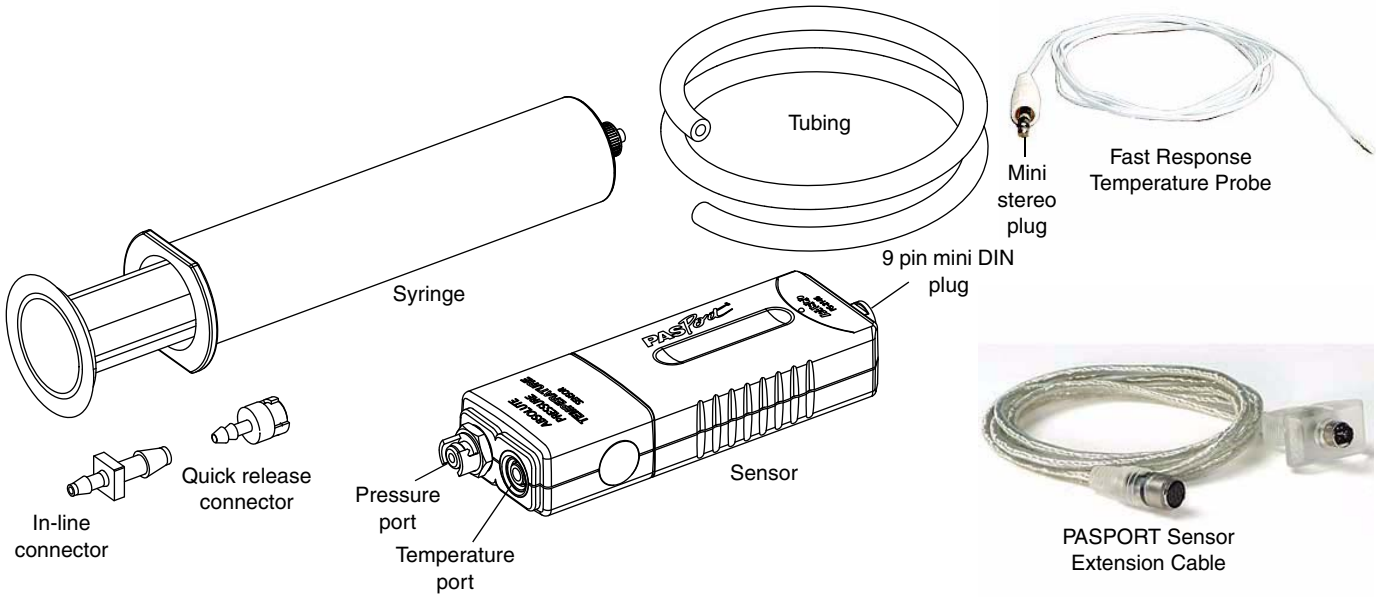
Absolute Pressure/Temperature Sensor

PS-2146



Included Equipment	**Part Number**
Absolute Pressure/Temperature Sensor	PS-2146
Hose and Coupling Kit	003-05543
Polyurethane tubing, 0.125” ID (2 ft.)	
In-line connector (4)	
Quick release connector (4)	
Syringe, 60 cubic centimeters	699-166
Fast Response Temperature Probe	PS-2135 (pack of three)
PASPORT Sensor Extension Cable	PS-2500
Required Equipment	Part Number
PASCO Interface and Software	see the PASCO catalog or www.pasco.com
Recommended Equipment	Part Number
Ideal Gas Law Syringe	TD-8596A
Absolute Zero Apparatus	TD-8595

Introduction

The Absolute Pressure/Temperature Sensor simultaneously measures gas pressure and temperature. The pressure range is from 0 kilopascals (kPa) to 700 kPa. The included Fast Response Temperature Probe plugs into the temperature port and has a range from -10 °C to 70 °C. The sensor includes tubing, quick release connectors, and in-line connectors.

Quick Start

1. Connect the sensor to your PASCO interface. If you are using a computer, connect the interface to it.

2. Plug the Fast Response Temperature Probe into the temperature port.

3. Start the PASCO data acquisition software.

4. Press, click, or tap the start button to begin recording data.

- The display should show the atmospheric pressure and the ambient temperature.

