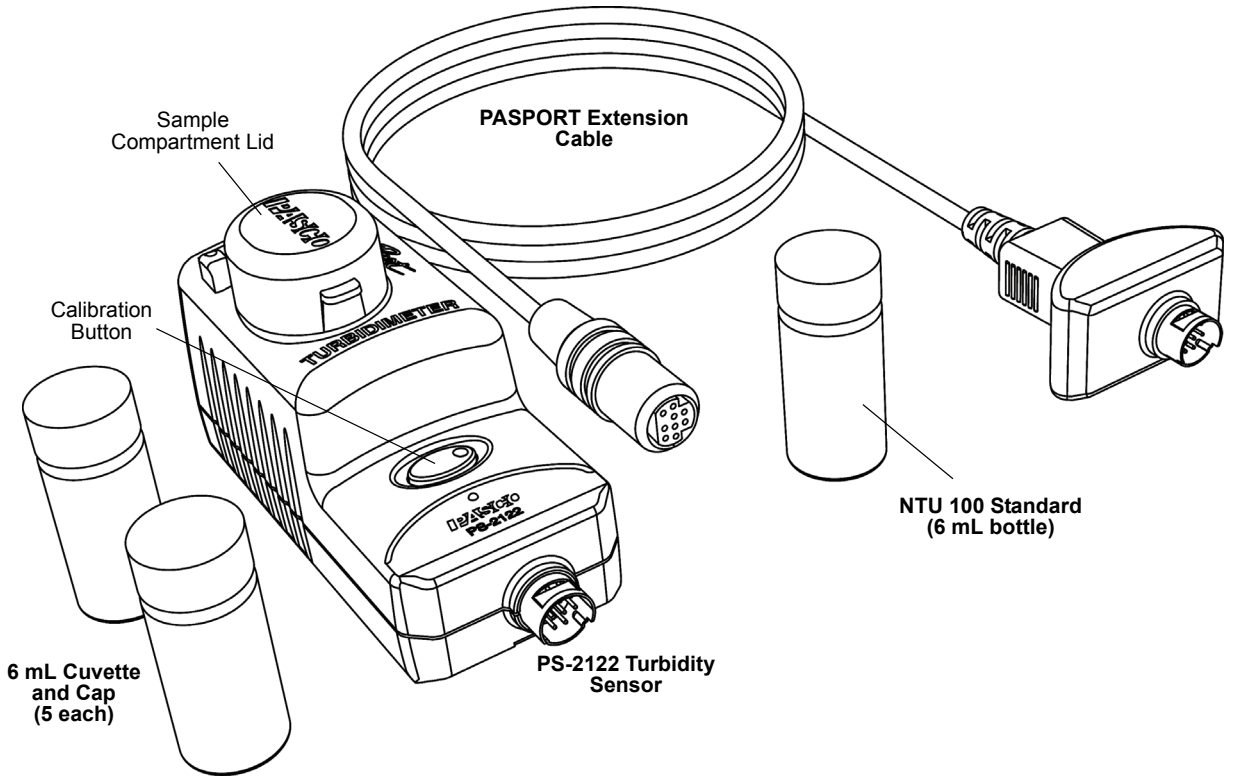
Turbidity Sensor

PS-2122



Included Items	Included Items
Turbidity Sensor (PS-2122)	PASPORT Extension Cable (PS-2500)
NTU 100 Standard (PS-2511)	Cuvette, 6 mL, with Cap (5 each)
Cuvette Cap Labels (not shown)	Storage Box (not shown)

Required Items*	Required Items*
PASCO Interface	PASCO Data Acquisition Software

**See the PASCO catalog or the PASCO web site at www.pasco.com for more information.*

Product Description

The PS-2122 Turbidity Sensor is designed to measure the turbidity level ("cloudiness") of water samples in nephelometric turbidity units (NTU) by measuring light scattered by the sample at 90 degrees. The light source is stabilized to prevent drift. The opaque housing eliminates ambient light.

The Turbidity Sensor is intended for educational purposes and is not recommended for environmental compliance testing or similar activities.

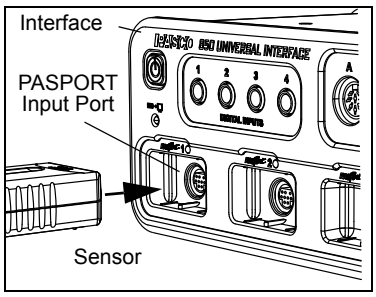
The Turbidity Sensor makes relative measurements of turbid solutions with a particle size between 0 and 200 microns. Because turbidity is a time-dependent dynamics phenomenon, factors such as particle density, particle size, temperature, and pressure may cause reading variation, especially in repeatability studies. For particle sizes above 200 microns, extract the large particles or allow more time for measurement.

Suggested Activities

- Compare the turbidity of water sample from various locations.
- Determine the rate of settling of a sample.
- Measure the formation of a precipitate.

Quick Start

- Plug the Turbidity Sensor into one of the PASPORT input ports of a PASCO interface (such as the 850 Universal Interface or SPARK Science Learning System).



- NOTE: If more distance is needed between the sensor and the interface, connect the sensor to the PASPORT Extension Cable (PS-2500) and then plug the cable into the interface.
- Put 6 milliliters (mL) of a fluid sample in a cuvette and cap it. **NOTE**: Avoid touching the glass with your fingers. Wipe the glass with a non-abrasive cleaning tissue and/or silicone oil.
- Put the sample cuvette into the Sample Compartment and close the lid.
- Start the PASCO data acquisition software (such as PASCO Capstone). Set up a data display in the software.
- Begin recording data.

