Vernier Science Education

International Catalog 2024

Vernier®
SCIENCE EDUCATION

For science educators, by science educators

Thank you, from our hearts to yours.

You've shared a passion with us for inspiring students and furthering their interest in STEM careers, and for this we are so grateful.

Vernier Volunteers

As a company, we volunteer for organizations such as Habitat for Humanity, The Humane Society, Oregon Museum of Science & Industry, Portland Symphony, Oregon Public Broadcasting, LEGO® Robotic Tournaments, Meals-on-Wheels, The Nature Conservancy, Oregon Food Bank, and many other organizations.

Vernier employees are encouraged to volunteer for non-profit organizations of their choice on company time and receive four hours of pay each month for their volunteer time. Vernier employees regularly volunteer at schools—teaching children to read, teaching art literacy, and helping with field trips and other school functions.

Welcome!

Dear educator,

We hope this catalog finds you well and thriving in your classroom. It has been a roller-coaster year! We are thrilled to share some exciting announcements that signify a new chapter in our journey of supporting educators and promoting STEM literacy.

First, we are embarking on a remarkable transition from being a partner-owned company to a Perpetual Purpose Trust. This strategic move will enable us to sustain our mission indefinitely, ensuring that we continue to assist teachers in creating a STEM-literate society. Our commitment to providing durable products and solutions, offering unwavering quality and service, and giving back to the communities we serve and live in remains steadfast. With this change, we know it will remain the same in perpetuity.

This transition was prompted by John Wheeler stepping down from his role as CEO. Although he will no longer be leading the company, he will continue to offer his invaluable guidance and leadership to the organization, supporting our new CEO in maintaining our commitment to your needs and the support of STEM education. Dave and Christine Vernier will also continue to play key roles.

After more than a year of managing the supply chain crisis, we are thrilled to be creating new and exciting tools for teachers again. This year, we are adding new products including Go Direct Salinity, Go Direct Soil Moisture, Go Direct Pyranometer, Go Direct PAR, Go Direct Force Plate, and a Cart Fan.

As always, we are committed to supporting your educational objectives and are excited about the opportunities these new resources bring to your classroom. Thank you for your continued dedication to teaching, and we look forward to continuing to serve your needs in this new chapter of our journey.

John Wheeler
CEO

Dave Vernier
Co-Founder

Christine Vernier
Co-Founder

About Vernier Science Education

Vernier Science Education was co-founded in 1981 by Dave and Christine Vernier. Dave's background as a physics teacher and Christine's knack for business combined to form a company with a deep commitment to education.

Vernier is proud to be recognized for its philanthropic commitment, environmental policies, steady growth, and as one of the Best 100 Companies to Work For in Oregon for more than 25 years.

2023 Best Companies to Work For in Oregon

2023 Healthiest Employers of Oregon

2023 Best Green Companies in Oregon

Contents

For university products, visit vernier.com/college

What's New

NEW

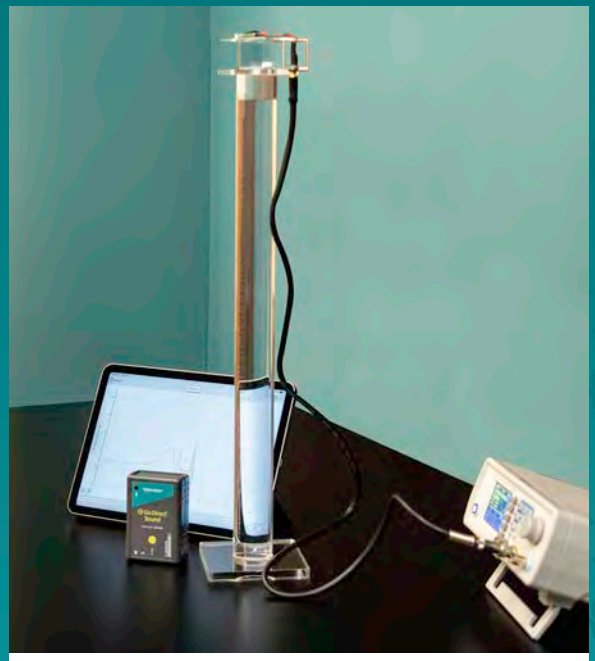
Transform Your Classroom into a Forensic Lab

Forensics and its real-world applications are engaging vehicles for learning key scientific concepts. Students investigate make-believe scenarios, such as suspected arson and poisoned glasses of wine, while they learn the vital role that analyzing and interpreting data play in science.

Forensic Chemistry Experiments is for teachers who wish to introduce their students to forensic science using realistic laboratory experiments with Vernier technology.

HSB-FCHEM

vernier.com/hsb-fchem



NEW

Resonance Apparatus

The Resonance Apparatus is used for the classic experiment of determining the speed of sound using the principle of resonance in a tube that is closed at one end. Fill the apparatus with water and use a tuning fork or the included speaker to produce sound.

RES-APP

vernier.com/res-app

What's New

NEW

Go Direct Salinity

Go Direct® Salinity precisely measures the total dissolved salt content of ocean or brackish water.

GDX-SAL

vernier.com/gdx-sal

NEW

Go Direct Soil Moisture

This sensor uses capacitance to measure the volumetric water content of soil.

GDX-SM

vernier.com/gdx-sm

NEW

Go Direct Pyranometer

Go Direct Pyranometer measures the power of electromagnetic radiation. It is sensitive to near infrared, visible, and UV radiation, where 90% of solar energy is concentrated.

GDX-PYR

vernier.com/gdx-pyr

NEW

Go Direct PAR

Go Direct PAR (Photosynthetically Active Radiation) measures photosynthetic light levels in both air and water.

GDX-PAR

vernier.com/gdx-par

NEW

Go Direct Force Plate

Measure the forces developed during stepping, jumping, and other human-scale actions. Observe change in apparent weight as you ride an elevator or measure reaction forces as you lean against a wall.

GDX-FP

vernier.com/gdx-fp

NEW

Cart Fan

The Cart Fan is a modular fan you can add to DTS and Go Direct carts that provides a constant force for dynamics investigations. Using one or multiple fans on a single cart allows students to investigate constant acceleration, balanced/unbalanced forces, and variable thrust angles.

DTS-CFAN

vernier.com/dts-cfan

International Dealers

Educators in over 150 countries utilize our solutions. Vernier technology is available from local dealers in 85 countries and directly from our office for the rest of the world.

Find your dealer at **vernier.com/dealers**

Getting Started

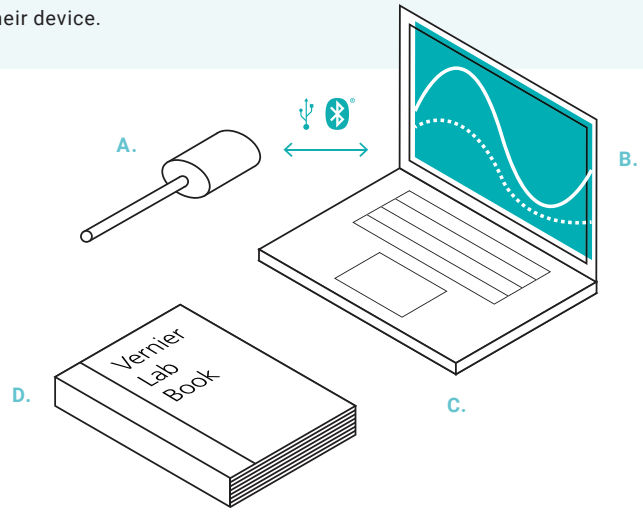
A Guide to Vernier Data Collection

Our data-collection technology helps students to record and analyze data from real-world phenomena and make critical connections with concepts and practices that support the development of scientific and critical thinking skills as well as real-world applications of science. Get to know our range of STEM solutions designed to inspire scientific curiosity and support student success.

vernier.com/getting-started

Why Choose Go Direct Sensors?

Go Direct® sensors are an ideal fit for schools with one-to-one computing solutions. These sensors can connect to any Bluetooth® wireless technology-enabled device—like laptops, Chromebooks, or tablets—or connect via a wired USB connection. The flexible, wireless connection makes it easy for students to log and analyze data in Vernier Graphical Analysis® directly on their device.



What You Need to Get Started

A. Go Direct Sensor

These versatile sensors connect to your device via Bluetooth wireless technology or USB.

B. Vernier Graphical Analysis Pro

With Vernier Graphical Analysis Pro, students can collect, graph, analyze, and share scientific data collected from Vernier sensors. Learn more at vernier.com/graphical-analysis

C. Device

Go Direct sensors connect to a wide variety of devices commonly used in classrooms, including Chromebooks, computers, compatible mobile devices, and LabQuest® 3.

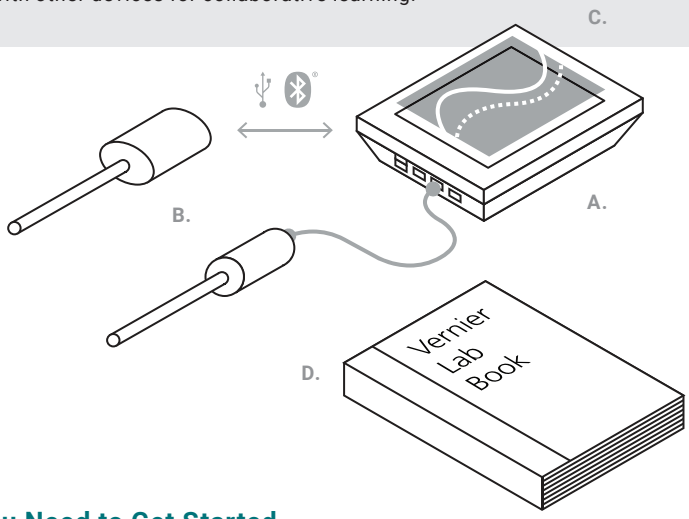
D. Lab Book

Step-by-step instructions at your fingertips save valuable time when integrating probeware into your curriculum. Many of our lab books provide support for Go Direct sensors and the Graphical Analysis app.

Our lab books come with a generous site license. Purchase once and share files school wide.

Why Choose LabQuest 3?

LabQuest 3 is an ideal solution for schools looking to provide students with an easy-to-use data-logging device. The built-in data-collection and analysis app works with all Vernier sensors, including LabQuest and Go Direct sensors. And as a standalone device, it minimizes on-screen distractions, while still allowing students to share data in real-time with other devices for collaborative learning.



What You Need to Get Started

A. LabQuest 3

With its large, high-resolution screen, LabQuest can be easily navigated using gestures. It also offers fast data collection, wireless connectivity with Wi-Fi and Bluetooth wireless technology, and a rechargeable, high-capacity battery.

B. Sensors

Compatible with all Vernier sensors, LabQuest 3 connects wirelessly with the family of Go Direct sensors and connects easily to our wired LabQuest sensors.

C. Software

LabQuest 3 has built-in software, LabQuest App, that gives your students real-time graphing and analysis capabilities in one handheld device. LabQuest 3 also offers built-in apps, such as a Periodic Table, Sound Recorder, and more, and includes student instructions for over 75 of our most popular experiments.

D. Lab Book

Looking for even more lab ideas? Our popular, award-winning lab books provide hundreds of well-tested, customizable experiments.

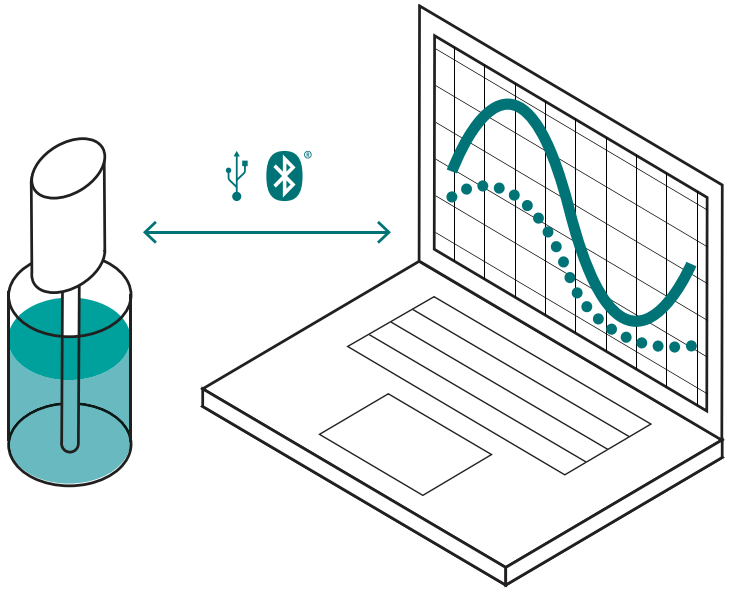
Our lab books come with a generous site license. Purchase once and share files school wide.

LEARN MORE ABOUT LABQUEST 3 ON **PAGE 12.**

Vernier Graphical Analysis Pro

Deepen students' understanding of natural phenomena through meaningful interaction with data.

With the Vernier Graphical Analysis® app, students can visualize and interact with experiment data collected via nearly any Vernier sensor. Unlock key features with Graphical Analysis Pro and do more with your Vernier sensors to deepen and extend learning. With access to Pro, you can enrich live instruction while providing more opportunities for students to interact with and analyze data outside of class time.



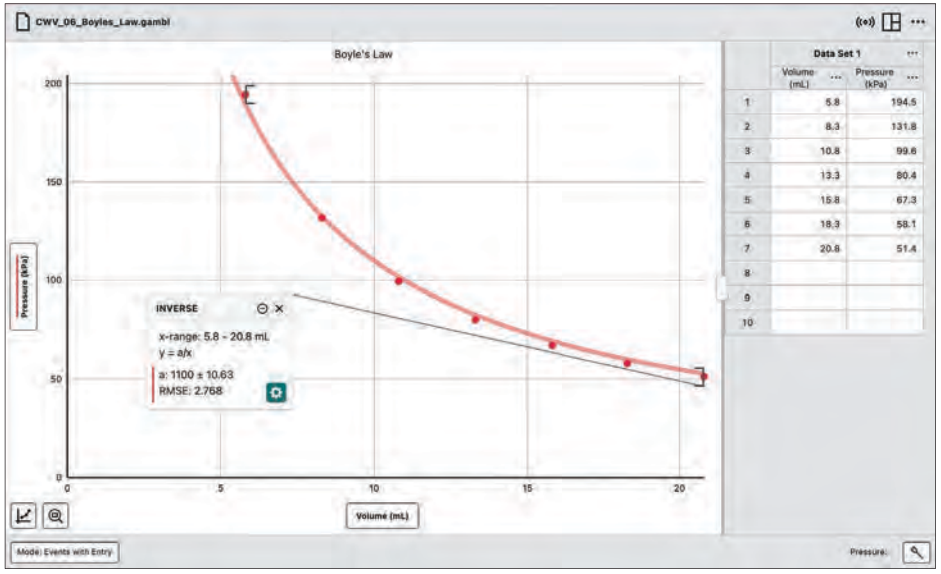
Awards

TECH & LEARNING AWARDS OF EXCELLENCE REMOTE LEARNING WINNER

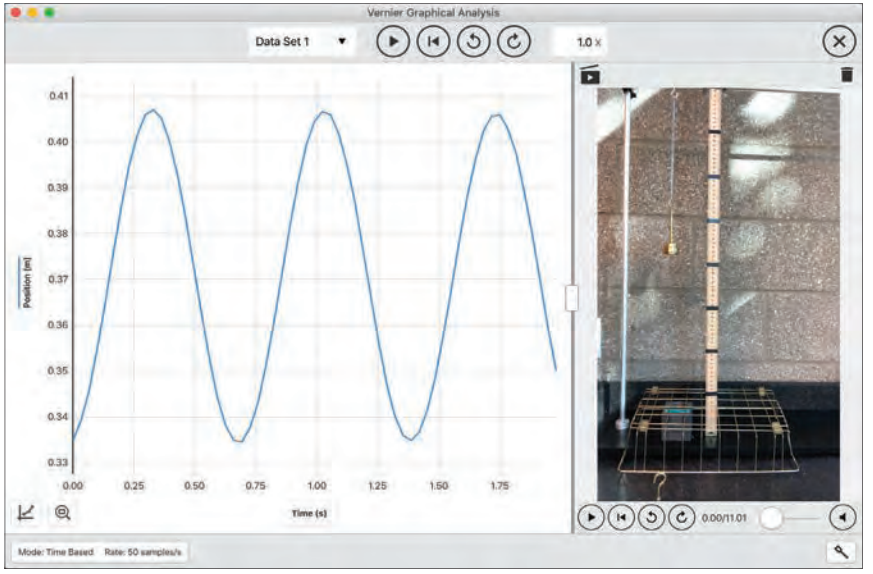
TECH & LEARNING BEST of SHOW ISTE20 LIVE Winner

2020 NEW PRODUCT AWARD THE

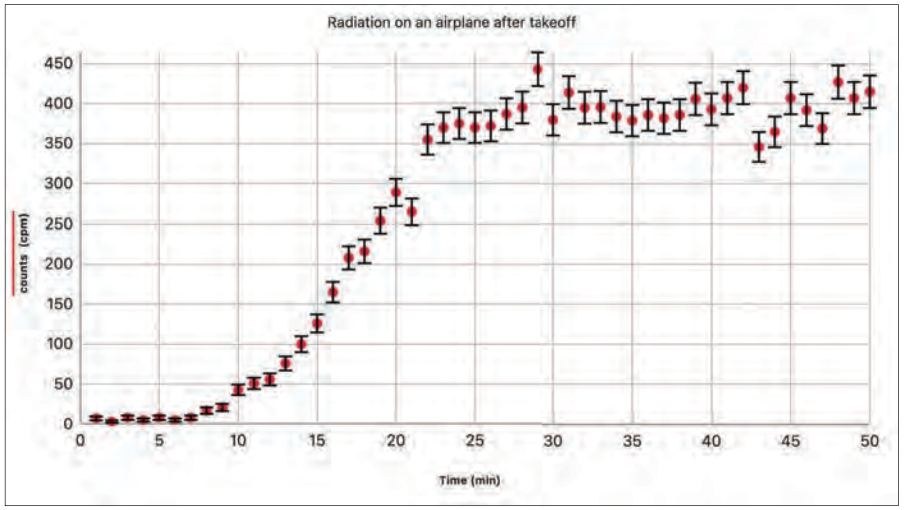
THE EDTECH AWARDS COOL TOOL FINALIST 2021



Choose curve fits from a library of functions or define your own equation. Display uncertainty of fit parameters.



