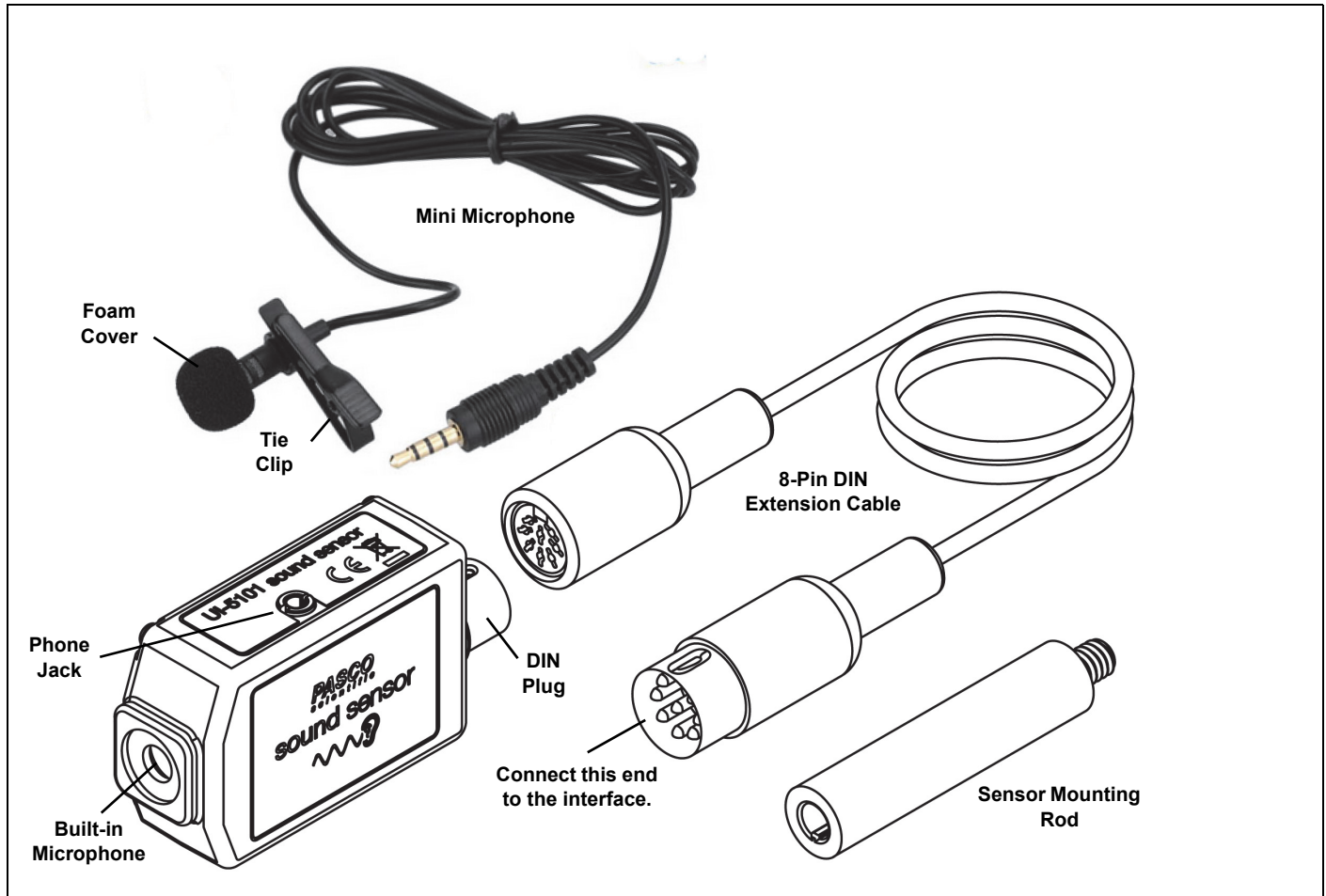


Sound Sensor

UI-5101



Hardware

Included Equipment
Sound Sensor (UI-5101)
Mini Microphone (UI-5102)
8-Pin DIN Extension Cable (UI-5218)
Sensor Mounting Rod

Introduction

The Sound Sensor is designed to be used with a PASCO computer interface to make measurements of relative intensity of sound.

The built-in sensing element of the Sound Sensor is an electret condenser microphone, which consists of an electret membrane, metal electrode, and field effect transistor that are in an efficient configuration yielding superior signal-to-noise ratios (>60 dB) and excellent frequency response (20 to 9,000 Hz).

Two stages of amplification are provided to condition the low-level signal from the microphone for input into the PASCO computer interface. The output from the sensor is bipolar and ranges between ± 10 volts. The Sound Sensor can detect voltage levels as low as 0.0005 volts, corresponding to sound levels that are barely audible to the human ear. Sound levels ranging from classroom background noise (45 dB) to levels exceeding 100 dB are easily detected with the Sound Sensor.

