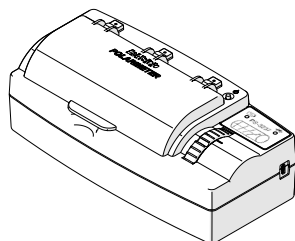


Polarimeter | PS-3237

PASCO

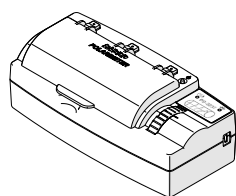
Quick Start Guide

012-16881A

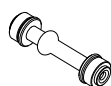


Note: Additional information on how to use the Polarimeter can be found in the SPARKvue or PASCO Capstone Help.

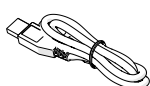
What's Included



Polarimeter



Sample Cell

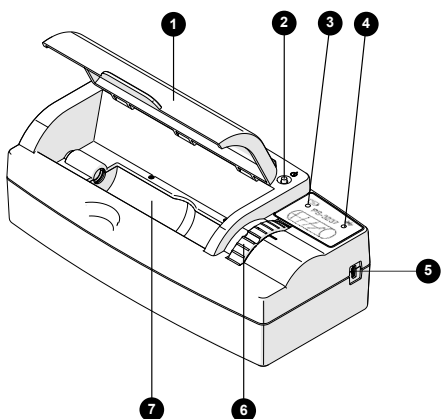


USB Cable

Required Items

- SPARKvue or PASCO Capstone Software

Features



1 Lid

Keep closed during data collection to block out ambient light.

2 Power Button

Press and hold for one second to turn the Polarimeter on or off.

3 Battery Status Light

Red (blink)	Low charge
-------------	------------

Green (solid)	Full charge
---------------	-------------

Yellow (solid)	Charging
----------------	----------

4 Bluetooth Status Light

Red (blink)	Ready to pair
-------------	---------------

Green (blink)	Paired
---------------	--------

5 USB Port

For connecting to a USB charger or computer USB port using the USB cable.

6 Analyzer Wheel

Turn to rotate the polarization disk analyzer.

7 Chamber

For holding the sample cell while collecting data.

Charge the Battery

The Polarimeter contains a rechargeable battery that lasts an entire school day when fully charged. It is also possible to collect data while the battery is charging. Charge the battery before using the Polarimeter for the first time since it is not shipped with a full charge.

To charge the battery:

1. Connect the USB cable to the USB port on the Polarimeter.
2. Connect the other end of the USB cable to a USB charger or powered USB port.

The battery status light will be solid yellow while the battery is charging and will change to solid green when the battery is fully charged.

Install or Update Software

The latest update of PASCO Capstone or SPARKvue is required to use the Polarimeter. Download the software at the locations provided below.

SPARKvue

Windows/macOS

Go to pasco.com/sparkvue then click Downloads.

iOS/Android/Chromebook

Search for SPARKvue in your device's app store.

PASCO Capstone

Windows/macOS

Go to pasco.com/capstone then click Downloads.

Connect to Software

The Polarimeter can be connected to PASCO Capstone or SPARKvue with a USB or Bluetooth connection.

Note: USB is not supported for iOS and some Android devices.

Important: After connecting the Polarimeter, a notification may appear asking to install a firmware update. Click **Yes** to update the firmware if prompted.

SPARKvue

1. Turn on the Polarimeter.
2. Open SPARKvue then click **Sensor Data**.
3. Connect the Polarimeter to SPARKvue:
 - USB: Connect the Polarimeter to your device using the USB cable.
 - Bluetooth: Select the Polarimeter that matches its device ID.
4. Select ☒ the measurements you want to display.
5. Select **Intensity vs Angle** under Quick Start Experiments.
6. Click **Start** to begin data collection.

PASCO Capstone

1. Turn on the Polarimeter.
2. Open Capstone then click **Hardware Setup**.
3. Connect the Polarimeter:
 - USB: Connect the Polarimeter to your computing device using the USB cable.
 - Bluetooth: Select the Polarimeter that matches its device ID.
4. Click **Data Summary** then click and drag a measurement to a display, such as a Graph.
5. Click **Record** to begin data collection.