Data display is synchronized with the video, allowing students to replay, speed up, slow down, and pause recorded experiments at key moments.



Use advanced analysis features, such as error bars, to describe measurement uncertainty.

"The data-sharing feature is outstanding. The engagement is so much better when doing demo labs."

— John Kunishima
Robert O. Townsend Junior High
Chino Hills, CA

FREE 30-DAY TRIAL

Get a 30-day free trial and learn about site license options and e-books at **vernier.com/gapro**

Key Features

With the Graphical Analysis app, students can visualize and interact with experiment data collected via nearly any Vernier sensor.

Graphical Analysis Pro features that teachers love

Live data sharing during demonstrations—great for in-person and remote learning

More graph types, including bar, histogram, and FFTs, plus the ability to plot categorical items

Video-sensor data sync, which enables students to replay, speed up, slow down, and pause recorded experiments at key moments in time

Library of over 45 sample experiments ready to be analyzed by students as prep work, homework, or a makeup assignment

Graph annotations so students can demonstrate their comprehension of the graph—and the underlying scientific concepts

Custom curve fits that enable students to fit a function of their choosing to experimental data

For more information, go to vernier.com/graphical-analysis

WORKS ON CHROMEBOOKS!

Vernier Video Analysis

Investigate projectile motion.

Study Motion Everywhere

Vernier Video Analysis® helps students make connections between the classroom and the real world. With this streamlined app, students can use videos they find or record their own with mobile devices to measure motion of objects that they can't measure with a sensor.

FREE 30-DAY TRIAL

Get a 30-day free trial and learn about site license options and e-books at **vernier.com/video-analysis**

Features

- Vernier Video Analysis app is compatible with multiple browsers and platforms: ChromeOS,™ Windows,® macOS,® iOS, iPadOS,® and Android.™
- Students can use prepared videos, found videos, or their own videos for analysis.
- The app makes it possible to do experiments that cannot be done with sensors, such as analyzing the motion of a basketball in flight—objects can be tracked automatically by the app.
- Analysis is easy with multiple graphing options, so students are able to think critically about the collected data—they can even analyze the motion of multiple objects in a single video.
- With this app, you can apply vectors and vector components over the video after tracking a moving object, illuminating changes in position, velocity, and acceleration.
- When multiple objects have been marked, just enter their masses and the app can automatically calculate and display the center of mass location.
- Annual site-licensing makes purchasing and renewing quick and easy.

Vernier Video Analysis: Motion and Sports

Vernier Video Analysis: Motion and Sports features 12 investigations using Vernier Video Analysis. In addition to traditional physics concepts such as velocity and acceleration, its investigation of sports activities expands learning opportunities and further connects the study of motion to students' daily lives.

Download only
HSB-VVAMS-E

Vernier Video Analysis: Conservation Laws and Forces

This e-book features 12 investigations dealing with topics such as conservation of energy and momentum using the Vernier Video Analysis app.

Download only
HSB-VVACLF-E

Vernier Spectral Analysis

Collect, Share, and Analyze Spectrometer Data

The free Vernier Spectral Analysis® app makes it easy to incorporate spectroscopy into your biology, chemistry, and physics experiments. Using the app, students can collect a full spectrum and explore topics such as Beer's law, enzyme kinetics, and plant pigments.

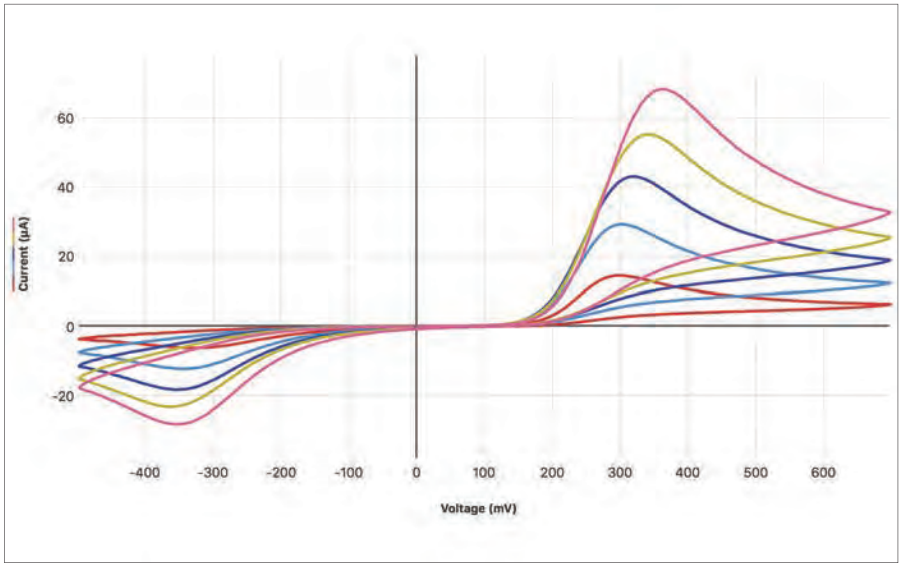
Compatible with ChromeOS, Windows, macOS, iOS, iPadOS, and Android.

Features

- Follow on-screen instructions for simplified Beer's law or kinetics data collection.
- Collect full absorbance spectrum or percent transmittance data in less than one second.
- Analyze data with built-in analysis tools, including data interpolation and curve fits.
- Determine the order of kinetics reaction with the calculated columns function.
- Understand color transmission using the color strip shown on full spectrum graphs.
- View a full spectrum of your sample while collecting data for Beer's law or kinetics experiments.
- View spectral lines by collecting intensity *vs.* wavelength data.

Learn more at vernier.com/spectral-analysis

Vernier Instrumental Analysis



Incorporate Instrumentation into Your Curriculum

Our free Vernier Instrumental Analysis® app makes it easy to incorporate instrumentation into your chemistry curriculum. With this app, students can collect and analyze data from Mini GC, Mini GC Plus, Go Direct Mini GC,™ Go Direct Cyclic Voltammetry System, and Go Direct Polarimeter using computers, Chromebooks, or other mobile devices.

Compatible with ChromeOS, Windows, macOS, iOS, iPadOS, and Android.

Features

- Perform peak integration.
- Split peaks present in your gas chromatograms.
- Determine peak retention time and area.
- Capture and analyze polarimetry data to identify optically active compounds.
- Directly measure the optical rotation value of a sample in your polarimeter at a single point or over time.
- Analyze, save, and export gas chromatography, voltammetry, and polarimetry data.
- Explore electrochemistry and redox reactions with voltammograms.

Learn more at vernier.com/instrumental-analysis

LabQuest 3

LabQuest 3 is a powerful, easy-to-navigate, and versatile data-logging solution for STEM students.

LabQuest® 3 reimagines data collection by providing students with an innovative, easy-to-use interface. A larger screen and advanced touch screen abilities make it easier for students to collect, graph, and analyze data wherever they are—in the classroom or in the field. Challenge your students to gain a deeper understanding of science through data with the accessible, groundbreaking LabQuest 3.

- Connects wirelessly to the family of Go Direct® sensors
- Easy-to-use platform enables students to generate graphs and analyze results
- An excellent choice for laboratories, classrooms, or in-the-field investigations

LABQ3

LabQuest 3 purchase includes *LabQuest 3 unit, rechargeable battery (in unit), AC power adapter, micro USB computer connection cable, and Quick-Start Guide*

Full-Featured Data-Collection Platform

The most engaging and effective approach to science is interactive, with students collecting and analyzing data to understand and apply core concepts. Graphing and analyzing data is an essential component of the inquiry and learning process. LabQuest 3, with its built-in data-collection and analysis app that works with all Vernier sensors, supports hands-on data collection in the classroom, in the lab, and in the field.

- Is a Chromebook™ not available? No problem. LabQuest 3 can do it all—data collection, data analysis, and data sharing.
- Keep your expensive computers safe from spills, drops, and crashes—use LabQuest 3 in the chemistry lab, at the watershed, or next to your bridge tester. LabQuest 3 does not need another device for data collection or analysis.
- With a portable design, your students take it anywhere they go.
- LabQuest 3 works with both Go Direct and wired LabQuest sensors.

Connectivity to Other Platforms

One-to-Many Data Sharing

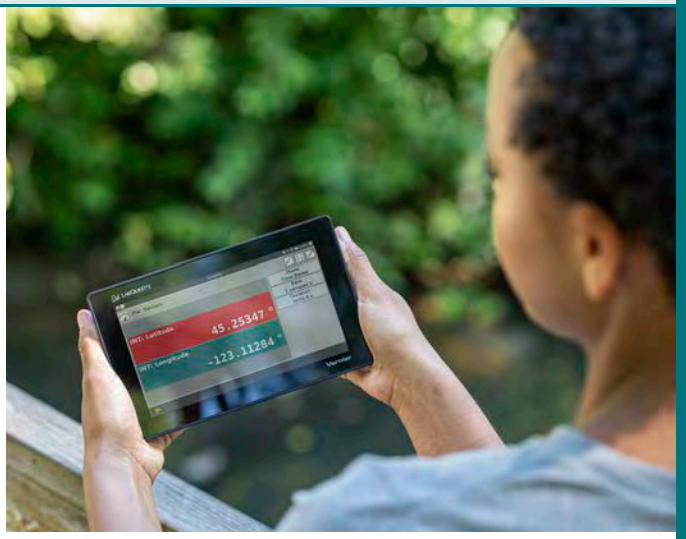
Students can share real-time data with multiple devices for a truly hands-on, collaborative learning experience. Use LabQuest 3 to transfer data wirelessly to computers, Chromebooks, or mobile devices running Vernier Graphical Analysis®.

Data Sharing from a LabQuest 3 can also be used to connect wired LabQuest sensors to mobile devices that don't support a USB interface.

USB Sensor Interface

If you want to use your own computer or Chromebook to collect data, use LabQuest 3 as a conduit between our wired LabQuest sensors and your device. LabQuest 3 works as a USB sensor interface with Vernier Graphical Analysis.

Learn more at vernier.com/labq3



LabQuest App

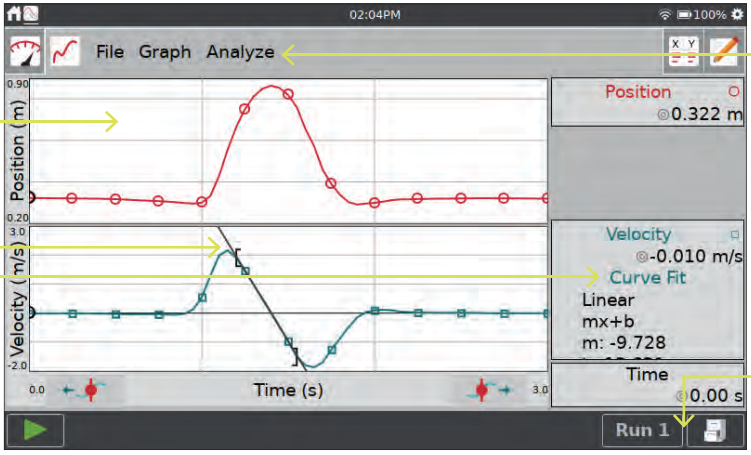
LabQuest 3 has built-in software that gives your students real-time graphing capabilities in a handheld device. It's powerful, yet beautifully simple.

- Collect data and view in a Data Table, Meter, and Graph.
- Perform curve fits.
- Use built-in sensors—GPS and Microphone.
- Draw a prediction before collecting data.
- Display two graphs at once.
- Display a tangent line or use the Integral function tool.
- Calculate statistics for your data.

Learn more about built-in applications and other great features at vernier.com/labq3

One or two high-resolution plots of data are displayed in real time.

Display curve fit statistics.

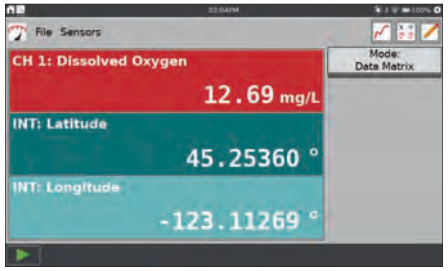


Curve fits and other analysis tools are available.

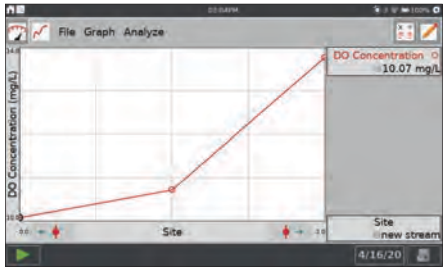
Easily store and recall multiple runs.

One-Touch Simplicity

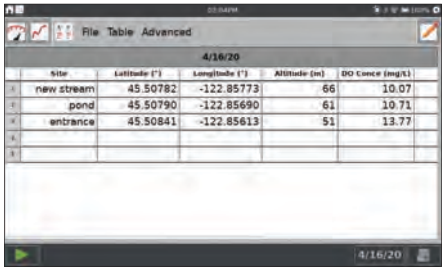
Your students can collect data and view them in a Meter, Graph, or Data Table.



Meter



Graph



Data Table

Learn more at vernier.com/labq3

LabQuest 3 Accessories and Replacement Parts

Product	Order Code
LabQuest Charge Station	LQ3-CRG
LabQuest 3 Stand	LQ3-STN
LabQuest Power Supply*	LQ3-PS
LabQuest Lanyard	LQ3-LAN
LabQuest 3 Battery*	LQ3-BAT
LabQuest Battery Boost 3	LQ-BOOST3
Vernier Micro USB Cable*	CB-USB-MICRO
Vernier Micro USB to USB-C Cable	CB-USB-C-MICRO

**Included with LabQuest 3*

LabQuest Viewer App

LabQuest Viewer

Teach students how to use LabQuest® by projecting your LabQuest screen. Display live images of all LabQuest units in your lab to monitor student progress or compare group data. LabQuest Viewer® is compatible with both macOS® and Windows® computers.

Computer software includes a site license for every teacher's computer in your school.

CD LQ-VIEW
Download LQ-VIEW-E

For more information, visit vernier.com/lq-view

LabQuest Viewer for iPad

Use LabQuest Viewer app for iPad® on your classroom iPad to wirelessly view and control LabQuest. When your iPad is used with a projector, you can easily display any LabQuest screen for the entire class to see.

For more information, visit vernier.com/lq-view-ipad

Download on the App Store

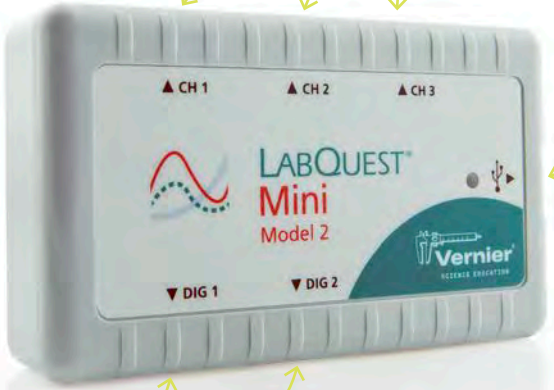
LabQuest Mini

LabQuest Mini (Model 2) brings the power of our award-winning LabQuest technology to you when you don't need the versatility of a standalone device. The perfect solution for educators collecting data using LabQuest sensors with a computer or Chromebook,™ LabQuest Mini interfaces with Vernier Graphical Analysis® (computers and Chromebooks only).

