Wireless Technology
Here is turnkey technology that’s ready when you are. Just connect and collect.

Get Started Today
Simplify calibrations and save time by automating the collection of pH data in your lab.

Wireless pH Sensor Bundle
Just the tools you need to get started collecting data in your Chemistry lab! (page 4)
Wireless pH and Temperature

It's easier and more affordable than ever before to get started with PASCO!

Eliminate the need for manual data recording and improve student engagement with live sensor data from the Wireless pH and Temperature Sensors.

- Live, recorded, or logged data
- Wireless connectivity
- Infrequent calibrations
- Free SPARKvue app

It's easier and more affordable than ever before to get started with PASCO!

Start with a pH or Temp Sensor, or outfit your science lab with a low-cost sensor bundle.

Get Started Today

From sensors and software to storage and labs, PASCO products are easy to use, so you and your students can focus on doing science.

For details, call your PASCO Education Specialist at 800-772-8700.
**Software + a Dedicated Science Datalogger**

**SPARKvue® 4**

This award-winning data collection and analysis software works on any platform!

SPARKvue’s intuitive design has made it an award-winning tool for collecting and analyzing experimental data. The user-friendly platform optimizes data collection and provides tools for in-depth analysis within a compact, yet powerful workspace. With the recent release of SPARKvue 4, we’ve added new features, including a new Welcome screen and Blockly coding. Now, students can use block-based code to sense and control PASCO devices, including any of our wireless sensors.

**Data Collection:**
- **Live Data Bar:** See sensor readings before recording
- **Periodic Sampling:** Automatic sampling at a fixed rate
- **Manual Sampling:** Saves data only when a user specifies
- **Blockly:** Adds coding plus sense and control functions
- **Collaborate:** Start a shared session and stream results in real-time

**Data Displays:**
- Graph displays with multiple plot areas and axes
- Digits
- Meter
- Data Tables
- FFT
- Map Display
- Weather Dashboard
- Oscilloscope

**Tools for Data Analysis:**
- **Scale-to-Fit:** Adjust axes for optimal data view
- **Data Selection:** Easily select a portion of data for analysis
- **Prediction Tool:** Visualize a prediction alongside the data
- **Smart Tool:** Find data coordinates and calculate delta values
- **Calculation Tools for Statistics:** Easily obtain statistics such as minimum, maximum, mean values, and more
- **Slope Tool:** Find the slope of a curve at a specific point
- **Curve Fits:** Various curve fits with goodness of fit values
- **User Annotation:** Easily add text notes to runs or points
- **Axes:** Add another y-axis or a new plot with one button

**SPARK LXi Datalogger**

The SPARK LXi Datalogger is a Bluetooth® handheld datalogger that enables students to connect wired and wireless sensors, collect data, generate graphs, and analyze results. It is durable, splash-proof, and works seamlessly with PASCO sensors. The SPARK LXi can simultaneously accommodate up to five wireless sensors. It includes two ports for PASPORT sensors, as well as two ports for the included Fast Response Temperature Probe and Voltage Probe. It can be used with PASCO wireless sensors and PASPORT sensors with an AirLink, SPARKlink® Air, or 550 Universal Interface.

**Features:**
- 8” Color Capacitive Touchscreen (1280 x 800 pixels)
- 2 GHz Quad Core Processor, 1.5 GB RAM, 16 GB Memory
- Speakers, microphone, GPS, accelerometer, and two cameras
- Simultaneously connects up to 5 PASCO wireless sensors
- WiFi-enabled
- Easily send and collect files between devices

**Software:**
- SPARKvue® for data collection and analysis, MatchGraph, and Spectroscopy
- Microsoft Word, Excel, and PowerPoint
- Scientific Calculator, Periodic Table, and Google Science Journal

PASCO wireless sensors are Bluetooth accessories and require Bluetooth Low Energy wireless technology or our USB Bluetooth adapter. Bluetooth is a registered trademark of Bluetooth SIG. Apple, the Apple logo, iPad, iPhone, and Mac are trademarks of Apple Inc., registered in the U.S. and other countries. App Store is a service mark of Apple Inc. Android, Chromebook, and Google Play are trademarks of Google Inc. Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries. www.pasco.com © 2020 PASCO Scientific. All rights reserved.

