



## Barometer

PS-2113A



### Sensor Specifications:

<b>Sensor Range:</b>	4.4 to 34 in. Hg
<b>Accuracy:</b>	±0.03 in. Hg
<b>Resolution:</b>	0.001 in. Hg
<b>Max. Sample Rate:</b>	20 samples per second
<b>Default Sample Rate:</b>	1 sample per second
<b>Operating Temperature:</b>	0 to 40°C
<b>Relative Humidity Range:</b>	5 to 95%, non-condensing*

\*Condensation on unit will negatively affect performance.

**Note:** The Barometer comes with a 20 in. piece of plastic tubing and four connectors for transpiration and other experiments. To attach the tubing, insert a connector on the port and rotate the connector clockwise until it locks in place. Slide a piece of tubing over the valve.



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012-07578E

## Barometer Quick Start

The PS-2113A Barometer measures atmospheric pressure in inches of mercury (Hg), hectopascals (hPa), kilopascals (kPa), and millibars (mBar).

### Additional Equipment Needed

- PASPORT™ Interface (USB Link, **Xplorer**, etc.) with USB-compatible computer
- EZscreen or DataStudio® software (version 1.5 or later)

### Equipment Setup

1. Connect the PASPORT Interface to a USB port on your computer or to a USB hub. If using an **Xplorer** in the classroom as an interface, connect the **Xplorer** cable to the USB port on your computer.
2. Connect the sensor to the PASPORT Interface.
3. The software launches when it detects a PASPORT Sensor. From the PASPORTAL screen, select a point of entry.



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Electronic workbooks using the Barometer will appear here.



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1



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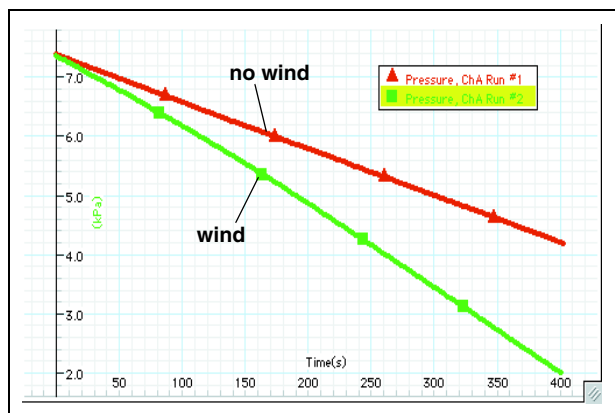


3

Electronic workbooks using the Barometer will appear here.



## Pressure Changes and Transpiration Rates in a Plant under Different Environmental Conditions



DataStudio Task:	Procedure:
Record data:	On the main toolbar, click the <b>Start</b> button.
Open the Setup window:	On the main toolbar, click the <b>Setup</b> button.
Change measurement units:	In the Experiment Setup window, click on the Maximize button and scroll to the Barometer Sensor Box. In the Barometer Sensor box, click the down arrow to select a barometric pressure unit (or click in the box next to Absolute Pressure).
Scale to fit the data:	Click the <b>Scale to fit</b> button on the graph toolbar.



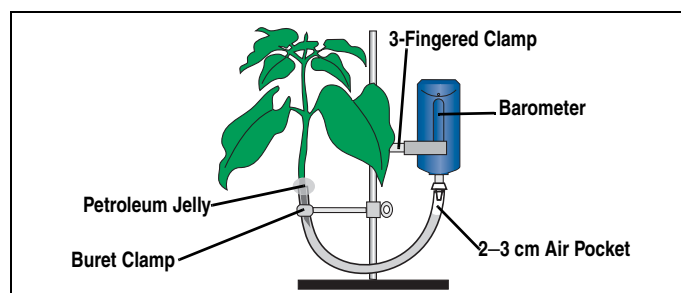
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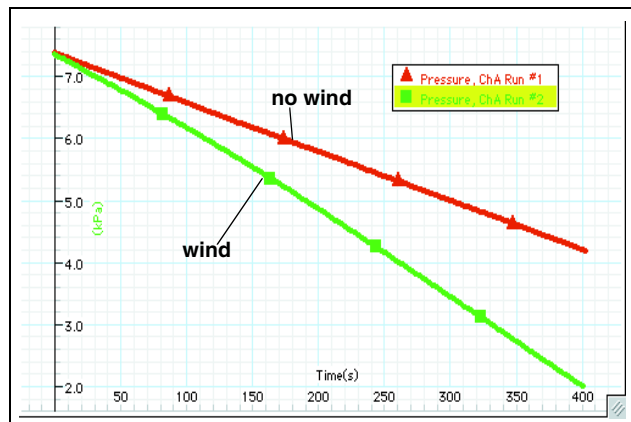
## DataStudio Activity: Transpiration Rates in a Plant

**Equipment required:** PS-2113A Barometer, PASPORT interface, DataStudio software, USB-compatible computer, plant, bowl of water, rod stand with two clamps, fan, petroleum jelly.