LQ-MINI

Learn more at vernier.com/lq-mini

Three analog sensor ports *for use with most sensors, such as temperature, pH, and force*



USB connectivity

Connect LabQuest Mini to a Windows or macOS computer or a Chromebook to collect data.

Two digital sensor ports *for use with digital sensors, such as motion detectors, photogates, chemical polarimeters, diffraction apparatus, and drop counters*

Go!Link

The Go!Link USB sensor interface is a quick and affordable way to get started with data-collection technology. It's a single-channel interface that connects most of our LabQuest sensors to your computer or Chromebook USB port.

GO-LINK

Learn more at vernier.com/go-link

USB connectivity

Connect Go!Link to a Windows or macOS computer or a Chromebook to collect data.

One analog port *for use with most sensors, such as temperature, pH, and force*

USING GO DIRECT SENSORS?
NO INTERFACE REQUIRED!

LabQuest Mini and Go!Link interfaces are required when using wired LabQuest Sensors.
They are not for use with Go Direct® Sensors.

Secondary School

Encourage your students and build their confidence in pursuing a STEM career paths with hands-on experience using data-collection technology from Vernier. Our technology supports you as you prepare students to meet local and national standards through experimentation.

vernier.com/high-school

Contents

For university products, visit vernier.com/college

Lab Books & Investigations

E-books and Printed Books—the Choice is Yours

Many of our popular, award-winning lab books are available in both e-version and printed formats. When you purchase a printed book, you also receive the electronic version. When you purchase either format, you receive

- Anytime access to the most up-to-date versions of experiments on all supported Vernier software (free Vernier web account required)
- Editable student files and complete teacher information files, including sample data and supplies lists
- A generous site license—purchase once and share files with other teachers in your school

Helping You Meet Standards and Learning Objectives

Vernier understands that helping students meet standards is an important part of teaching. As standards change, we are committed to providing you with the most current information. You will find the following alignments and correlations for Vernier lab books at **vernier.com/standards**

- AP* (Advanced Placement Program)
- IB† (International Baccalaureate Diploma Program)

Ideas for Your Science Classroom

If you are looking for experiments that can help you excite your students about STEM, check out our extensive library. We make it easy to find ideas from fellow educators and Vernier professionals.

Visit **vernier.com/experiment**

Inspire Your International Baccalaureate Students with Innovative Experiments

For more about what Vernier can do for your IB students, see pp. 60–61.

Learn more at vernier.com/lab-books

** AP and Advanced Placement Program are registered trademarks of the College Entrance Examination Board, which was not involved in the production of and does not endorse this product.*

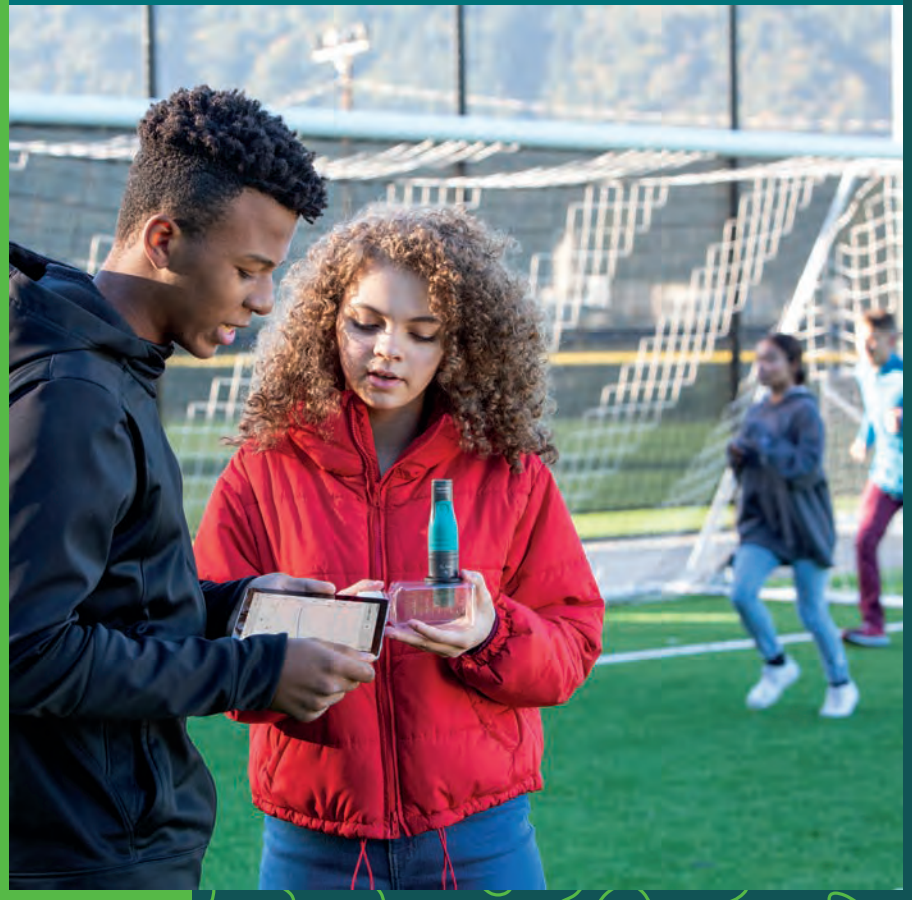
† The IB Diploma Program is an official program of the International Baccalaureate Organization (IBO) which authorizes schools to offer it. The material available here has been developed independently of the IBO and is not endorsed by it.

Secondary School

Biology

Our biology solutions include high-quality sensors, easy-to-use software, and exceptional technical support to set up you and your students for classroom success.

vernier.com/biology



Go Direct CO_2 Gas

MOST POPULAR

Use Go Direct® CO_2 Gas to measure carbon dioxide gas levels, air temperature, and relative humidity. It's an excellent sensor for measuring fermentation, cell respiration, and photosynthesis.

GDX-CO2

vernier.com/gdx-co2

Go Direct O_2 Gas

Use this sensor to measure gaseous oxygen concentration levels and air temperature.

GDX-O2

vernier.com/gdx-o2

Go Direct Gas Pressure

Use Go Direct Gas Pressure to monitor gas pressure in a variety of experiments. Easily change the displayed units to any one of seven options. This sensor includes a syringe, tubing, and stoppers to ease experiment setup.

GDX-GP

vernier.com/gdx-gp

Go Direct pH

This is an important and versatile sensor for lab and field activities alike. Go Direct pH is a general-purpose pH sensor used to monitor pH of aqueous solutions.

GDX-PH

vernier.com/gdx-ph

Go Direct Optical Dissolved Oxygen

Use this sensor to measure dissolved oxygen, water temperature, and atmospheric pressure.

GDX-ODO

vernier.com/gdx-odo

Go Direct Conductivity

Go Direct Conductivity determines the ionic content of an aqueous solution by measuring its electrical conductivity. It features a built-in temperature sensor, so you can simultaneously read conductivity and temperature.

GDX-CON

vernier.com/gdx-con

Go Direct Respiration Belt

Go Direct Respiration Belt uses a force sensor and an adjustable nylon strap to measure human respiration rates before, during, and after exercise.

GDX-RB

vernier.com/gdx-rb

Go Direct EKG

Go Direct EKG measures electrical activity in the heart and electrical signals produced during muscle contractions.

GDX-EKG

vernier.com/gdx-ekg

Physiology

Human Physiology Go Direct Standard Package

This package includes nine sensors that work with Vernier Graphical Analysis® Pro and LabQuest® 3.
Two useful accessories are also included.

- Go Direct® Blood Pressure
- Go Direct EKG
- Go Direct Force and Acceleration
- Go Direct Hand Dynamometer
- Go Direct O_2 Gas
- Go Direct Respiration Belt
- Go Direct Surface Temperature
- Go Direct Spirometer
- Go Wireless® Heart Rate
- Reflex Hammer Accessory Kit
- BioChamber 250

GDP-HP-DX

vernier.com/gdp-hp-dx

Human Physiology Experiments: Volume 2

Human Physiology Experiments: Volume 2 contains 15 experiments designed to encourage students to explore the physiology of various human organ systems. An expansion of our *Human Physiology Experiments: Volume 1* lab book, the setup for these experiments is minimal—students are collecting data within minutes.

Printed book + download ALB-HP2
Download only ALB-HP2-E

vernier.com/alb-hp2

DOWNLOAD a free experiment at **vernier.com/alb-hp2**

Go Direct Hand Dynamometer

Measure grip strength, pinch strength, and muscle fatigue wirelessly.

GDX-HD

vernier.com/gdx-hd

Agricultural Science

NEW

Go Direct PAR

Go Direct PAR (Photosynthetically Active Radiation) measures photosynthetic light levels in both air and water.

GDX-PAR

vernier.com/gdx-par

NEW

Go Direct Soil Moisture

Simply insert this rugged sensor into the soil to be tested, and the volumetric water content of the soil is reported in percent.

GDX-SM

vernier.com/gdx-sm

Go Direct Weather System

Easily monitor a wide variety of environmental factors with just one sensor. The included Go Direct Weather Vane accessory is required to report wind direction.

GDX-WTVA

vernier.com/gdx-wtva

LabQuest 3

LabQuest 3 can serve as a standalone data-collection platform that works with all of our sensors. This makes it an excellent choice for teachers and students in the classroom and in the field.

LABQ3

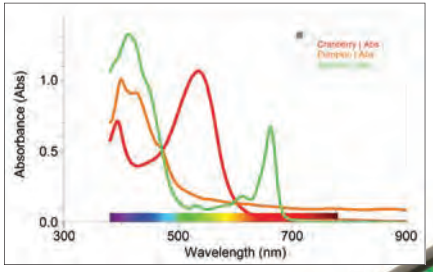
vernier.com/labq3

Go Direct SpectroVis Plus

Introduce your students to spectroscopy with our affordable Go Direct SpectroVis® Plus. Students can easily collect a full-wavelength spectrum (absorbance, percent transmittance, fluorescence, or intensity), study absorbance *vs.* concentration (standard curve), or monitor enzyme activity (kinetics). Collect and analyze data using Vernier Spectral Analysis® app or LabQuest App.

GDX-SVISPL

vernier.com/gdx-svispl



Biology Go Direct Starter Package

This package includes four sensors that work with Vernier Graphical Analysis Pro and LabQuest 3.

- Go Direct Temperature
- Go Wireless Heart Rate
- Go Direct Gas Pressure
- Go Direct CO_2 Gas

GDP-BIO-ST

Learn more at vernier.com/gdp-bio-st

Biology Go Direct Standard Package

This package includes 11 sensors that work with Vernier Graphical Analysis Pro and LabQuest 3. Two sampling chambers are also included.

- Go Direct Temperature
- Go Direct Gas Pressure
- Go Direct O_2 Gas
- Go Direct CO_2 Gas
- Go Direct Colorimeter
- Go Direct Conductivity
- Go Direct EKG
- Go Direct pH
- Go Direct Optical Dissolved Oxygen
- Go Direct Respiration Belt
- Go Wireless® Heart Rate
- BioChamber 250
- BioChamber 2000

GDP-BIO-ODX

Learn more at vernier.com/gdp-bio-odx

Biology with Vernier Lab Book

Biology with Vernier addresses the fundamentals of a secondary school biology course with 31 experiments that include cell respiration, photosynthesis, membrane diffusion, osmosis, human physiology, transpiration, fermentation, and more.

Learn more at vernier.com/bwv

Printed book + download BWV
Download only BWV-E

Featured Products

Go Direct Sensors

Sensor		Order Code
Go Direct® Blood Pressure		GDX-BP
Go Direct CO_2 Gas		GDX-CO2
Go Direct Colorimeter		GDX-COL
Go Direct Conductivity		GDX-CON
Go Direct EKG		GDX-EKG
Go Direct Ethanol Vapor		GDX-ETOH
Go Direct Force and Acceleration (for use with Reflex Hammer Accessory Kit)		GDX-FOR
Go Direct Gas Pressure		GDX-GP
Go Direct Hand Dynamometer		GDX-HD
Heart Rate Monitors		
Go Wireless® Exercise Heart Rate		GW-EHR
Go Wireless Heart Rate		GW-HR
Go Direct O_2 Gas		GDX-O2
Go Direct Optical Dissolved Oxygen		GDX-ODO
NEW Go Direct PAR		GDX-PAR
pH Sensors		
Go Direct pH		GDX-PH
Go Direct Tris-Compatible Flat pH		GDX-FPH
Go Direct Respiration Belt		GDX-RB
NEW Go Direct Soil Moisture		GDX-SM
Go Direct SpectroVis® Plus		GDX-SVISPL
Go Direct Spirometer		GDX-SPR
Temperature Probes		
Go Direct Surface Temperature		GDX-ST
Go Direct Temperature		GDX-TMP
Go Direct Weather System		GDX-WTVA

Accessories

Accessory	Order Code
Go Direct Charge Station	GDX-CRG
Reflex Hammer Accessory Kit	RFX-ACC

See all our products for biology at vernier.com/biology

LabQuest Sensors

Sensor	Order Code
25-g Accelerometer	ACC-BTA
Blood Pressure Sensor	BPS-BTA
CO_2 Gas Sensor	CO2-BTA
Colorimeter	COL-BTA
Conductivity Probe	CON-BTA
EKG Sensor	EKG-BTA
Ethanol Sensor	ETH-BTA
Gas Pressure Sensor	GPS-BTA
Goniometer	GNM-BTA
Hand Dynamometer	HD-BTA
Heart Rate Monitors	
Exercise Heart Rate Monitor	EHR-BTA
Hand-Grip Heart Rate Monitor	HGH-BTA
O_2 Gas Sensor	O2-BTA
PAR Sensor	PAR-BTA
pH Sensors	
pH Sensor	PH-BTA
Tris-Compatible Flat pH Sensor	FPH-BTA
Soil Moisture Sensor	SMS-BTA
Spirometer	SPR-BTA
Temperature Probes	
Stainless Steel Temperature Probe	TMP-BTA
Surface Temperature Sensor	STS-BTA

See all our products for biology at vernier.com/biology

Spectrophotometers

vernier.com/spectrometers

Equipment	Order Code
Go Direct SpectroVis Plus	GDX-SVISPL
Go Direct Fluorescence/UV-VIS Spectrophotometer	GDX-SPEC-FUV
Go Direct UV-VIS Spectrophotometer	GDX-SPEC-UV
Go Direct Visible Spectrophotometer	GDX-SPEC-VIS

Digital Microscopes

Equipment	Order Code
Celestron® Digital Microscope Imager	CS-DMI
5MP Celestron Digital Microscope	CS-5MP
USB Digital Microscope	BD-EDU-100

Lab Books*

Title	Order Code
Biology with Vernier	BWV
Investigating Biology through Inquiry	BIO-I
Advanced Biology with Vernier (LabQuest® sensors only)	BIO-A
Human Physiology Experiments: Volume 1 (Go Direct sensors only)	HSB-HP
Human Physiology Experiments: Volume 2 (Go Direct sensors only)	ALB-HP2
Human Physiology with Vernier (LabQuest sensors only)	HP-A
Agricultural Science with Vernier	AWV

** Includes printed book and download; also available as a download only.*

Looking for Replacement Parts?

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SECONDARY SCHOOL

Environmental Science

Help your students see that the environmental science concepts discussed in the classroom have serious implications on the world around them. Our hands-on investigations and data-collection technology help students form a better understanding of phenomena.

vernier.com/environmental-science

NEW

Go Direct Soil Moisture

This sensor uses capacitance to measure the volumetric water content of soil.

GDX-SM

vernier.com/gdx-sm

Go Direct Optical Dissolved Oxygen

This optical sensor makes it easy to measure dissolved oxygen in water, atmospheric pressure, and water temperature.

GDX-ODO

vernier.com/gdx-odo

NEW

Go Direct Salinity

Go Direct® Salinity precisely measures the total dissolved salt content of ocean or brackish water.

GDX-SAL

vernier.com/gdx-sal

Go Direct Tris-Compatible Flat pH

The flat glass, double-junction design makes this sensor a good choice for environmental science.

GDX-FPH

vernier.com/gdx-fph

Go Direct Conductivity

Go Direct Conductivity determines the ionic content of an aqueous solution by measuring its electrical conductivity.

GDX-CON

vernier.com/gdx-con

Go Direct Surface Temperature

This sensor has an exposed thermistor that results in an extremely rapid response time, making it perfect for use in air and water.

GDX-ST

vernier.com/gdx-st

Go Direct Light and Color

Measure light intensity in the visible-to-ultraviolet electromagnetic spectrum. An RGB color sensor detects relative contributions of primary colors in light.

GDX-LC

vernier.com/gdx-lc

Go Direct Weather System

Easily monitor a wide variety of environmental factors with just one sensor. Go Direct Weather System includes an affordable, wireless handheld sensor used to measure ambient temperature, humidity, wind speed, and more. The included Go Direct Weather Vane accessory is required to report wind direction.