The separate Mini Microphone is a sensitive, wide-range electret condenser microphone with a protective foam cover (removable). Its frequency range is 20 to 9,000 KHz and its cable is approximately 1.5 meter long. The 3.5 millimeter phone plug connects into the phone jack on the top of the Sound Sensor.

The Mini Microphone allows the Sound Sensor to be used with the PASCO WA-9894 Resonance Air Column with Speaker. When the Mini Microphone is plugged into the Sound Sensor, the sensor's built-in microphone is turned off.

The sensor has an "auto ID" feature when connected to a PASCO 550 Universal Interface or 850 Universal Interface. The PASCO data collection software automatically recognizes the sensor if the sensor is connected to these interfaces.

NOTE: The Sound Sensor can be used with the PASCO 750 ScienceWorkshop Interface or 500 ScienceWorkshop Interface, but the "auto-ID" feature will not be active.

The Sound Sensor can be plugged directly into the PASCO interface or can be connected to the interface with the included 8-Pin DIN Extension Cable.

Additional Items Required

Item	Model
850 Universal Interface	UI-5000

OR

550 Universal Interface	UI-5001
PASCO Capstone Software*	UI-5400

*See the PASCO web site at

www.pasco.com/software

for information about the PASCO Capstone Software options and to check for the latest versions.



- Mac OS X
- Windows

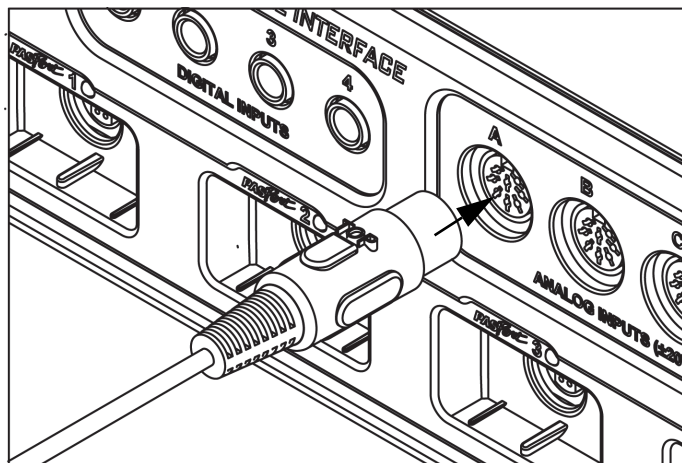
Recommended Items

Item	Model
Resonance Air Column with Speaker	WA-9594
Open Speaker	WA-9900
Economy Resonance Tube	WA-9495
Sine Wave Generator	WA-9867
Tuning Fork Set	SE-7342

Set Up the Hardware

Connecting the Sensor to an Interface with the 8-Pin Din Extension Cable (UI-5218)

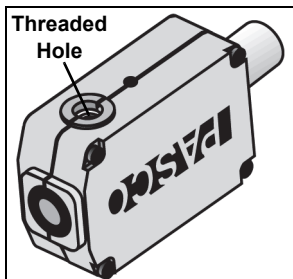
- Connect one end of the included 8-Pin DIN Extension Cable into the DIN plug on the end of the sensor.
- Connect the other end of the 8-Pin DIN Extension Cable to an Analog Port on the 850 Universal Interface or 550 Universal Interface.
- **NOTE:** If you use the older versions of the 8-Pin DIN Extension Cable (CI-6516 or those supplied with ScienceWorkshop sensors prior to 2012, the auto-ID function will not work.



- **NOTE:** The Sound Sensor can also be connected directly to an analog input port on the interface.

Mounting the Sensor

The Sound Sensor housing includes a threaded hole (1/4-20) on the bottom side. Screw a Sensor Mounting Rod into the threaded hole, and use clamps and support rods to hold the sensor in place.



Set Up the Software

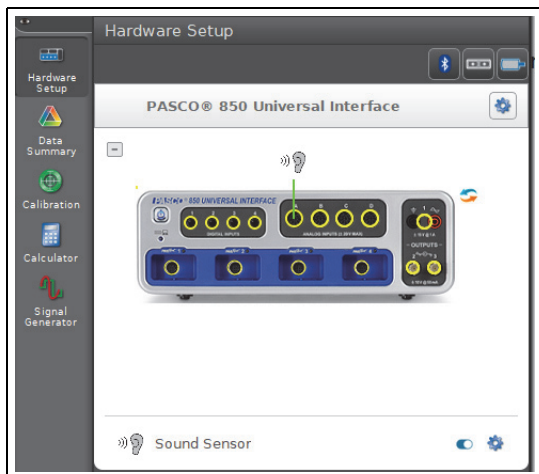
Software Help

See the PASCO Capstone Help for information about collecting, displaying, and analyzing data.