For more information and specifications on these products, go to pasco.com/chemistry
Chemistry Solutions
Our Chemistry Solutions bring classic apparatus into the future with wireless connectivity and live data displays that make measuring as easy as observing.

Sample Lab Activities
- Boyle’s Law
- State Changes
- Evaporative Cooling
- Specific Heat
- Energy from Food
- Greenhouse Gases
- Chemical Reactions
- Density of a Solid
- Density of a Liquid
- Chemical Formula

Essential Chemistry Student and Teacher Lab Manuals
These lab manuals contain 73 labs that cover topics such as the ones listed below. The Student Lab Manual is a print-only version. The Teacher Lab Manual comes in both an all-digital version and a print version. Also available is the Essential Chemistry Teacher Lab Manual Resources. This rich all-digital resource includes editable documents, PowerPoint presentations, answer keys, video lab assistance, and more.

Essential Chemistry Basic Equipment Kit
Use this bundle to perform more than 30 activities in the Lab Manual.

Wireless sensors in the kit include
- pH
- Temperature
- Voltage
- Pressure
- Conductivity
(See pasco.com for complete kit contents.)

Essential Chemistry Student Lab Manual (print only)........................................EC-6352 $25
Essential Chemistry Teacher Lab Manual (digital only)...................................... EC-6330-DIG $40
Essential Chemistry Teacher Lab Manual (print only)........................................EC-6330 $50
Essential Chemistry Teacher Lab Manual Resources (digital only).....................EC-6353-DIG $125
Essential Chemistry Basic Equipment Kit ......................................................EC-6360 $269
Wireless pH Sensor

Here’s the best tool for measuring pH since litmus paper. The Wireless pH Sensor can be used to quickly obtain accurate pH readings, log data to the connected device, or collect data autonomously for hours or weeks. Use the sensor to study water quality, environmental monitoring, testing solutions, and chemical reactions.

Features:
- Compatible with ion-selective electrodes (ISE) and oxidation reduction probe (ORP).
- Includes Bluetooth® connectivity.
- Logs pH data directly onto the sensor for long-term experiments.

Wireless Temperature Sensor

Welcome to the modern thermometer. Students can access instant temperature readings but also continuously monitor, log, and plot temperature data.

Features:
- Variable sampling rate
- Includes Bluetooth® connectivity and long-lasting battery
- Logs temperature data directly onto the sensor for long-term experiments.
- Water-resistant (1 m for 30 minutes)
- No calibration required

Wireless Pressure Sensor

The Wireless Pressure Sensor allows students to easily collect accurate gas pressure data for a wide range of applications.

Applications:
- Boyle’s Law and Charles’ Law
- Stoichiometry and limiting reactants
- Measure chemical reaction rates
- Study enzyme reactions using hydrogen peroxide and catalase

Wireless Voltage Sensor

The Wireless Voltage Sensor is ideal for exploring the fundamental concepts of electricity, voltage, and basic circuits.

Features:
- Logging mode with onboard memory
- Long-lasting rechargeable battery
- Variable sampling rate
- Range ±15 V
- Accuracy ±1%

Wireless Drop Counter

The Wireless Drop Counter features a wide drop window that improves control and accuracy during titrations.

Features:
- Simplifies titrations and improves student understanding
- IR filter prevents room lighting from affecting results
- Sensor unit can suspend up to three other probes in solution.
Wireless Conductivity Sensor

The Wireless Conductivity Sensor measures the electrical conductivity of an aqueous solution. It is ideal for investigating the properties of solutions, including total dissolved solids (TDS) for water quality inquiry.

Features:
- Measures conductivity and total dissolved solids
- Automatic temperature compensation
- Battery life >1 year
- Remote logging with built-in memory
- Water-resistant (1 m for 30 minutes)

Oxidation Reduction Potential Probe

Use this probe to monitor solutions during oxidation-reduction titrations, perform water quality studies, and study the effects of water chlorination. (This probe is not a standalone sensor. It connects to and requires an amplifier.)