GDX-WTVA
(sensor and vane)

vernier.com/gdx-wtva

Strengthen students' critical thinking skills by introducing them to alternative energy solutions to real-world problems.

The KidWind Project and Vernier have teamed up to provide the technology, resources, and support you need for your students to investigate renewable energy.

- **Engage your students** as they watch power output and energy production data develop in real time.
- **Inspire creativity** as your students build and test prototypes, test solutions to engineering problems, and optimize designs.
- **Measure** voltage and current, and calculate power, without using a multimeter.
- **Set up activities quickly** and easily, creating more time for instruction and exploration.

Renewable Energy with Vernier

The *Renewable Energy with Vernier* lab book features 26 experiments in wind and solar energy. The book contains a combination of explorations, classic experiments, inquiry investigations, engineering projects, and more.

vernier.com/rev

Printed book + download
REV

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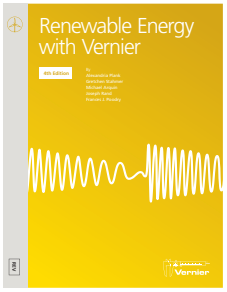
REV-E



Solar Energy Exploration Kit

Explore solar energy with this innovative science kit designed to help students investigate energy transformations. Experiment with basic circuits and learn about important factors in photovoltaic systems.

KW-SEEK

vernier.com/kw-seek

KidWind Advanced Wind Experiment Kit

Discover advanced concepts of wind turbine technology, including gearboxes and generator construction (with the optional KidWind simpleGEN). Students use the blades they design to generate electricity, lift weights, and pump water. This kit is recommended for use with our *Renewable Energy with Vernier* lab book.

KW-AWX

KidWind Advanced Wind Experiment Kit Classroom Pack

KW-AWXC

vernier.com/kw-awx

KidWind Blade Design Consumables

Bulk balsa, chipboard sheets, and dowels for blade making in the classroom. Pack includes 100 balsa sheets, 150 chipboard sheets, and 250 dowels.

KW-BDC

vernier.com/kw-bdc

Go Direct Energy

This sensor quantifies the voltage, current, power, and energy output of small wind turbines and solar panels, such as those used in our KidWind Experiment Kits.

GDX-NRG

vernier.com/gdx-nrg

LabQuest 3

LabQuest 3 is a powerful, connected, and remarkably versatile data-logging solution.

LabQuest® 3 can serve as a standalone data-collection platform that works with all of our sensors. This makes it an excellent choice for teachers and students in the classroom as well as in the field.

LABQ3

vernier.com/labq3

Go Direct Sensor Clamp

The Go Direct® Sensor Clamp securely fastens to a wand-style Go Direct sensor, and the included lanyard works as a strap to prevent accidental drops during investigations in the field. Sensors are sold separately.

GDX-CLAMP

vernier.com/gdx-clamp

Environmental Science Go Direct Starter Package

This package includes four sensors that work with Vernier Graphical Analysis® Pro and LabQuest 3.

- Go Direct Temperature
- Go Direct Tris-Compatible Flat pH
- Go Direct Conductivity
- Go Direct Optical Dissolved Oxygen

GDP-EV-ST

Learn more at vernier.com/gdp-ev-st

Investigating Environmental Science through Inquiry

The *Investigating Environmental Science through Inquiry* lab book contains 34 inquiry-based environmental science investigations.

Topics include

- Earth systems and resources (air, water, and soil)
- The living world
- Global change and population
- Energy resources and consumption
- Pollution

Learn more at vernier.com/esi

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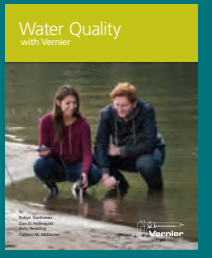
Water Quality with Vernier

The *Water Quality with Vernier* lab book contains 18 water quality tests, including pH, total dissolved solids, dissolved oxygen, BOD, flow rate, turbidity, nitrates, and phosphates.

Learn more at vernier.com/wqv



Printed book + download WQV
Download only WQV-E

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Sensor		Order Code
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Go Direct Colorimeter		GDX-COL
Go Direct Conductivity		GDX-CON
Go Direct Current		GDX-CUR
Go Direct Energy		GDX-NRG
Go Direct Ethanol Vapor		GDX-ETOH
Ion-Selective Electrodes		
Go Direct Ammonium Ion-Selective Electrode		GDX-NH4
Go Direct Calcium Ion-Selective Electrode		GDX-CA
Go Direct Chloride Ion-Selective Electrode		GDX-CL
Go Direct Nitrate Ion-Selective Electrode		GDX-NO3
Go Direct Light and Color		GDX-LC
Go Direct O_2 Gas		GDX-O2
Go Direct Optical Dissolved Oxygen		GDX-ODO
pH Sensors		
Go Direct pH		GDX-PH
Go Direct Tris-Compatible Flat pH		GDX-FPH
NEW Go Direct Salinity		GDX-SAL
NEW Go Direct Soil Moisture		GDX-SM
Go Direct SpectroVis® Plus		GDX-SVISPL
Temperature Probes		
Go Direct Surface Temperature		GDX-ST
Go Direct Temperature		GDX-TMP
Go Direct Voltage		GDX-VOLT
Go Direct Weather System		GDX-WTVA

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Go Direct Accessories

Accessory		Order Code
Go Direct Charge Station		GDX-CRG
Go Direct Sensor Clamp		GDX-CLAMP

LabQuest Sensors

Sensor		Order Code
Conductivity Probe		CON-BTA
Flow Rate Sensor		FLO-BTA
pH Sensor		PH-BTA
Tris-Compatible Flat pH		FPH-BTA
Salinity Sensor		SAL-BTA
Soil Moisture Sensor		SMS-BTA
Turbidity Sensor		TRB-BTA

Lab Equipment

Equipment	Order Code
KidWind Advanced Wind Experimenty Kit	KW-AWX
KidWind Basic Wind Experiment Kit	KW-BWX
Solar Energy Exploration Kit	KW-SEEK
KidWind 2V/400mA Solar Panel	KW-SP2V
Vernier Variable Load	VES-VL
Primary Productivity Kit	PPK
Water Depth Sampler	WDS
Water Quality Bottles	WQ-BOT

Lab Books

Book Title	Order Code
Investigating Environmental Science through Inquiry	Printed book + download: ESI Download only: ESI-E
Water Quality with Vernier (LabQuest® sensors only)	Printed book + download: WQV Download only: WQV-E
Renewable Energy with Vernier	Printed book + download: REV Download only: REV-E
Climate and Meteorology Experiments (Go Direct sensors only)	Download only: HSB-CM-E

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SECONDARY SCHOOL

Earth Science

When you use Vernier technology to teach Earth science, you can count on our affordable sensors, intuitive software, and creative solutions to help your students understand key Earth science concepts.

vernier.com/earth-science

Go Direct Temperature

MOST POPULAR

This rugged probe measures the temperature of a variety of substances including air, soil, and water.

Range: –40 to 125°C

GDX-TMP

vernier.com/gdx-tmp

Go Direct Temperature Teacher Pack

GDX-TMP-TP

Includes 8 Go Direct® Temperature Probes and a Go Direct Charge Station.

Go Direct 3-Axis Magnetic Field

Useful for topics in geology, this sensor can determine the magnitude and direction of a magnetic field at any point in space.

GDX-3MG

vernier.com/gdx-3mg

Go Direct pH

This wireless sensor monitors the pH of aqueous solutions and is perfect for lab and field experiments alike.

GDX-PH

vernier.com/gdx-ph

Go Direct pH Teacher Pack

GDX-PH-TP

Save money when you purchase the Go Direct pH Teacher Pack, which includes 8 Go Direct pH Sensors and a Go Direct Charge Station.

Go Direct Light and Color

Measure light intensity in the visible-to-ultraviolet electromagnetic spectrum. An RGB color sensor detects relative contributions of primary colors in light.

GDX-LC

vernier.com/gdx-lc

Go Direct Conductivity

Go Direct Conductivity determines the ionic content of an aqueous solution by measuring its electrical conductivity.

GDX-CON

vernier.com/gdx-con

Go Direct Motion

Go Direct Motion uses ultrasound to measure the position, velocity, and acceleration of moving objects.

GDX-MD

vernier.com/gdx-md

Climate and Meteorology Experiments Go Direct Package

This package includes all the sensors needed to do the activities in the book.

- Go Direct® Surface Temperature (2)
- Go Direct Light and Color
- Go Direct Weather System

GDP-CM

Learn more at vernier.com/gdp-cm

Climate and Meteorology Experiments

This lab book is packed with interactive experiments that challenge students to use data-collection technology to explore storm systems and other important weather-related topics.

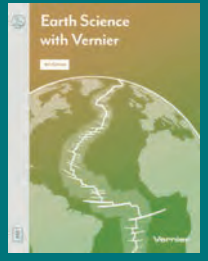
Learn more at vernier.com/hsb-cm-e

Download only HSB-CM-E

Earth Science with Vernier

In addition to the 33 experiments in *Earth Science with Vernier*, the six projects in this lab book engage students as they learn about the world around them.

Learn more at vernier.com/esv



Printed book + download ESV
Download only ESV-E

Go Direct Weather System

Easily monitor a wide variety of environmental factors with just one sensor. Go Direct Weather System includes an affordable, wireless handheld sensor used to measure ambient temperature, humidity, wind speed, and more. The included Go Direct Weather Vane accessory is required to report wind direction.

GDX-WTVA (sensor and vane)

vernier.com/gdx-wtva

Go Direct Surface Temperature

This sensor has an exposed thermistor that results in an extremely rapid response time, making it perfect for use in air and water.

GDX-ST

vernier.com/gdx-st

Featured Products

Looking for Replacement Parts?

Visit vernier.com/replacements

Go Direct Sensors

Sensor	Order Code
Go Direct 3-Axis Magnetic Field	GDX-3MG
Go Direct CO_2 Gas	GDX-CO2
Go Direct Conductivity	GDX-CON
Go Direct Current	GDX-CUR
Go Direct Energy	GDX-NRG
Go Direct Light and Color	GDX-LC
Go Direct Motion	GDX-MD
Go Direct O_2 Gas	GDX-O2
Go Direct Optical Dissolved Oxygen	GDX-ODO
pH Sensors	
Go Direct pH	GDX-PH
Go Direct Tris-Compatible Flat pH	GDX-FPH
Temperature Probes	
Go Direct Surface Temperature	GDX-ST
Go Direct Temperature	GDX-TMP
Go Direct Voltage	GDX-VOLT
Go Direct Weather	GDX-WTHR
Go Direct Weather System	GDX-WTVA

Go Direct Accessories

Accessory	Order Code
Go Direct Charge Station	GDX-CRG
Go Direct Sensor Clamp	GDX-CLAMP

LabQuest Sensors

Sensor	Order Code
Anemometer	ANM-BTA
Barometer	BAR-BTA
Flow Rate Sensor	FLO-BTA
Magnetic Field Sensor	MG-BTA
Salinity Sensor	SAL-BTA
Soil Moisture Sensor	SMS-BTA
Stainless Steel Temperature Probe	TMP-BTA
Tris-Compatible Flat pH Sensor	FPH-BTA
Turbidity Sensor	TRB-BTA

Accessories & Lab Equipment

Product	Order Code
Electrode Support	ESUP
KidWind Basic Wind Experiment Kit	KW-BWX
Solar Energy Exploration Kit	KW-SEEK
KidWind 2V/400mA Solar Panel	KW-SP2V
Vernier Resistor Board	VES-RB

Lab Books

Title	Order Code
Earth Science with Vernier	Printed book + download: ESV Download only: ESV-E
Water Quality with Vernier (LabQuest® sensors only)	Printed book + download: WQV Download only: WQV-E
Climate and Meteorology Experiments (Go Direct sensors only)	Download only: HSB-CM-E

See all our products for Earth science at vernier.com/earth-science

SECONDARY SCHOOL

Chemistry

Vernier chemistry resources cover an array of key concepts to help prepare your students for what lies ahead. From gas laws to spectroscopy, our products are backed by an extensive collection of experiments and unparalleled technical support.

vernier.com/chemistry

Go Direct Temperature

MOST POPULAR

Students can use this rugged, general-purpose sensor to monitor temperature.

Range: –40 to 125°C

GDX-TMP

vernier.com/gdx-tmp

Go Direct Temperature Teacher Pack

GDX-TMP-TP

Includes 8 Go Direct® Temperature Probes and a Go Direct Charge Station.

Go Direct pH

Conduct acid-base titrations, monitor pH changes during chemical reactions, and investigate household acids and bases. The wireless connection makes it easier to do field-based studies such as testing the pH of surface water.

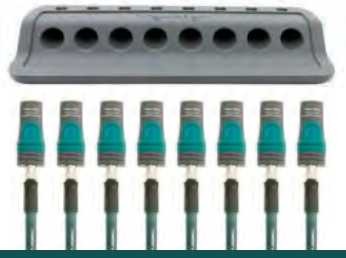
GDX-PH

vernier.com/gdx-ph

Go Direct pH Teacher Pack

GDX-PH-TP

Save money when you purchase the Go Direct pH Teacher Pack, which includes 8 Go Direct pH Sensors and a Go Direct Charge Station.



Go Direct Gas Pressure

Explore pressure changes and gas laws with this sensor that measures the absolute pressure of a gas.

GDX-GP

vernier.com/gdx-gp

Go Direct Conductivity

Go Direct Conductivity determines the ionic content of an aqueous solution by measuring its electrical conductivity. It features a built-in temperature sensor to simultaneously read conductivity and temperature.

GDX-CON

vernier.com/gdx-con

Go Direct Colorimeter

Explore absorbance and percent transmittance in a variety of experiments including Beer's law (absorbance *vs.* concentration) and kinetic studies (concentration *vs.* time). Students select between four wavelengths (430 nm, 470 nm, 565 nm, 635 nm) to set up their experiment.

GDX-COL

vernier.com/gdx-col

Go Direct Drop Counter

As an alternative to using a buret, the drop counter precisely records the number of drops of titrant added during a titration and then automatically converts it to volume.

GDX-DC

vernier.com/gdx-dc

Go Direct ORP

Determine the equivalence point of an oxidation-reduction titration or the oxidizing ability of chlorine in swimming pools. This sensor measures the capacity of a solution to either release or accept electrons from chemical reactions.

GDX-ORP

vernier.com/gdx-orp

Go Direct Constant Current System

Determine Avogadro's number and perform various electroplating and electrolysis experiments. This system combines a DC power source with a built-in current sensor to eliminate the need for a separate power supply. It can deliver up to 0.6 A at 5 V DC.

GDX-CCS

vernier.com/gdx-ccs

Go Direct Wide-Range Temperature

Use Go Direct® Wide-Range Temperature to determine the melting point of caffeine or the boiling point of different vegetable oils.

Range: –20 to 330°C

GDX-WRT

vernier.com/gdx-wrt

Go Direct Melt Station

Teach students the visual detection capillary method of melting point determination with Go Direct Melt Station. It accurately measures melting temperatures of a solid (up to 260°C), and real-time graphing provides a unique perspective of the melting process.

GDX-MLT

vernier.com/gdx-mlt

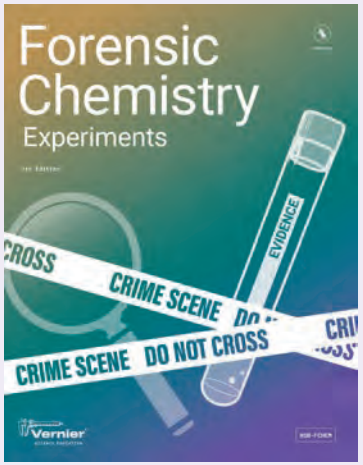
NEW

Forensic Chemistry Experiments

Forensics and its real-world applications are engaging vehicles for learning key scientific concepts. Students investigate scenarios, such as suspected arson and poisonous glasses of wine, while they learn the vital roles that analyzing and interpreting data play in science.

Forensic Chemistry Experiments is for teachers who wish to use forensics as a real-world hook to engage students in learning chemistry using Vernier technology.

vernier.com/hsb-fchem



Download only
HSB-FCHEM-E

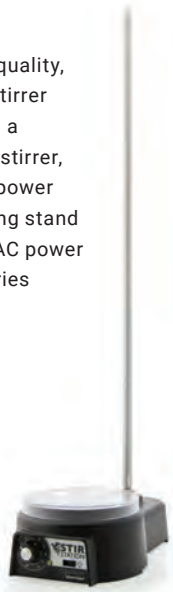
Printed book + download
HSB-FCHEM

Stir Station

The Stir Station is a high-quality, multi-function magnetic stirrer and ring stand. It includes a Stir Station, Vernier Microstirrer, magnetic stirring bar, AC power adapter, and removable ring stand post. It can be used with AC power (included) or four C batteries (not included).