- In PASCO Capstone, select **PASCO Capstone Help** from the **Help** menu, or press **F1**.

PASCO Capstone

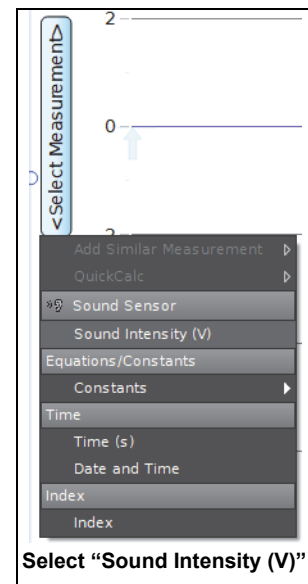
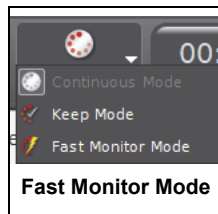
- In the software, select **Hardware Setup** in the Tools palette to open the Hardware Setup window. In the **Hardware Setup Window**, check that the Sound Sensor icon is connected to the interface icon.



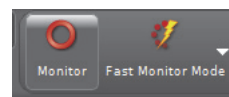
- Select **Hardware Setup** again to close the window.
- Select an Oscilloscope (Scope) display from the **Display** palette.



- In the Scope display, use the **<Select Measurement>** menu on the vertical axis to pick a measurement to be shown, such as Sound Intensity (V).
- In the **Controls** palette of the Scope display, click “Continuous Mode” to open the menu. Select “Fast Monitor Mode” from the menu.



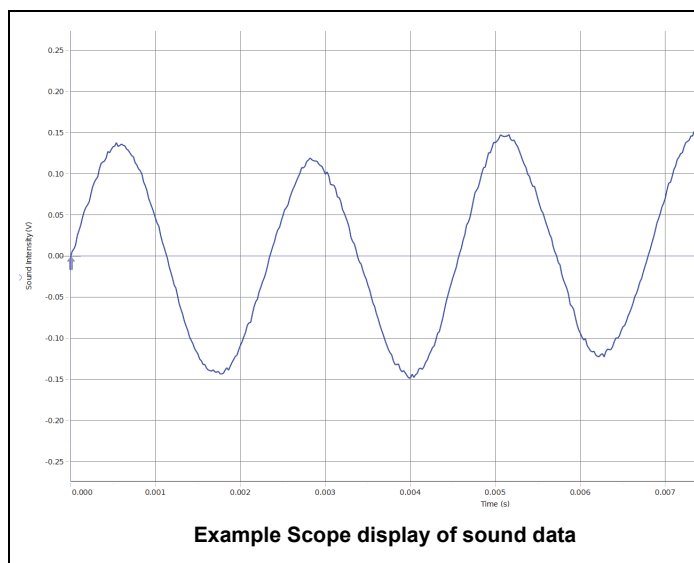
- The “Record” button changes to “Monitor”,



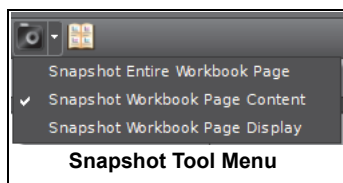
- In Fast Monitor Mode, the Scope display allows you to view data much faster than you can in the Record mode.

Collecting Data

- Select **Monitor** to begin viewing data in the Scope display.



- Select **Stop** to end viewing data. Remember to use the “Snapshot” tool to record the appearance of the Scope display.



Suggested Experiments

- Measure basic sound intensity
- Measure the speed of sound
- Measure beats
- Study the Doppler Effect
- Conduct voice studies
- Learn musical instrument overtones

See the PASCO Web site at

www.pasco.com/products/lab-manuals

for more information about experiments.

Specifications

Item	Value
Frequency Response	20 to 9,000 Hz
Decibel Range	45 dB to 100 dB
Signal-to-Noise Ratio	<60 dB
Output Voltage	±10 volts

Technical Support

For assistance with any PASCO product, contact PASCO at:

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

Phone: +1 916 462 8384 (worldwide)
8700-772-8700 (U.S.)

Web: www.pasco.com

Email: support@pasco.com

This manual will be updated periodically. For the latest revision of this manual, visit the PASCO Web site at

www.pasco.com/manuals

and enter the product number, UI-5101, in the text window.

Replacement Parts

For information about possible replacement parts, contact Technical Support:

Limited Warranty

For a description of the product warranty, see the PASCO catalog. For more information visit www.pasco.com/legal.

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CE Statement

This device has been tested and found to comply with the essential requirements and other relevant provisions of the applicable EU Directives.

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