- Obtain a healthy plant seedling and soak it in a bowl of water. Make a 45° cut through the stem.
- Plant-Tube Joint:** Fill a foot-long piece of the supplied tubing with water. To avoid air bubbles in the tube, submerge the tubing in the water bowl, and insert the seedling stem into the tube under water. Seal the joint with petroleum jelly. (**WARNING:** Do not allow fluid to enter the pressure port, as this will damage the sensor.)
- Sensor-Tube Joint:** Create a 2–3 cm air pocket at the other end of the tube. Using a quick connector, connect the tube to the sensor's pressure port.
- Using a rod stand and two clamps, build the setup shown below. Keep the sensor's pressure port 5–7 cm higher than the plant's end of the tube.
- Click the **Start** button to record data for at least 400 seconds.
- Repeat step 5, but instead, place a blowing fan next to the plant to simulate transpiration conditions on a windy day.
- Compare the two graphs of Pressure versus Time. How does "wind" affect transpiration rate?



## Pressure Changes and Transpiration Rates in a Plant under Different Environmental Conditions



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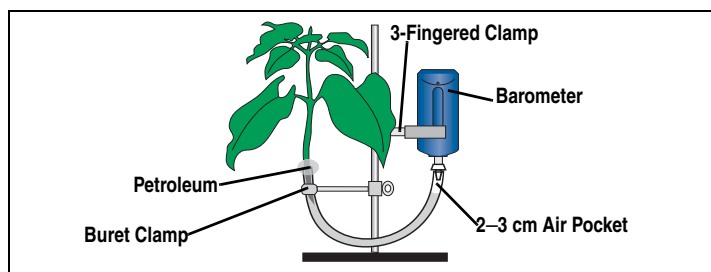
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EZscreen Tasks:	Procedure:
Record the pressure:	Click the <b>Start</b> button in the upper left corner of the screen. ( <b>Note:</b> With EZscreen software, you can record data for up to 2 hours.)
Change units of measurement:	Click on the <b>Barometer</b> icon in the lower right corner of the screen.
Scale to fit the data:	Double-click the Graph to scale the data.
Export data to DataStudio:	Click the <b>Exit to DataStudio</b> button.



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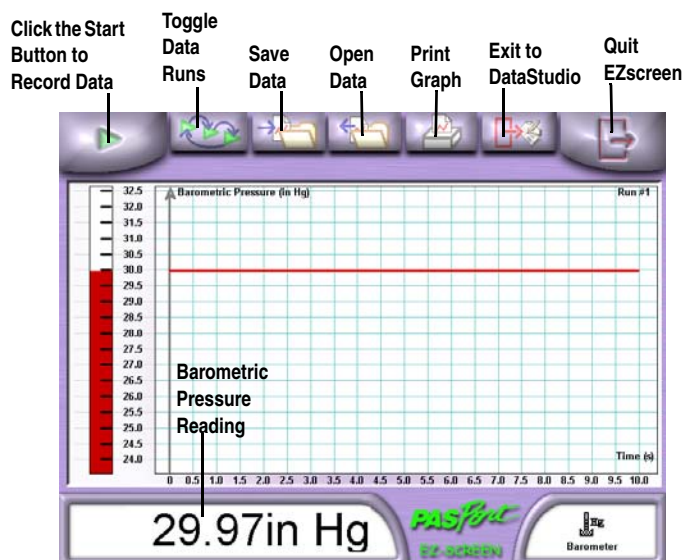
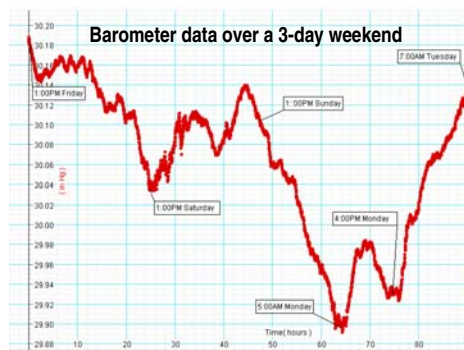
## Recording Barometric Pressure in the Classroom

1. Connect the Barometer to a PASPORT interface.
2. When the PASPORTAL window opens, launch either EZscreen or DataStudio software (or open a workbook activity).
3. To record data, click the **Start** button.

**Note:** The PS-2113A Barometer may be used in workbook activities developed for the PS-2114 Relative Pressure Sensor. To use the PS-2113A with these workbook activities, drag the measurement icon for the PS-2113A Barometer from the Data list (of the Summary window) to a new display (or the Displays list) in the workbook.

## Recording Barometric Pressure in the Field

When used with DataStudio software, the Barometer can measure barometric pressure over a 24 to 48 hour period, such as in weather studies. For field studies, connect the Barometer to a PASPORT Xplorer (PS-2000) or PowerLink (PS-2001) with DataStudio Connection Kit for PalmOS® (PS-2003).



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