STIR

vernier.com/stir



Go Direct Polarimeter

Our polarimeter measures chiral properties of optically active samples such as sugars and amino acids. Because students have a graph that shows a clear change in the light's polarization, they no longer need to determine the optical maximum with their eyes.

GDX-POL

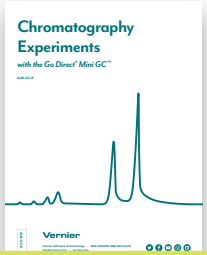
vernier.com/gdx-pol

Go Direct Mini GC

Teach students chromatography with an affordable, portable gas chromatograph that detects polar and nonpolar compounds. With the easy-to-use Go Direct Mini GC™ and the free Vernier Instrumental Analysis® app, students can separate, analyze, and identify substances contained in a volatile liquid or gaseous sample. Go Direct Mini GC connects to your device via Bluetooth® wireless technology or USB.

GDX-GC

Learn more at vernier.com/gdx-gc



FREE DOWNLOAD with purchase of Go Direct Mini GC
Chromatography Experiments with the Go Direct Mini GC e-book

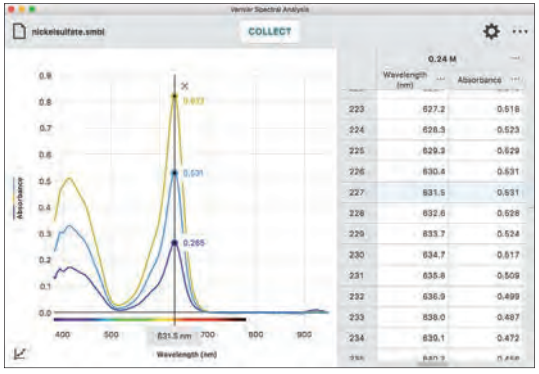
Go Direct SpectroVis Plus

Introduce your students to spectroscopy with the affordable Go Direct SpectroVis® Plus Spectrophotometer. With a range of 380 to 950 nm, students can easily collect a full-wavelength spectrum (absorbance, percent transmittance, fluorescence, or intensity), study absorbance *vs.* concentration (Beer's law), or monitor rates of reaction (kinetics). Collect and analyze data using Vernier Spectral Analysis® or LabQuest® App.

GDX-SVISPL

vernier.com/gdx-svispl

Our innovative, easy-to-use instruments collect data within seconds. Explore our full suite of spectrometers at **vernier.com/spectrometers**



Vernier Spectral Analysis App

Our free Vernier Spectral Analysis app makes it easy to incorporate spectroscopy into your chemistry experiments. Using the app, students can collect a full spectrum and explore topics such as Beer's law, kinetics, and fluorescence.

This user-friendly software includes analysis features such as curve fitting and data interpolation.

FREE DOWNLOAD

vernier.com/spectral-analysis

Chemistry Go Direct Starter Package

This package includes four sensors that work with Vernier Graphical Analysis® Pro and LabQuest® 3.

- Go Direct Temperature (2)
- Go Direct Gas Pressure
- Go Direct pH

GDP-CH-ST

Learn more at vernier.com/gdp-ch-st

Chemistry Go Direct Standard Package

This package includes 8 sensors that work with Vernier Graphical Analysis Pro and LabQuest 3.

- Go Direct Temperature (2)
- Go Direct Gas Pressure
- Go Direct pH
- Go Direct Voltage
- Go Direct Conductivity
- Go Direct Colorimeter
- Go Direct Drop Counter

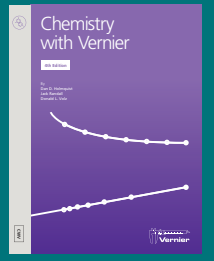
GDP-CH-DX

Learn more at vernier.com/gdp-ch-dx

Chemistry with Vernier

Combine *Chemistry with Vernier* with a package (shown above) to teach students the essentials of chemistry. This lab book contains 36 ready-to-use student experiments and instructor information, including sample data.

Learn more at vernier.com/cwv



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Printed book + download CWV

MORE CHEMISTRY LAB BOOKS ON **PAGE 39**

Featured Products

Go Direct Sensors

Sensor		Order Code
Go Direct® CO_2 Gas		GDX-CO2
Go Direct Colorimeter		GDX-COL
Go Direct Conductivity		GDX-CON
Go Direct Platinum-Cell Conductivity		GDX-CONPT
Go Direct Constant Current System		GDX-CCS
Go Direct Current		GDX-CUR
Go Direct Drop Counter		GDX-DC
Go Direct Electrode Amplifier		GDX-EA
Go Direct Ethanol Vapor		GDX-ETOH
Go Direct Gas Pressure		GDX-GP
Go Direct Melt Station		GDX-MLT
Go Direct Mini GC™		GDX-GC
Go Direct ORP		GDX-ORP
pH Sensors		
Go Direct Glass-Body pH		GDX-GPH
Go Direct pH		GDX-PH
Go Direct Tris-Compatible Flat pH		GDX-FPH
Go Direct Polarimeter		GDX-POL
Go Direct Radiation Monitor		GDX-RAD
Spectrometers		vernier.com/spectrometers
Go Direct Emissions Spectrometer		GDX-SPEC-EM
Go Direct Fluorescence/UV-VIS Spectrophotometer		GDX-SPEC-FUV
Go Direct SpectroVis® Plus		GDX-SVISPL
Go Direct UV-VIS Spectrophotometer		GDX-SPEC-UV
Go Direct Visible Spectophotometer		GDX-SPEC-VIS
Temperature Probes		
Go Direct Surface Temperature		GDX-ST
Go Direct Temperature		GDX-TMP
Go Direct Thermocouple		GDX-TC
Go Direct Wide-Range Temperature		GDX-WRT
Go Direct Voltage		GDX-VOLT

See all our products for chemistry at vernier.com/chemistry

Go Direct Charge Station

Accessory	Order Code
Go Direct Charge Station	GDX-CRG

LabQuest® Sensors

Sensor	Order Code
Colorimeter	COL-BTA
Conductivity Probes	
Conductivity Probe	CON-BTA
Platinum-Cell Conductivity Probe	CONPT-BTA
Current Probes	
Constant Current System	CCS-BTA
Current Probe	DCP-BTA
Drop Counter	VDC-BTD
Electrode Amplifier	EA-BTA
Gas Pressure Sensor	GPS-BTA
Instrumentation Amplifier	INA-BTA
Melt Station	MLT-BTA
ORP Sensor	ORP-BTA
pH Sensors	
Glass-Body pH Electrode BNC (requires Electrode Amplifier)	GPH-BNC
pH Sensor	PH-BTA
Tris-Compatible Flat pH Sensor	FPH-BTA
Polarimeter (Chemical)	CHEM-POL
Radiation Monitor	VRM-BTD
Temperature Probes	
Stainless Steel Temperature Probe	TMP-BTA
Surface Temperature Sensor	STS-BTA
Thermocouple	TCA-BTA
Wide-Range Temperature Probe	WRT-BTA
Voltage Probes	
Differential Voltage Probe	DVP-BTA
Voltage Probe	VP-BTA

Balances

Sensor	More Info
OHAUS Scout® (120 g)	vernier.com/ohs-123
OHAUS Scout (220 g)	vernier.com/ohs-222
OHAUS Scout (420 g)	vernier.com/ohs-422

Spectrometers

Spectrometer	Order Code
Go Direct Emissions Spectrometer	GDX-SPEC-EM
Go Direct Fluorescence/ UV-VIS Spectrophotometer	GDX-SPEC-FUV
Go Direct SpectroVis Plus	GDX-SVISPL
Go Direct UV-VIS Spectrophotometer	GDX-SPEC-UV
Go Direct Visible Spectophotometer	GDX-SPEC-VIS

Gas Chromatograph

Gas Chromatograph	Order Code
Go Direct Mini GC	GDX-GC

Lab Equipment and Accessories

Accessory	Order Code
Cuvette Rack	CUV-RACK
Electrode Support	ESUP
Melt Station Capillary Tubes	MLT-TUBE
Plastic Cuvettes (100)	CUV
Stir Station	STIR

Lab Books†

Book Title	Order Code
Chemistry with Vernier	CWV
Advanced Chemistry with Vernier	CHEM-A
Vernier Chemistry Investigations for Use with AP Chemistry*	APCHEM
Investigating Chemistry through Inquiry	CHEM-I
Food Chemistry Experiments	HSB-FOOD
NEW *Forensic Chemistry Experiments*	HSB-FCHEM
Organic Chemistry with Vernier	CHEM-O

† Books listed here include printed book and download; also available as a download only.

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Looking for Replacement Parts?

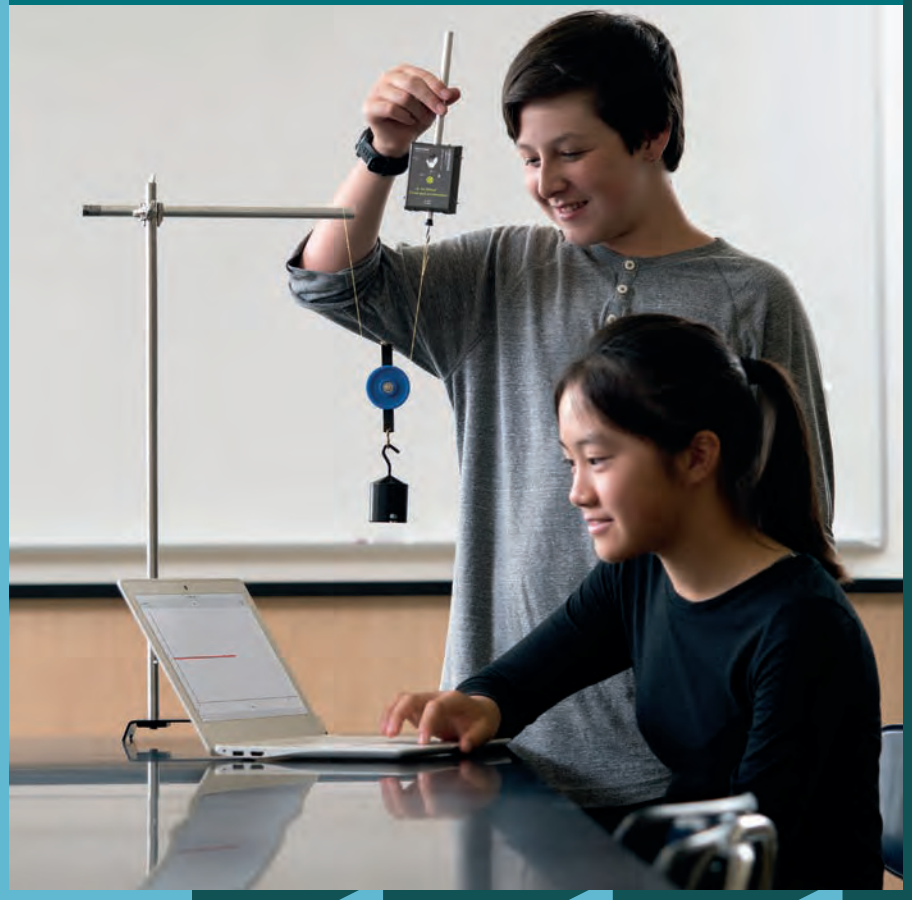
Visit vernier.com/replacements

SECONDARY SCHOOL

Physical Science

From matter and energy to motion and forces, Vernier offers the support you need and the technology your students can use to investigate physical science.

vernier.com/physical-science



Go Direct Sensor Carts

With our Go Direct® Sensor Carts, students can explore force, position, velocity, and acceleration directly on their devices via Bluetooth® wireless technology—no wires or additional equipment required. Each cart features built-in sensors to simplify experiment setup.

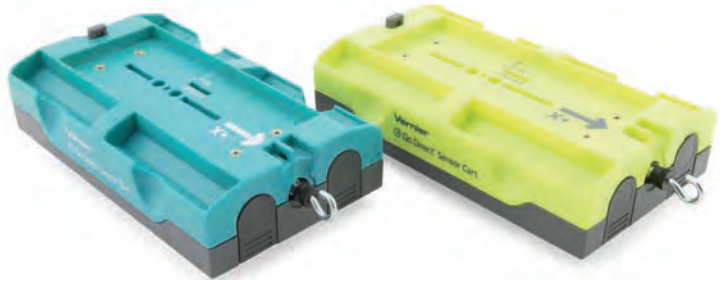
Go Direct Sensor Cart (Green)

GDX-CART-G

Go Direct Sensor Cart (Yellow)

GDX-CART-Y

vernier.com/gdx-cart



Go Direct Temperature

MOST POPULAR

Students can use this rugged, general-purpose sensor to monitor temperature.

Range: –40 to 125°C

GDX-TMP

vernier.com/gdx-tmp

Go Direct Temperature Teacher Pack

GDX-TMP-TP

Includes 8 Go Direct Temperature Probes and a Go Direct Charge Station.

Go Direct Light and Color

Students use this sensor to measure the brightness of a light bulb or the reflectance of light from various objects. They can also measure UV light and relative amounts of red, blue, and green light.

GDX-LC

vernier.com/gdx-lc

Go Direct Force and Acceleration

Students can use this sensor to measure forces of up to 50 N. The included 3-axis accelerometer makes it a versatile sensor for many topics in physical science.

GDX-FOR

vernier.com/gdx-for

Go Direct pH

Go Direct pH is a general-purpose pH sensor used to monitor pH of aqueous solutions.

GDX-PH

vernier.com/gdx-ph

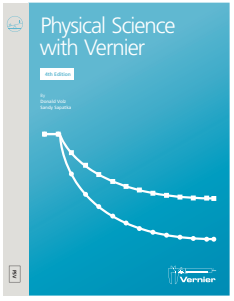
Physical Science with Vernier

Physical Science with Vernier contains 40 ready-to-use experiments for physical science. Experiments are included for nine Vernier sensors and cover a variety of topics in chemistry and physics.

Topics include

- Structures and properties of matter
- Forces and interactions
- Waves and electromagnetic radiation
- Chemical reactions

vernier.com/psv



Printed book + download
PSV

Download only
PSV-E

Go Direct Sensors

Sensor	Order Code
Go Direct 3-Axis Magnetic Field	GDX-3MG
Go Direct Acceleration	GDX-ACC
Carts and Tracks	
Dynamics Cart and Track System with Go Direct Sensor Carts	DTS-GDX
Go Direct Sensor Cart (Green)	GDX-CART-G
Go Direct Sensor Cart (Yellow)	GDX-CART-Y
Go Direct Conductivity	GDX-CON
Go Direct Current	GDX-CUR
Go Direct Energy	GDX-NRG
Go Direct Force and Acceleration	GDX-FOR
Go Direct Gas Pressure	GDX-GP
Go Direct Light and Color	GDX-LC
Go Direct Motion	GDX-MD
Go Direct pH	GDX-PH
Go Direct Photogate	GDX-VPG
Go Direct Sound	GDX-SND
Go Direct Structures & Materials Tester	GDX-VSMT
Temperature Probes	
Go Direct Surface Temperature	GDX-ST
Go Direct Temperature	GDX-TMP
Go Direct Thermocouple	GDX-TC
Go Direct Voltage	GDX-VOLT

Go Direct Charge Station

Accessory	Order Code
Go Direct Charge Station	GDX-CRG

Lab Books

Title	Order Code
Physical Science with Vernier	Printed book + download: PSV Download only: PSV-E

See all our products for physical science at vernier.com/physical-science

SECONDARY SCHOOL

Physics

From kinematics to optics, Vernier technology helps your students connect the dots between the classroom and the real world. Our physics products enable student and educator success so that you can spend less time troubleshooting and more time teaching your students about the scientific principles of the world around them.

vernier.com/physics

NEW Cart Fan

The Cart Fan is a modular fan you can add to DTS and Go Direct carts that provides a constant force for dynamics investigations. Using one or multiple fans on a single cart allows students to investigate constant acceleration, balanced/unbalanced forces, and variable thrust angles.

DTS-CFAN

vernier.com/dts-cfan

FOR MORE INFORMATION ABOUT CART AND TRACK SYSTEMS, **SEE PAGE 46**.

NEW Go Direct Force Plate

Measure the forces developed during stepping, jumping, and other human-scale actions. Observe change in apparent weight as you ride an elevator or measure reaction forces as you lean against a wall.

GDX-FP

vernier.com/gdx-fp

Go Direct Motion

Go Direct® Motion uses ultrasound to measure the position, velocity, and acceleration of moving objects.

GDX-MD

vernier.com/gdx-md

Go Direct Force and Acceleration

Measure forces as small as ±0.1 N and up to ±50 N with this sensor that couples a 3-axis accelerometer with a stable and accurate force sensor. Use it to measure pushes and pulls in the classroom or outdoors.

GDX-FOR

vernier.com/gdx-for

Go Direct Photogate

This double-gate sensor includes two photogates built into the arms of the sensor. It accurately measures velocity and acceleration.