Prepare the Sample Cell

The Sample Cell holds the substance to be analyzed. To prepare the sample cell:




1. Remove the cap from one end of the sample cell by rotating it counterclockwise. Proceed to pull off the quartz window holder then the quartz window under the cap.
2. Fill the sample cell to the top with the substance to be analyzed.
3. Replace the quartz window on the sample cell with the rubber ring facing *away* from the cell then place the holder on top of the quartz window. Place the cap on top of the holder and rotate clockwise until finger-tight.
4. Gently tap the sample cell so that any bubbles in the sample move into the protuberance then place the sample cell in the Polarimeter chamber (the direction does not matter).

Measure the Optical Angle of Rotation



The Polarimeter is used to measure the rotation of plane-polarized light by optically active chiral compounds. The angle of rotation can be measured by finding the angle at which the maximum amount of light passes through the sample and comparing that angle to an optically inactive substance such as distilled water.

1. Connect the Polarimeter to SPARKvue or Capstone.
2. Select the Intensity vs. Angle Quick Start Experiment.
3. Prepare the sample cell with distilled water.
4. Start data collection then slowly rotate the analyzer to collect data between 0° and 360° . Stop data collection when finished.
5. Use a Gaussian fit to determine the first angle of maximum intensity:

SPARKvue

- a. Go to  and switch to .
- b. Draw a box over the peak of maximum intensity. Move or resize the box as needed.
- c. Click the selection box then click .
- d. Select Gaussian Fit then click OK.
- e. The angle of the peak is indicated by the c parameter in the Gaussian equation. Record this value.

PASCO Capstone

- a. Go to the graph tool bar and click .
 - b. Move and resize the selection box to highlight the peak of maximum intensity.
 - c. Click the selection box then click  then select Gaussian.
 - d. The angle of the peak is indicated by the x_0 parameter in the Gaussian equation. Record this value.
6. Repeat steps 3 to 5 with your test substance.
 7. Calculate the difference between the two recorded angles.

The difference between the angles is the angle of rotation of the sample. It is recommended to find the angle of rotation for a solution at multiple different concentrations. See the [experiment worksheets](#) available on the PASCO website for further details.

Experiments

Print-ready experiment worksheets are available to download from the PASCO website. Go to pasco.com/freelabs and enter **PS-3237** in the **Part No.** field to access all experiments related to the Polarimeter.

Software Help

Additional information on how to use the Polarimeter can be found in the PASCO Capstone and SPARKvue Help.

SPARKvue

Click  then select Help.

PASCO Capstone

In the menu bar, click Help then select PASCO Capstone Help.

Troubleshooting

Reset the sensor if you are experiencing any connection issues. To reset the sensor, press and hold the power button for 10 seconds then release. Try connecting the sensor again when the Bluetooth indicator light is blinking red.

Specifications

LED Wavelength	589 nm
Encoder Resolution	0.09°
Sample Cell Path Length	100 mm

Technical Support

Contact PASCO Technical Support for assistance with this or any other PASCO product.

Phone 1-800-772-8700 (USA)
1-916-462-8384 (International)

Chat www.pasco.com
email support@pasco.com

Regulatory Information

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 or 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.

Battery Disposal Instructions

Batteries contain chemicals that, if released, may affect the environment and human health. Batteries should be collected separately for recycling and recycled at a local hazardous material disposal location adhering to your country and local government regulations. To find out where you can drop off your waste battery for recycling, please contact your local waste disposal service, or the product representative. The battery used in this product is marked with the International symbols to indicate the need for the separate collection and recycling of batteries.

CE Statement

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

FCC Statement

This Class A digital device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Warranty, Copyright, and Trademarks

Limited Warranty

For a description of the product warranty, see the Warranty and Returns page at www.pasco.com/legal.

Copyright

This document is copyrighted with all rights reserved. Permission is granted to non-profit educational institutions for reproduction of any part of this manual, providing the reproductions are used only in their laboratories and classrooms, and are not sold for profit. Reproduction under any other circumstances, without the written consent of PASCO scientific, is prohibited.

Trademarks

PASCO and PASCO scientific are trademarks or registered trademarks of PASCO scientific, in the United States and/or in other countries. All other brands, products, or service names are or may be trademarks or service marks of, and are used to identify, products or services of, their respective owners. For more information visit www.pasco.com/legal.