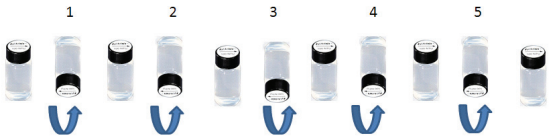
SETUP: For more information on setting up the software and recording data, refer to the User's Guide and online help for the data acquisition software.

Calibration

Preparation Procedures: Regular Use

Calibration of the Turbidity Sensor is required the first time the sensor is used. It is also necessary when you are measuring solutions with varying temperatures, or when using different cuvettes. All calibrations are stored inside the sensor in flash memory.

- To prepare for calibration of the Turbidity Sensor, gently invert the 100 NTU Standard cuvette (included) five times. Clean the outside of the cuvette.



- Put 6 mL of deionized water into an empty cuvette and tighten the cap. Clean the outside of the cuvette.
- Connect the sensor to a PASPORT-compatible interface land turn the interface on.
- Put the cuvette with the deionized water into the sensor Sample Compartment and close the lid.

Calibration

- Press and release the green Calibration Button on the sensor.
- The light-emitting diode (LED) in the button should turn on.
- When the LED in the button begins to blink, replace the first cuvette with the 100 NTU Standard cuvette and close the lid, and press and release the button.
- When calibration is complete, the button LED will turn off.
- To verify, start the PASCO data acquisition software, set up a Digits display, and start recording data.
- The Digits display should show approximately 100 NTU ±1 NTU.
- Stop recording data.

Preparation Procedures: Intermittent Use

If the 100 NTU Standard cuvette has been stored for more than one month, do the following before calibration:

1. Shake the cuvette vigorously for one minute to stir up the particles.

2. Allow the cuvette to stand undisturbed for five minutes to eliminate air bubbles.

3. Gently invert the cuvette five times.

4. Clean the outside of the glass cuvette.

Expiration

By following the preparation procedures, the 100 NTU Standard sample should provide accurate results (±7%) up to the expiration data on the bottom of the cuvette. After the expiration date, PASCO cannot guarantee the stability of the sample. Order PS-2511 to replace the 100 NTU Standard sample.

Sensor Usage Tips

- For very turbid samples, the initial turbidity measurement will fluctuate as particles begin to settle. Wait for the reading to stabilize and then record the measurement.
- Avoid taking readings around bright lights. Make sure that the lid is closed securely.
- Avoid or dilute dark-colored samples.
- Always fill the cuvette to the lid with at least 6 mL of sample.
- Before making a turbidity reading, use a sieve or pipette to remove “floaters” or large, visible particles of sediment from the sample

Orienting the Cuvette (Optional)

To minimize variations in the readings due to natural differences or imperfections in the glass of the cuvette, do the following for each cuvette you plan to use:

1. Insert the cuvette containing 6 mL of a sample into the Sample Compartment, but do not close the lid. Instead, grasp the cap of the cuvette.

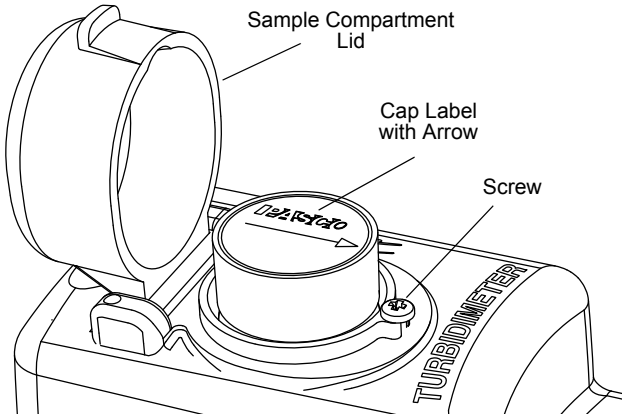
2. Put a piece of black cloth over your hand and the sensor so that no light enters the sensor.

3. Set up a Digits display in the data acquisition software. Start recording data.

4. With your covered hand, rotate the cuvette while observing the reading in the display. At the lowest turbidity reading, stop recording data. Do not rotate the cuvette any further. Stop recording data.

5. With the cuvette still in the Sample Compartment, place one of the provided arrow labels on the cap, with the arrow pointing toward the screw on the front of the Sample Compartment.

For subsequent measurements, always align the arrow with the screw. Do not switch caps between cuvettes.



Specifications

Item	Information
Range:	**0 to 400 NTU***
Accuracy:	**± 0.2 NTU for 0 to 20 NTU** **± 0.5 NTU for 20 to 100 NTU** **±1 NTU for 100 to 400 NTU**
Resolution:	**0.1 NTU**
Temperature Range:	**5 to 40 °C**

**1 NTU = one nephelometric turbidity unit*

Other Items

Cuvettes and Caps	PS-2509 (set of 6 each)
Silicone Oil*	PS-2510

**Use the Silicon Oil to wipe the outside of the glass cuvette.*

Technical Support

For assistance with any PASCO product, contact PASCO at:

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

Phone: +1 916-786-3800 (worldwide)
800-772-8700 (U.S.)

Web: www.pasco.com

Email support@pasco.com

For the latest information about the Turbidity Sensor, visit the PASCO web site at www.pasco.com and enter "PS-2122" 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 (to the right) and on the product or its packaging indicates that this product must not be disposed of in a standard waste container.