GDX-VPG

vernier.com/gdx-vpg

Go Direct Acceleration

Collect acceleration, rotation, and altitude data in the classroom or in the field.

GDX-ACC

vernier.com/gdx-acc

Go Direct Voltage

This sensor combines a wide input voltage range and high precision, making it an excellent choice for investigations of both AC/DC circuits and electromagnetism.

GDX-VOLT

vernier.com/gdx-volt

Go Direct Current

Measure electric currents in circuits with this versatile sensor.

GDX-CUR

vernier.com/gdx-cur

Go Direct 3-Axis Magnetic Field

Determine the magnitude and direction of a magnetic field at any point in space with this 3-axis sensor.

GDX-3MG

vernier.com/gdx-3mg

Go Direct Sound

Use this sensor to easily capture and evaluate waveforms, or measure sound level in decibels.

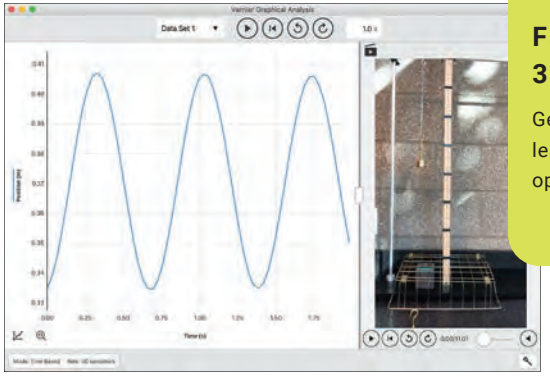
GDX-SND

vernier.com/gdx-snd

Vernier Graphical Analysis Pro

Unlock key features with Vernier Graphical Analysis® Pro and do more with your Vernier sensors to deepen and extend learning. With access to Pro, you can enrich live instruction while providing more opportunities for students to interact with and analyze data outside of class time.

vernier.com/graphical-analysis



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30-DAY TRIAL

Get a 30-day free trial and learn about site license options at **vernier.com/gapro**

Advanced Physics with Vernier—Mechanics

Teach mechanics concepts at the Advanced Placement or college level. Experiments are designed for an interactive teaching style, with planned moments for instructor- or student-led discussion.

Printed book + download PHYS-AM
Download only PHYS-AM-E

vernier.com/phys-am

Advanced Physics with Vernier—Beyond Mechanics

The second of a two-volume set, this book focuses on second-semester topics in college physics. It is recommended for AP* and IB‡ physics courses.

Printed book + download PHYS-ABM
Download only PHYS-ABM-E

vernier.com/phys-abm

Vernier Video Analysis

The Vernier Video Analysis® app brings video analysis to your students in an easy-to-use, streamlined application. Students can design their own scientific investigations, record videos, and then analyze the motion. This app gives your students the opportunity to observe and study hard-to-replicate phenomena regardless of device—it even works with Chromebooks!

vernier.com/video-analysis

FREE
30-DAY TRIAL

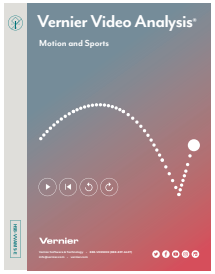
Get a 30-day free trial and learn about site license options and e-books at **vernier.com/video-analysis**

Vernier Video Analysis: Motion and Sports

In addition to traditional physics concepts such as velocity and acceleration, the 12 investigations in this book include analysis of sports activities. This further connects concepts of motion to students' daily lives.

Download only HSB-VVAMS-E

vernier.com/hsb-vvams-e



Vernier Video Analysis: Conservation Laws and Forces

Examine topics beyond basic motion using the 12 investigations in this book. Like its counterpart (left), videos are included in the electronic download, making it easy to integrate video analysis into homework or classwork.

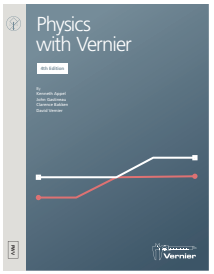
Download only HSB-VVACLF-E

vernier.com/hsb-vvaclf-e

Physics with Vernier

Physics with Vernier has 35 experiments in mechanics, sound, light, electricity, and magnetism. This book has a wide variety of experiments for motion detectors, force sensors, light sensors, magnetic field sensors, photogates, temperature probes, and more.

vernier.com/pwv



Printed book + download PWV
Download only PWV-E

Sensor Cart Physics

(Go Direct sensors only)

Students use the Vernier Go Direct® Sensor Cart to complete the 21 investigations in this e-book—the guided-inquiry format gives students agency in choosing what they measure and analyze.

vernier.com/hsb-scp-e

Download only HSB-SCP-E

Physics Explorations and Projects

Physics Explorations and Projects is a collection of investigations aligned to the NGSS. These investigations invite students to explore phenomena without extensive instructions. The guided-inquiry format encourages students to choose what variables to measure and analyze.

vernier.com/pep

Printed book + download PEP
Download only PEP-E

Physics Go Direct Standard Package

This package includes 12 products that work with Vernier Graphical Analysis Pro and LabQuest® 3.

- Go Direct Motion
- Go Direct Force and Acceleration
- Go Direct Voltage
- Go Direct Current (2)
- Go Direct Photogate
- Go Direct Acceleration
- Go Direct Sound
- Go Direct Light and Color
- Go Direct 3-Axis Magnetic Field
- Ultra Pulley Attachment
- Picket Fence

GDP-PHY-DX

Learn more at vernier.com/gdp-phy-dx

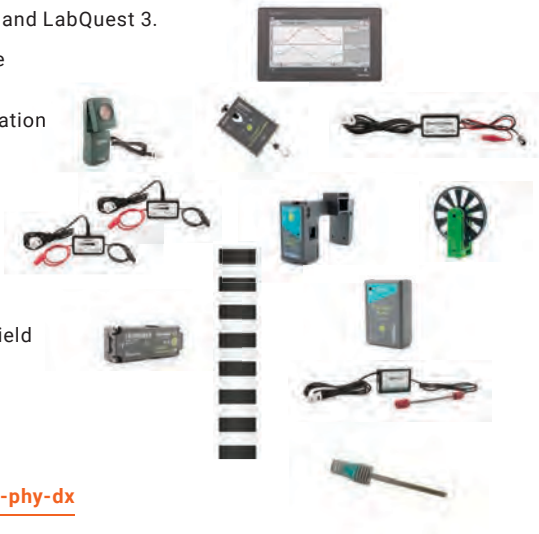
LabQuest 3 Physics Standard Package

This package includes 13 products that work with Vernier Graphical Analysis Pro and LabQuest 3.

- Vernier LabQuest 3 Interface
- Motion Detector
- Go Direct Force and Acceleration
- Differential Voltage Probe
- Current Probe (2)
- Go Direct Photogate
- Go Direct Acceleration
- Go Direct Sound
- Light Sensor
- Go Direct 3-Axis Magnetic Field
- Ultra Pulley Attachment
- Picket Fence

LQ3-PHY-DX

Learn more at vernier.com/lq3-phy-dx



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‡ The IB Diploma Program is an official program of the International Baccalaureate Organization (IBO) which authorizes schools to offer it. The material available here has been developed independently of the IBO and is not endorsed by it.

Dynamics Cart and Track Systems

One Dynamics System—Three Ways to Collect Data
Depending on your budget and your needs, we offer three ways to collect motion data.

1 Go Direct Sensor Cart

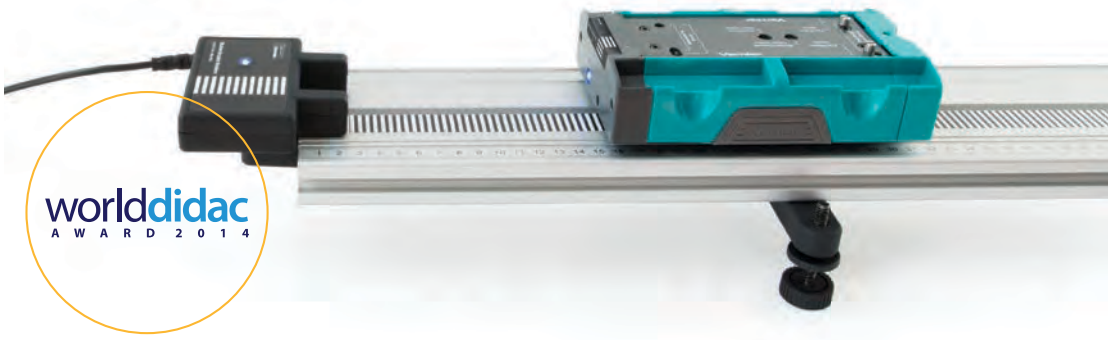
The wireless Go Direct® Sensor Cart includes an optical encoder on a wheel to sense the displacement of the cart, on or off the track. No interface is needed to use this system with the Vernier Graphical Analysis® Pro app. Students can perform impulse and momentum experiments with the built-in force sensor, and the 3-axis accelerometer means you can take your Sensor Cart off campus to investigate accelerations on a swing or merry-go-round.

2 The Motion Encoder*

VERNIER EXCLUSIVE

For classrooms already equipped with data-collection interfaces, the Motion Encoder dramatically improves data quality and simplifies experiment setup over the traditional ultrasonic Motion Detector. An optical sensor under the dynamics cart senses the passage of the cart over a striped decal on the track. The displacement information is sent as an encoded IR signal to a receiver at the track's end. This optical-only system provides excellent, repeatable, and noise-resistant data.

** U.S. Patent No. 9,488,503*



3 A Traditional Motion Detector

The Motion Detector is the classic method for collecting position data. Use a Motion Detector bracket to measure cart motion for the entire length of the track. You can even use two Motion Detectors at once to study cart collisions.

Unlike the Motion Encoder or Go Direct Sensor Cart, the Motion Detector can be used for dynamics experiments other than cart-on-track experiments. Students can graph their own walking motion, study a simple pendulum, or graph a ball toss with a Motion Detector. If you want to use only a Motion Detector for all of your motion experiments, get the Dynamics Cart and Track System without the Motion Encoder or Go Direct Sensor Cart.

Dynamics Cart and Track System with Go Direct Sensor Cart

BUILT-IN SENSORS = LOWER TOTAL COST

The Dynamics Cart and Track System with Go Direct® Sensor Cart includes essential laboratory equipment for teaching dynamics and kinematics. With our Go Direct Sensor Cart, students can explore force, position, velocity, and acceleration directly on their device using Bluetooth® wireless technology. There are no wires to create drag, and no additional equipment is required! Each cart features built-in sensors that simplify experiment setup and make this system the best choice for studying dynamics and kinematics.

with 1.2 m Track DTS-GDX
vernier.com/dts-gdx

with 2.2 m Track DTS-GDX-LONG
vernier.com/dts-gdx-long

Dynamics Cart and Track System with Motion Encoder

THIS OPTION REQUIRES AN INTERFACE SUCH AS LABQUEST 3 OR LABQUEST MINI

The Dynamics Cart and Track System with Motion Encoder includes an optical position sensing system to record cart motion.

with 1.2 m Track DTS-EC
vernier.com/dts-ec

with 2.2 m Track DTS-EC-LONG
vernier.com/dts-ec-long

Dynamics Cart and Track System

USE WITH SENSORS YOU ALREADY OWN—SENSORS ARE NOT INCLUDED

The Dynamics Cart and Track System features the Combination Track/Optics Bench, two low-friction plastic carts (one standard and one with an adjustable plunger), and attachment accessories.

with 1.2 m Track DTS
vernier.com/dts

with 2.2 m Track DTS-LONG
vernier.com/dts-long

NEW Cart Fan

The Cart Fan is a modular fan you can add to DTS and Go Direct carts that provides a constant force for dynamics investigations. Using one or multiple fans on a single cart allows students to investigate constant acceleration, balanced/unbalanced forces, and variable thrust angles.

DTS-CFAN

vernier.com/dts-cfan

Friction Pad DTS

Add a Friction Pad to any of our plastic dynamics carts to study the effect of consistent friction on the motion of the cart.

DTS-PAD

vernier.com/dts-pad

Motion Encoder Cart and Receiver

This kit includes a fully assembled Motion Encoder Cart, as well as the Motion Encoder Receiver and Motion Encoder Long Track Strip.

DTS-MEC

vernier.com/dts-mec

Eddy Current Brake

Eddy current brakes are used as a braking system for high-speed trains and roller coasters. Recreate this unusual braking system in your classroom or laboratory by installing our Eddy Current Brake into the end cap of a plastic Vernier dynamics cart. As the cart moves over the track, the magnets in the Eddy Current Brake create an electromagnetic drag on the cart that is proportional to the cart's speed.

DTS-ECB

vernier.com/dts-ecb

Bumper and Launcher Kit

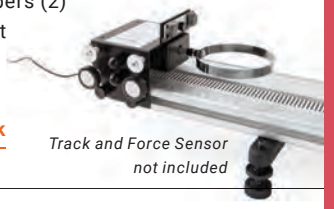
With the Bumper and Launcher Kit, students can use the Dynamics Cart and Track System to perform Hooke's law experiments or study momentum and impulse.

The kit includes

- Clay (~20 grams)
- Clay holders (2)
- Dual-magnet bumper
- Force sensor mounting screw
- Hoop bumpers (2)
- Magnetic bumpers (2)
- Rubber bumpers (2)
- Track bracket

BLK

vernier.com/blk



Track and Force Sensor not included

Go Direct Sensor Carts

We've added wireless sensors to our popular dynamics cart. Each cart includes an encoder wheel to report position, velocity, and acceleration. Conduct basic physics investigations with or without a track.

Go Direct® Sensor Cart (Green)

GDX-CART-G

Go Direct Sensor Cart (Yellow)

GDX-CART-Y

vernier.com/gdx-cart

INCLUDES 22 EXPERIMENTS

Sensor Cart Physics

Download only

HSB-SCP-E

Go Direct Motion

Go Direct® Motion uses ultrasound to measure the position, velocity, and acceleration of moving objects.

GDX-MD

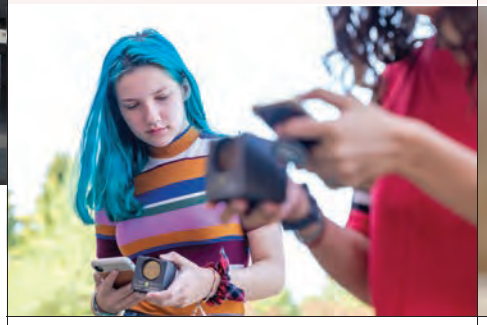
vernier.com/gdx-md

Go Direct Photogate

This double-gate sensor includes two photogates built into the arms of the sensor. It accurately measures velocity and acceleration.

GDX-VPG

vernier.com/gdx-vpg



Picket Fence

Picket Fences have eight opaque bars spaced every 5 cm, silk-screened directly onto clear plastic. Drop the picket fence through a photogate to obtain records of position, velocity and acceleration *vs.* time in order to measure *g*.

PF

vernier.com/pf

Ultra Pulley Attachment

Add an Ultra Pulley to your Photogate to monitor motion as a string passes over the pulley or as the pulley rolls along a table.

SPA

vernier.com/spa

NEW Go Direct Force Plate

Measure the forces developed during stepping, jumping, and other human-scale actions. Observe change in apparent weight as you ride an elevator, or measure reaction forces as you lean against a wall.

GDX-FP

vernier.com/gdx-fp

Go Direct Force and Acceleration

Measure forces as small as ±0.1 N and up to ±50 N with this sensor that couples a 3-axis accelerometer with a stable and accurate force sensor. Use it to measure pushes and pulls in the classroom or outdoors.

GDX-FOR

vernier.com/gdx-for

LabQuest Products for 1D Motion and Force

Product		Order Code
Accelerometers		
Low-g Accelerometer vernier.com/lga-bta		LGA-BTA
3-Axis Accelerometer vernier.com/3d-bta		3D-BTA
25-g Accelerometer vernier.com/acc-bta		ACC-BTA
Dual-Range Force Sensor vernier.com/dfs-bta		DFS-BTA
Force Plate vernier.com/fp-bta		FP-BTA
Motion Detectors		
Motion Detector vernier.com/md-btd		MD-BTD
Go!Motion vernier.com/go-mot		GO-MOT
Photogate vernier.com/vpg-btd		VPG-BTD

Go Direct Projectile Launcher

Use the Go Direct® Projectile Launcher to investigate important concepts in two-dimensional kinematics. Launch steel balls at angles between 0 and 90 degrees and over distances up to 2.5 m.

GDX-PL

vernier.com/gdx-pl

Independence of Motion Accessory

The Independence of Motion Accessory enables students to use the Vernier Projectile Launcher to perform the classic experiment where one ball is dropped as another is projected horizontally. The balls strike the floor simultaneously.

IOM-VPL

vernier.com/iom-vpl

Time of Flight Pad

The Time of Flight Pad is used with a projectile launcher or photogate (not included) to precisely measure how long a projectile has been in motion.