Connecting the Syringe or a Stopper

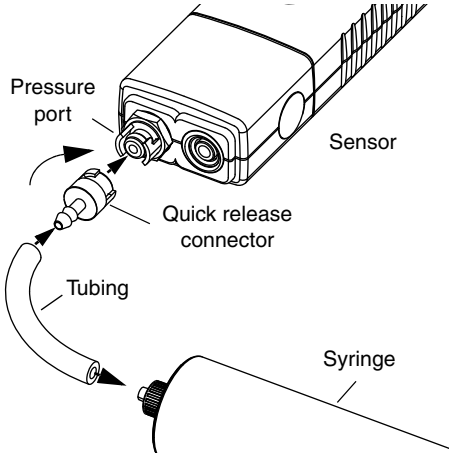
1. Cut a piece of tubing to the desired length.

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 about one-eighth of a turn until the connector clicks into place.

4. Connect the other end of the tubing to the syringe.

- NOTE: To connect a stopper instead of the syringe, put the small diameter end of the in-line connector into the tubing, and push the other end of the in-line connector into the hole in the stopper.

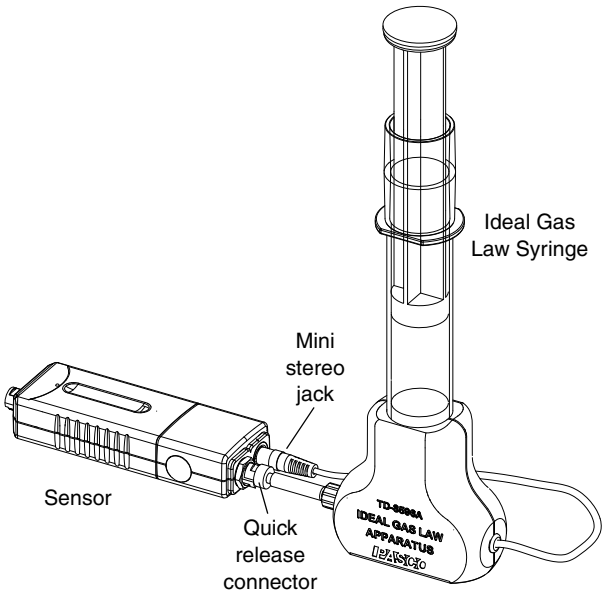


Important: Do not immerse the sensor in liquid or allow it to get wet.

Connecting the Sensor to the TD-8596A Ideal Gas Law Syringe

- Plug the mini stereo jack of the Ideal Gas Law Syringe into the temperature port on the sensor.

- Connect the quick release connector of the Ideal Gas Law Syringe into the pressure port on the sensor.



Calibration

The absolute pressure for this sensor is factory calibrated and for temperature, calibration is usually not necessary. However, a one-point or two-point calibration for temperature can be performed. To do so, you must have an accurate, independent means of measuring temperature, such as a thermometer. For instructions, refer to the documentation for your data acquisition software or data logger.

Suggested Uses

- Study gas laws, such as Charles' Law, Boyle's Law, and the Ideal Gas Law.
- Extrapolate pressure and temperature to determine absolute zero.
- Explore pressure and temperature relationships.

Other PASCO Equipment for use with the Absolute Pressure/Temperature Sensor

Item	Part Number
Skin/Surface Temperature Probe*	PS-2131
Stainless Steel Temperature Probe*	PS-2153
Heat Engine/Gas Law Apparatus	TD-8572
Small Piston Heat Engine	TD-8592

- *NOTE: The Absolute Pressure/Temperature Sensor was designed for use with any thermistor-based PASCO Temperature probe that has a 3.5 mm (0.125 inch) mini stereo plug.

Specifications

Item		Temperature*
Range	0 to 700 kPa	-10 °C to 70 °C
Accuracy	±2 kPa	±0.5 °C
Resolution	0.1 kPa	0.0025 °C
Repeatability	1 kPa	0.01 °C
Units	kPa, N/m^2, psi, atm, torr	°C, °K, °F

**The temperature range depends on the temperature probe used. These specifications are for the Fast Response Temperature Probe.*

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 the latest information on the product or the instruction manual, visit the PASCO web site at www.pasco.com and enter PS-2146 into the Search window.

Limited Warranty For a description of the product warranty, see the PASCO catalog.
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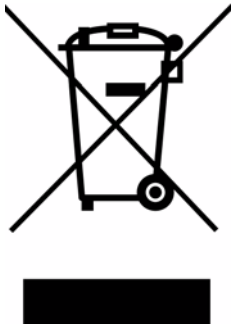
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