to the documentation for your software or datalogger for detailed instructions.
2. Connect the syringe to the sensor's pressure port using a 1 cm length of plastic tubing and a quick-release connector. It is important to use a short piece of tubing to minimize the volume of gas that is not measured by the syringe.
3. Press or click the start button to begin measuring pressure.
4. Hold the plunger of the syringe at 20 mL.
5. Press or click the keep button to record a single data point.
6. Type in the gas volume indicated by the syringe.
7. Push the plunger to 18 mL and repeat steps 5 and 6.
8. Repeat steps 5 and 6 for volumes of 16 mL, 14 mL, 12 mL, and 10 mL.

The resulting graph illustrates the relationship between pressure and volume. To plot a linear relationship, make a graph of pressure versus inverse volume.



Specifications

Range	0 kPa to 700 kPa
Accuracy	±2 kPa
Resolution	0.01 kPa
Maximum sample rate	200 samples per second
Repeatability	1 kPa
Operating temperature	0° C to 40° C
Relative humidity range	5% to 95% non-condensing (condensation on unit will negatively affect performance)

Technical Support

For assistance with any PASCO product, contact PASCO at:

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

Phone: 916-786-3800 (worldwide)
800-772-8700 (U.S.)

Fax: 916-786-7565

Web: www.pasco.com

Email: support@pasco.com

For more information about the Absolute Pressure Sensor and the latest revision of this Instruction Sheet, visit: the PASCO web site at www.pasco.com and enter PS-2107 in the Search window.

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 and on the product or its packaging indicates that this product **must not** be disposed of in a standard waste container.