TOF-VPL

vernier.com/tof-vpl

NEW Go Direct Rotary Motion Package

The Go Direct Rotary Motion Sensor and Rotational Motion Accessory Kit can be used to study rotational inertia, conservation of angular momentum, and additional rotational motion concepts.

GDX-RMPK

vernier.com/gdx-rmpk

Go Direct Rotary Motion

Measure angular displacement, angular velocity, and angular acceleration easily and precisely.

GDX-RMS

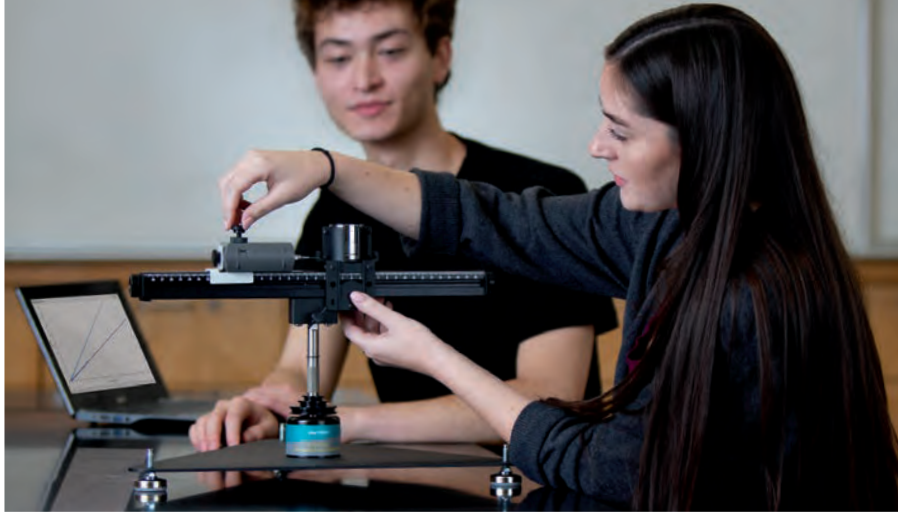
vernier.com/gdx-rms

Rotational Motion Accessory Kit

Use this kit with a rotary motion sensor to study the motion of a physical pendulum; the rotational inertia of disks, rings, and point masses; and the conservation of angular momentum.

AK-RMV

vernier.com/ak-rmv



NEW Go Direct Centripetal Force System

Easily measure angular velocity and centripetal force and acceleration without the hassle of wires using this system (includes a Go Direct Centripetal Force Apparatus and Go Direct Force and Acceleration).

GDX-CFAF

vernier.com/gdx-cfaf

Go Direct Centripetal Force Apparatus

This rotational system mounted on a solid base is designed to work with Go Direct® Force and Acceleration (not included).

GDX-CFA

vernier.com/gdx-cfa

Moment of Inertia Kit

Expand the capabilities of a Vernier centripetal force apparatus to investigate moments of inertia of different geometries.

CFA-MIK

vernier.com/cfa-mik

Motor Accessory Kit

Control the rotational rate of the Go Direct Centripetal Force Apparatus so students can focus on a single variable.

GDX-CFA-MAK

vernier.com/gdx-cfa-mak

Go Direct Force and Acceleration

Measure forces as small as ±0.1 N and up to ±50 N with this sensor that couples a 3-axis accelerometer with a stable and accurate force sensor. Use it to measure pushes and pulls in the classroom or outdoors.

GDX-FOR

vernier.com/gdx-for

NEW Hanging Masses

PHY-HM250

NEW Friction Block

PHY-FRBL

Go Direct Voltage

This sensor combines a wide input voltage range and high precision, making it an excellent choice for investigations of both AC/DC circuits and electromagnetism.

GDX-VOLT

vernier.com/gdx-volt

Go Direct Current

Measure electric currents in circuits with this versatile sensor.

GDX-CUR

vernier.com/gdx-cur

Go Direct 3-Axis Magnetic Field

Determine the magnitude and direction of a magnetic field at any point in space with this 3-axis sensor.

GDX-3MG

vernier.com/gdx-3mg

Go Direct Static Charge

Unlike a traditional electroscope, Go Direct Static Charge offers a means for quantitative measurement and analysis of positive and negative charges of objects that would not be possible in a traditional lab—such as measuring the charge on a balloon.

GDX-Q

vernier.com/gdx-q

High Current Sensor

Range: ±10 A

HCS-BTA vernier.com/hcs-bta

Instrumentation Amplifier

Range: ±1 V

INA-BTA vernier.com/ina-bta

30-Volt Voltage Probe

Range: ±30 V

30V-BTA vernier.com/30v-bta

Power Amplifier

Use this as a power supply for DC and AC circuit investigations or to drive devices such as speakers, lamps, and small DC motors.

PAMP vernier.com/pamp

Vernier Circuit Board 2

Use this convenient platform to study basic series and parallel circuits as well as RLC circuits. Many components for experimentation are provided.

VCB2 vernier.com/vcb2

Extech® Digital Power Supply

This power supply provides constant current or constant voltage for physics activities that require DC power.

EXPS vernier.com/exps

Electrostatics Kit

Students use the Electrostatics Kit to perform a range of experiments in electrostatics with Go Direct Static Charge.

ESK-CRG vernier.com/esk-crg

Gas Pressure Sensors

vernier.com/gas-pressure-sensors

Go Direct Gas Pressure

Go Direct Gas Pressure Sensor measures the absolute pressure of a gas. It records accurate absolute pressure readings relative to the perfect vacuum reference point inside the sensor, allowing you to go below atmospheric pressure or up to 400 kPa. This sensor includes a syringe, tubing, and stoppers.

Range: 0 to 400 kPa

GDX-GP

Gas Pressure Sensor

Range: 0 to 210 kPa

GPS-BTA

Temperature Probes

vernier.com/temperature-sensors

Go Direct Surface Temperature

Designed for use in situations in which low thermal mass or flexibility is required, Go Direct Surface Temperature has an exposed thermistor that results in an extremely rapid response time, making it perfect for use in air and water.

Range: –25 to 125°C

GDX-ST

Surface Temperature Sensor

Range: –25 to 125°C

STS-BTA

Go Direct Temperature

Unlike a traditional thermometer, Go Direct Temperature allows students to collect real-time temperature measurements of a single instance or over a period of time. Its range and wireless capability make Go Direct Temperature the go-to sensor for real-world applications.

Range: –40 to 125°C

GDX-TMP

Go Direct Temperature Teacher Pack

Includes 8 Go Direct® Temperature Probes and a Go Direct Charge Station.

GDX-TMP-TP

Stainless Steel Temperature Probe

Range: –40 to 135°C

TMP-BTA

NEW

Resonance Apparatus

Watch the video

The Resonance Apparatus is used for the classic experiment of determining the speed of sound using the principle of resonance in a tube that is closed at one end. Fill the apparatus with water and use a tuning fork or the included speaker to produce sound. Listen for the resonance while moving the inner tube, or use a sound sensor to locate the resonance lengths.

RES-APP

vernier.com/res-app

Go Direct Sound

Use Go Direct® Sound to easily capture and evaluate waveforms.

GDX-SND

vernier.com/gdx-snd

Frequency Generator

Easily connect the Frequency Generator to the Power Amplifier to create sine, square, sawtooth, and triangle waves at a wide range of frequencies. It also outputs DC voltage.

FGEN-PAMP

vernier.com/fgen-pamp

Microphone

Display and study the waveforms of sounds from voices and musical instruments. This sensor is also appropriate for speed of sound experiments.

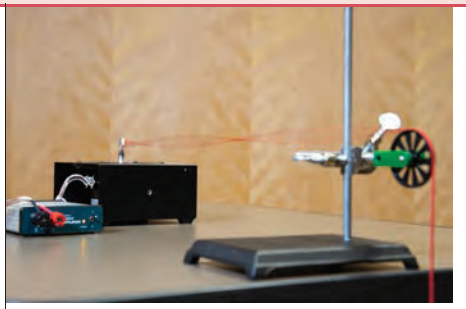
MCA-BTA vernier.com/mca-bta

Sound Level Sensor

Use the Sound Level Sensor to easily measure sound level in decibels (dB) in a variety of experiments.

Range: 55 to 110 dB

SLS-BTA vernier.com/sls-bta



Power Amplifier

Drive devices such as speakers, lamps, and small DC motors.

PAMP

vernier.com/pamp

Power Amplifier Accessory Speaker

Study mechanical waves on strings and springs.

PAAS-PAMP

vernier.com/paas-pamp

Go Direct Light and Color

Measure light intensity in the visible to ultraviolet electromagnetic spectrum. An RGB color sensor detects relative contributions of primary colors in light.

GDX-LC

vernier.com/gdx-lc

Light Sensor

Investigate polarizers, reflectivity, and solar energy with this sensor that approximates the human eye in spectral response. It's great for inverse square law experiments.

LS-BTA

vernier.com/ls-bta

Diffraction Apparatus

Using the Diffraction Apparatus, with its included Red Diffraction Laser, high-precision slits, and High Sensitivity Light Sensor, students can create, view, and measure diffraction and interference patterns.

The Diffraction Apparatus requires a Combination Track/Optics Bench (not included).

DAK

vernier.com/dak

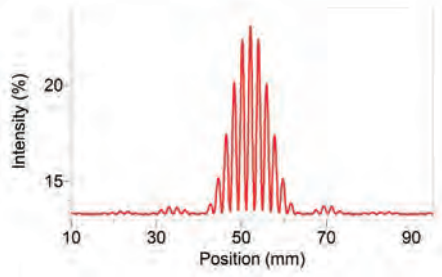
Combination 1.2 m Track/ Optics Bench

TRACK vernier.com/track

Green Diffraction Laser *(optional)*

Add this to your Diffraction Apparatus to study the effect of wavelength on a diffraction pattern.

GDL-DAK vernier.com/gdl-dak



Optics Expansion Kit

Use the Optics Expansion Kit with your dynamics track (not included) to conduct optics experiments, such as image formation with lenses and light intensity *vs.* distance. You can even use the kit to build a basic telescope.

Kit includes

- 3 lenses (100 mm converging lens, 200 mm converging lens, –150 mm diverging lens)
- Screen
- Combination luminous and point light source
- Light Sensor Holder*
- Aperture screen
- Power supply

The Optics Expansion Kit is used in *Physics with Vernier* and *Advanced Physics with Vernier—Beyond Mechanics* experiments.

OEK

Download free sample experiments at vernier.com/oek

** The Light Sensor Holder can be used with any style Vernier light sensor.*

Combination Dynamics Track and Optical Bench

The Combination Dynamics Track and Optical Bench is aluminum and includes a metric scale. Extremely rigid, this 1.2 (or 2.2) meter track will not sag under use. The track includes two Adjustable Two Foot Levelers.

with 1.2 m Track TRACK

vernier.com/track

with 2.2 m Track TRACK-LONG

vernier.com/track-long

Polarizer/Analyzer Set

PAK-OEK

vernier.com/pak-oek

Mirror Set

M-OEK

vernier.com/m-oek

Light source not included

Color Mixer

CM-OEK

Download a free sample experiment at vernier.com/cm-oek

See website for replacement parts.

Go Direct Emissions Spectrometer

This emissions spectrometer connects to your device via Bluetooth® wireless technology or USB to give precise measurements over a range of 350–900 nm. Use it with or without an optical fiber (not included) to examine spectra of light bulbs, spectrum tubes, or the sun.

GDX-SPEC-EM

vernier.com/gdx-spec-em

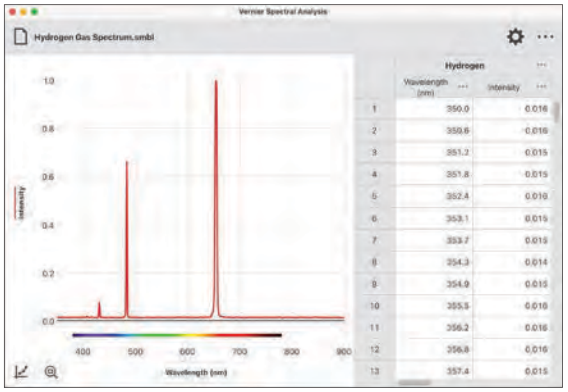
Vernier Emissions Fiber

VSP-EM-FIBER
vernier.com/vsp-em-fiber

Vernier Spectral Analysis App

Our free Vernier Spectral Analysis® app makes it easy to incorporate spectroscopy into your physics lab. Using the app, students can analyze spectra from diverse sources such as spectrum tubes, light bulbs, and the sun.

vernier.com/spectral-analysis



Radiation Monitors

Go Direct Radiation Monitor

Explore radiation statistics, measure the rate of nuclear decay, and monitor radon progeny. Go Direct® Radiation Monitor detects alpha, beta, gamma, and X-ray radiation, and includes LED and audible indicators.

GDX-RAD

vernier.com/gdx-rad

Vernier Radiation Monitor

The Vernier Radiation Monitor detects alpha, beta, gamma, and X-ray radiation and can be used for experiments in nuclear counting statistics, shielding, and decay rate measurements.

VRM-BTD

vernier.com/vrm-btd

Spectrum Tube Single Power Supply

These power supplies feature an ultra-safe design for electrifying spectrum tubes.

ST-SPS

vernier.com/st-sps

Spectrum Tubes

Spectrum Tubes are permanently enclosed in protective plastic carriers, with no exposed high voltage.
All Spectrum Tubes are sold separately:

Hydrogen	ST-H
Nitrogen	ST-N
Helium	ST-HE
Neon	ST-NE
Carbon Dioxide	ST-CO2
Air	ST-AIR
Argon	ST-AR

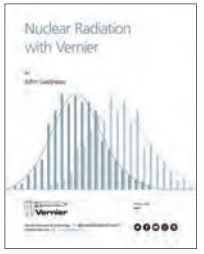
vernier.com/spectrum-tubes

Spectrum Tubes carry a two-year warranty (hydrogen tube: two years or 40 hours, whichever comes first; all other tubes: two years or 100 hours, whichever comes first).

Nuclear Radiation with Vernier

This free e-book includes six experiments for data collection with a radiation monitor:

- Distance and Radiation
- Counting Statistics
- Lifetime Measurement
- Background Radiation Sources
- Radiation Shielding
- Alpha, Beta, and Gamma



FREE DOWNLOAD
vernier.com/nrv-e

Featured Products

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Go Direct Sensors

Sensor	Order Code
Go Direct 3-Axis Magnetic Field	GDX-3MG
Go Direct Acceleration	GDX-ACC
Carts and Tracks	
Dynamics Cart and Track System with Go Direct Sensor Carts	DTS-GDX
Go Direct Sensor Cart (Green)	GDX-CART-G
Go Direct Sensor Cart (Yellow)	GDX-CART-Y
Go Direct Centripetal Force Apparatus	GDX-CFA
Go Direct Current	GDX-CUR
Go Direct Force and Acceleration	GDX-FOR
NEW Go Direct Force Plate	GDX-FP
Go Direct Gas Pressure	GDX-GP
Go Direct Light and Color	GDX-LC
Go Direct Motion	GDX-MD
Go Direct Photogate	GDX-VPG
Go Direct Projectile Launcher	GDX-PL
Go Direct Radiation Monitor	GDX-RAD
Go Direct Rotary Motion	GDX-RMS
Go Direct Sound	GDX-SND
Go Direct Static Charge	GDX-Q
Temperature Probes	
Go Direct Surface Temperature	GDX-ST
Go Direct Temperature	GDX-TMP
Go Direct Voltage	GDX-VOLT

Go Direct Charge Station

Sensor	Order Code
Go Direct Charge Station	GDX-CRG

LabQuest® Sensors

Sensor	Order Code
Accelerometers	
3-Axis Accelerometer	3D-BTA
25-g Accelerometer	ACC-BTA
Low-g Accelerometer	LGA-BTA
Carts and Tracks	
Dynamics Cart and Track System with Motion Encoder	DTS-EC
Encoder Fan Cart	CART-FEC
Current Sensors	
Current Probe	DCP-BTA
High Current Sensor	HCS-BTA
Electricity and Magnetism Sensors	
Charge Sensor	CRG-BTA
Magnetic Field Sensor	MG-BTA
Force Sensors	
Dual-Range Force Sensor	DFS-BTA
Force Plate	FP-BTA
Gas Pressure Sensor	GPS-BTA
Light Sensors	
Diffraction Apparatus	DAK
Light Sensor	LS-BTA
Motion Detectors	
Go!Motion® (USB sensor)	GO-MOT
Motion Detector	MD-BTD
Photogate	VPG-BTD
Power Amplifier	PAMP
Projectiles	
Projectile Launcher	VPL
Time of Flight Pad	TOF-VPL
Radiation Monitor	VRM-BTD
Rotary Motion Sensor	RMV-BTD
Sound Sensors	
Microphone	MCA-BTA
Sound Level Sensor	SLS-BTA
Temperature Probes	
Stainless Steel Temperature Probe	TMP-BTA
Surface Temperature Sensor	STS-BTA
Voltage Probes	
30-Volt Voltage Probe	30V-BTA
Differential Voltage Probe	DVP-BTA
Instrumentation Amplifier	INA-BTA
Voltage Probe	VP-BTA

Emissions Spectrometer

Spectrometer	Order Code
Go Direct Emissions Spectrometer	GDX-SPEC-EM

Physics Lab Supplies

Part	Order Code
NEW Cart Fan	DTS-CFAN
NEW Friction Block	PHY-FRBL
NEW Hanging Masses	PHY-HM250
NEW Meter Stick	PHY-METER
NEW Solenoid	PHY-SN700

See all our products for physics at vernier.com/physics

SECONDARY SCHOOL

Engineering and Coding

Encourage curiosity, build confidence, and spark an interest in STEM careers in your students. Vernier solutions give your students practical ways to learn engineering design principles and integrate sensor data into computer science concepts.