Features:
- Measures oxidation-reduction potential
- Automatic temperature compensation
- Battery life >1 year
- Remote logging with built-in memory
- Water-resistant (1 m for 30 minutes)

Wireless Temperature Link

The Wireless Temperature Link enables wireless connection for any PASCO temperature probe with a 3.5 mm connection. The link comes with a Fast Response Temperature Probe, but it can also connect to the Stainless Steel Temperature Probe, Skin/Surface Temperature Probe, the Absolute Zero Sphere, and the Ideal Gas Law Apparatus.

Features:
- Range of -30°C to 105°C
- Onboard datalogging
- Includes temp probe
- Includes Bluetooth® connectivity and long-lasting coin cell battery

Ideal Gas Law Apparatus

By connecting a Pressure Sensor and a Temperature Sensor to the syringe, students can quantitatively look at the relationships between pressure, temperature, and volume.

Applications:
- Ideal Gas Law
- Gay-Lussac’s Law
- Boyle’s Law
- Charles’ Law

Absolute Zero Sphere

The Absolute Zero Sphere is an effective tool for determining absolute zero temperature. Students connect Pressure and Temperature Sensors before immersing the sphere in water baths of varying temperatures.

Applications:
- Experimentally determine absolute zero
- Gay-Lussac’s Law
- Ideal Gas Law
- Measure temperature and pressure changes in real time

Molecular Model Set

The Molecular Model Set is the perfect tool to help students understand core science concepts such as the conservation of mass, chemical formulas, and balancing equations. Anything is possible for students, from creating simple water or carbon dioxide molecules to complex biochemicals such as amino acids, as they make models while they study Chemistry and Biochemistry.
Wireless Spectrometer

The Wireless Spectrometer from PASCO is specifically designed for modern chemistry, biology, and physics labs. With Bluetooth® and USB connectivity, students can quickly connect from their device or computer using the free PASCO Spectrometry Software. With this affordable spectrometer, students can gather a full spectrum of data in less than one second. After specifying a target wavelength, students can study concentrations (Beer’s Law), rates of reactions, or investigate emission spectra using the optional fiber optic cable.

Features:
- Battery Type: Rechargeable LiPo
- Range: 380-950 nm
- Resolution: 2–3 nm FWHM
- Detection Range: 380–950 nm
- Fluorescence Excitation Wavelengths: 405 nm and 500 nm
- Light Source: LED-boosted tungsten
- Connectivity: Bluetooth®
- Compatibility: Windows, Mac, iPhone and Android smartphones, iPad, Android and Chrome tablets; includes software.

Applications:
- Explore enzymatic reactions
- Determine the chemical formula of a compound
- Emission spectra of light from flame tests or other sources
- Determine the rate of a reaction
- Study the relationship between concentration and absorbance (Beer’s Law)

Wireless Spectrometer ........................................... PS-2600 $399

PASCO Polarimeter

PASCO’s Polarimeter has both Bluetooth® and USB connectivity, so it works on your iPad®, Chromebook™, tablets, and computers. It is ideal for introductory Organic and Biochemistry experiments with chiral compounds.

With this device, plane polarized light is passed through a sample, which contains a chiral compound, to an analyzer and a detector. The degree of optical rotation of the plane polarized light is based on the type and amount of sample present. Determine the concentration of a sugar solution based on the optical rotation of plane polarized light.

Specifications:
- Bluetooth® and USB connectivity
- 589 nm LED light source
- Accuracy = ±0.09º optical rotation
- SPARKvue- and Capstone-compatible
- Industry-standard, horizontal polarimeter sample cell (100 mm)

PASCO Polarimeter .............................................. PS-2235 $499
The Wireless Colorimeter simultaneously measures the absorbance and transmittance of six different wavelengths. The sensor can be used to study enzyme activity, photosynthesis, and the rates of chemical reactions. By using the accessory cuvettes and a calibration standard, the colorimeter also functions as a turbidimeter for water quality analysis.

**Color detection/peak wavelengths:** 650 nm (red), 600 nm (orange), 570 nm (yellow), 550 nm (green), 500 nm (blue), 450 nm (violet)

**Features:**
- Quick and easy calibration
- Simultaneously measures six different wavelengths
- Stabilized light source for consistent readings
- Displays the absorbance and transmittance at each wavelength