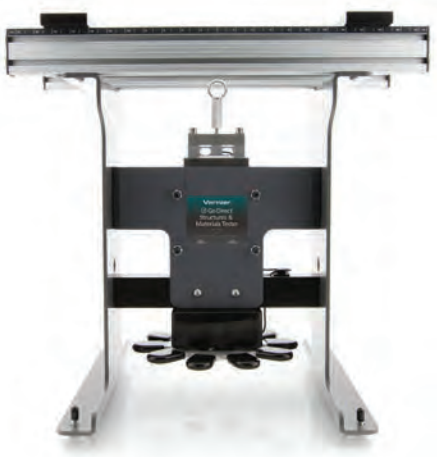
vernier.com/engineering

Go Direct Structures & Materials Tester

Use our Go Direct® Structures & Materials Tester to evaluate the strength of model bridges and engineered structures by measuring the applied load. Utilizing both load and displacement sensors, your students can evaluate the properties of materials.

Benefits

- Force and displacement sensors connect via Bluetooth® wireless technology or USB
- Uses Vernier Graphical Analysis® Pro app to collect and analyze data
- Exact force and displacement for bends and breaks
- Accurate positioning for center and off-center loading
- Free software simplifies bridge-building contests
- Includes *Materials Testing: Beams to Bridges* e-book



GDX-VSMT

vernier.com/gdx-vsmt

Truss Tester Accessory

The Truss Tester Accessory attaches to the Go Direct Structures & Materials Tester, holds a single truss upright, and makes it possible for the load to be applied in a variety of locations.

VSMT-TRUSS

vernier.com/vsmt-truss

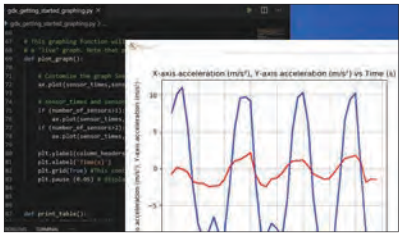
Go Direct Bridge Competition Software

Make data collection easy and seamless for bridge-building competitions with our free Go Direct Bridge Competition Software. This software provides real-time graphing to give students immediate feedback on bridge performance and displays side-by-side comparisons for the entire class.

FREE DOWNLOAD

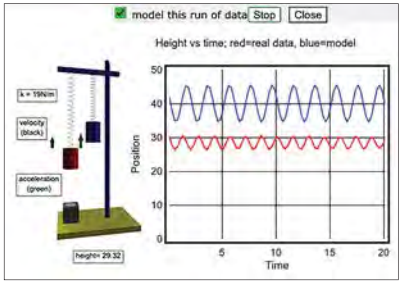
vernier.com/godirect-bridge-competition-software

Code with Python



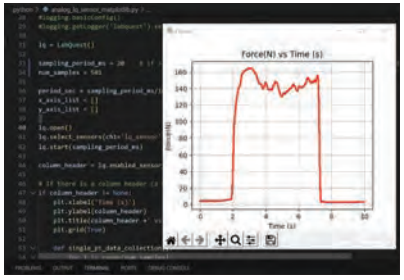
Python with Go Direct Sensors

Create Python® code to capture data from Go Direct sensors. Supported on Windows® 10, macOS,® and Linux (including Raspberry Pi®)



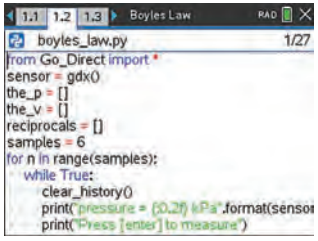
Web VPython with Go Direct Sensors

Create 3D animations in a browser with Web VPython and Go Direct sensors. Both are compatible with a Chrome™ browser on Windows, macOS, Linux, and Chromebooks.



Python with LabQuest Sensors

Communicate with your LabQuest sensors in Python. For LabQuest and Python, we offer support for Windows and macOS.



Python with TI Calculators and Go Direct Sensors

Students can code beyond the screen of select TI calculators by integrating live sensor data into their Python programming language activities.

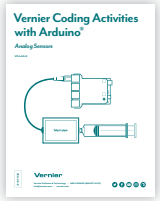
Available resources for using Python with Vernier sensors include a GitHub® repository, an introductory guide, and sample programs and activities.

vernier.com/python

For other coding solutions, including Scratch, JavaScript, and LabVIEW,™ see **vernier.com/hs-engineering**

Code with Arduino

Combining Vernier LabQuest sensors with the inexpensive, easy-to-program Arduino® microcontrollers makes integrating coding and engineering into your curriculum simple and affordable.



vernier.com/arduino

Practice Engineering Design with Renewable Energy

Challenge students to apply their knowledge as they explore the engineering design of wind turbines.

KidWind Advanced Wind Experiment Kit	KW-AWX
Go Direct Energy	GDX-NRG
KidWind Basic Building Parts	KW-BTPART
Renewable Energy with Vernier	
• Printed book + download:	REV
• Download only:	REV-E

vernier.com/kidwind

SECONDARY SCHOOL

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Inspire Your International Baccalaureate Students with Innovative Experiments

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Finding Teaching Materials for Your IB Course is as Easy as 1, 2, 3.

We offer a robust library of innovative experiments aligned with IB programs. These experiments use our hands-on data-collection technology to help students develop critical thinking and problem-solving skills at the core of IB success.

- RENEWABLE ENERGY
- HUMAN PHYSIOLOGY
- PHYSICS
- CHEMISTRY
- BIOLOGY

1

Choose Topic

Select your field from a wide variety of IB topics—biology, chemistry, physics, and more.

2

Browse Core Experiments

Once you choose your topic, you will be shown experiments that best support student learning on that topic.

3

Preview Experiments

Click on the experiments that interest you. From here, you will be able to preview the experiment and see the technology needed to do the experiment.

See what Vernier can do for your IB students. Visit **vernier.com/ib**

The IB Diploma Program is an official program of the International Baccalaureate Organization (IBO) which authorizes schools to offer it. The material available here has been developed independently of the IBO and is not endorsed by it.

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Middle School

Hands-on learning with technology is ideal for middle school students. Enhance their discovery and understanding of the world around them with the use of Vernier technology. Using our versatile, cutting-edge products and ready-to-go experiments correlated to the NGSS, you can encourage your students' curiosity and prepare them for secondary school—and the world beyond.

vernier.com/middle-school

Go Direct Temperature

MOST POPULAR

Students can use this rugged, general-purpose sensor to monitor temperature.

Range: –40 to 125°C

GDX-TMP

vernier.com/gdx-tmp

Go Direct Temperature Teacher Pack

GDX-TMP-TP

Includes 8 Go Direct® Temperature Probes and a Go Direct Charge Station

Go Direct Force and Acceleration

Measure forces as small as ±0.1 N and up to ±50 N with this sensor that couples a 3-axis accelerometer with a stable and accurate force sensor. Use it to measure pushes and pulls in the classroom or outdoors.

GDX-FOR

vernier.com/gdx-for

Go Direct Motion

Go Direct Motion uses ultrasound to measure the position, velocity, and acceleration of moving objects.

GDX-MD

vernier.com/gdx-md

Go Direct 3-Axis Magnetic Field

Determine the magnitude and direction of a magnetic field at any point in space with this 3-axis sensor.

GDX-3MG

vernier.com/gdx-3mg

Go Direct Gas Pressure

Go Direct Gas Pressure measures the absolute pressure of a gas.

GDX-GP

vernier.com/gdx-gp

Go Direct pH

Go Direct pH is a general-purpose pH sensor used to monitor pH of aqueous solutions.

GDX-PH

vernier.com/gdx-ph

Go Direct Light and Color

Go Direct Light and Color combines the power of multiple sensors to measure light intensity in the visible range and UV portions of the electromagnetic spectrum.

GDX-LC

vernier.com/gdx-lc

Go Direct Voltage

Go Direct Voltage combines a wide input voltage range and high precision, making it an excellent choice for investigations of both AC/DC circuits and electromagnetism.

GDX-VOLT

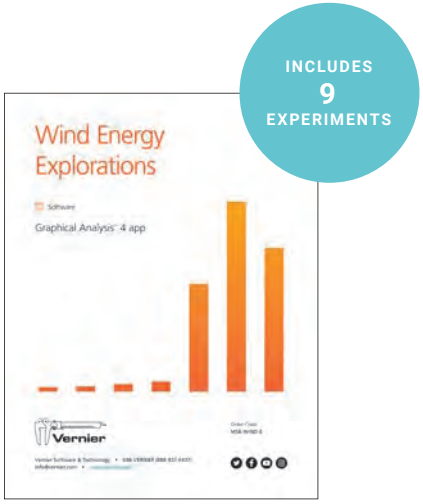
vernier.com/gdx-volt

Wind Energy Explorations

Students gain an understanding of energy, circuits, and loads, as well as practice engineering design as they use this e-book to explore wind energy.

MSB-WIND-E (e-book)

vernier.com/msb-wind-e



Wind Energy Explorations Go Direct Packages

Single Station Package *(shown below)*

This package includes

- Go Direct® Energy (1)
- Vernier Resistor Board (1)
- KidWind Basic Wind Experiment Kit

GDP-MS-WE

Classroom Package

This package includes

- Go Direct Energy Sensors (3)
- Vernier Resistor Boards (3)
- KidWind Basic Wind Experiment Classroom Pack (includes materials for 6 to 10 groups of 2 to 4 students each)

GDP-MS-WEC

Learn more at vernier.com/gdp-ms-we

Solar Energy Explorations

Solar energy provides a relevant topic for students to explore energy, temperature, and electrical circuits, culminating in an engineering design project.

MSB-SOLAR-E (e-book)

vernier.com/msb-solar-e

Solar Energy Explorations Go Direct Package

This package includes sensors that work with Vernier Graphical Analysis® Pro and LabQuest® 3. It also includes an experiment kit and a resistor board.

- Go Direct Energy
- Solar Energy Exploration Kit
- Go Direct Surface Temperature
- Vernier Resistor Board

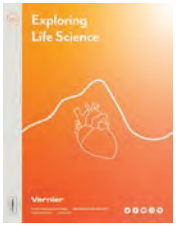
GDP-MS-SE

Learn more at vernier.com/gdp-ms-se

Exploring Life Science

From yeast to humans, this e-book provides opportunities for students to learn about life science.

Learn more at vernier.com/msb-ls-e



Download only
MSB-LS-E

Exploring Life Science Go Direct Package

This package contains the following: Go Direct Gas Pressure, Go Wireless® Heart Rate, Go Direct Conductivity, and Gas Pressure Sensor Bulb.

GDP-MS-LS

Middle School Explorations: Chemical Reactions

In the six experiments in this book, students gain an understanding of various types of chemical reactions as they build a model to explain what goes on at the molecular level during a chemical reaction.

Learn more at vernier.com/msb-cr-e

Download only
MSB-CR-E

Go Direct Temperature

This is a rugged, general-purpose sensor that students can use to monitor temperature.

GDX-TMP

Teacher pack is also available (includes 8 Go Direct Temperature Probes and a Charge Station).

GDX-TMP-TP

Middle School Science Go Direct Package

This package includes 12 sensors that work with Vernier Graphical Analysis Pro and LabQuest 3.

- Go Direct Motion Detector
- Go Direct pH
- Go Direct Voltage
- Go Direct Temperature (2)
- Go Direct Light and Color
- Go Direct Force and Acceleration
- Go Direct Gas Pressure
- Go Wireless Heart Rate
- Go Direct Conductivity
- Go Direct 3-Axis Magnetic Field
- Gas Pressure Sensor Bulb

GDP-MS-DX

Learn more at vernier.com/gdp-ms-dx

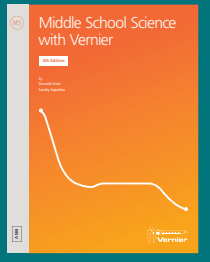
Middle School Science with Vernier

The *Middle School Science with Vernier* lab book contains 38 experiments in Earth science, life science, and physical science written specifically for students in grades 6–8. Making use of 10 different Vernier sensors, your students will enjoy doing these well-tested science experiments.

Includes experiments from these e-books

- ***Exploring Life Science***
- ***Exploring Earth and Space Science***
- ***Exploring Physical Science***

Learn more at vernier.com/msv



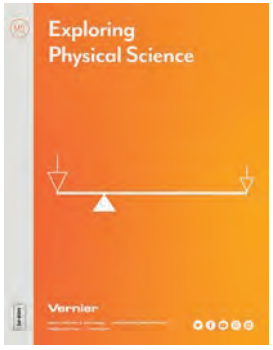
Printed book + download
MSV

Download only
MSV-E

Exploring Physical Science

From matter and energy to motion and forces, students explore a wide variety of topics in basic chemistry and physics in this e-book.

Learn more at vernier.com/msb-ps-e



Download only
MSB-PS-E

Exploring Physical Science Go Direct Package

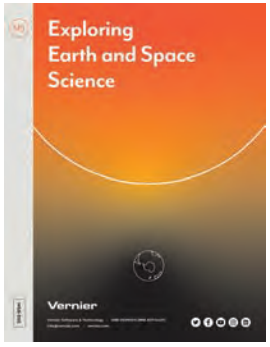
This package contains the following Go Direct® sensors: Temperature (2), Gas Pressure, Force and Acceleration, Motion Detector, Voltage, 3-Axis Magnetic Field, and Light and Color.

GDP-MS-PS

Exploring Earth and Space Science

Weather, soil, and water quality are a few of the Earth science topics students explore in this e-book.

Learn more at vernier.com/msb-ess-e



Download only
MSB-ESS-E

Exploring Earth and Space Science Go Direct Package

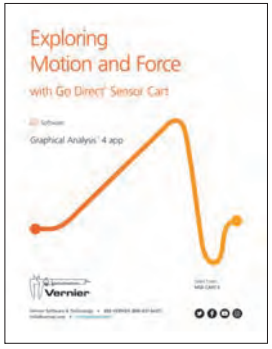
This package contains the following Go Direct sensors: Temperature (2), Light and Color, Motion Detector, Conductivity, and pH.

GDP-MS-ESS

Exploring Motion and Force with Go Direct Sensor Cart

In this e-book, students explore the force of friction, aspects of motion, and simple machines such as the lever, ramp, and pulley.

Learn more at vernier.com/msb-cart-e



Download only
MSB-CART-E

Exploring Motion and Force with Go Direct Sensor Cart Package

This package contains the following Go Direct sensors: Sensor Cart (Green) and Sensor Cart (Yellow).

GDP-MS-SC

Featured Products

Go Direct Sensors

Sensor	Order Code
Go Direct 3-Axis Magnetic Field	GDX-3MG
Carts and Tracks	
Dynamics Cart and Track System with Go Direct Sensor Carts	DTS-GDX
Go Direct Sensor Cart (Green)	GDX-CART-G
Go Direct Sensor Cart (Yellow)	GDX-CART-Y
Go Direct Conductivity	GDX-CON
Go Direct Current	GDX-CUR
Go Direct Energy	GDX-NRG
Go Direct Force and Acceleration	GDX-FOR
Go Direct Gas Pressure	GDX-GP
Go Wireless® Heart Rate	GW-HR
Go Direct Light and Color	GDX-LC
Go Direct Motion	GDX-MD
Go Direct Optical Dissolved Oxygen	GDX-ODO
pH Sensors	
Go Direct pH	GDX-PH
Go Direct Tris-Compatible Flat pH	GDX-FPH
Go Direct Sound	GDX-SND
Go Direct Structures & Materials Tester	GDX-VSMT
Temperature Probes	
Go Direct Surface Temperature	GDX-ST
Go Direct Temperature	GDX-TMP
Go Direct Voltage	GDX-VOLT
Go Direct Weather System	GDX-WTVA

Go Direct Charge Station

Accessory	Order Code
Go Direct Charge Station	GDX-CRG

Additional Products

Products	Order Code
Cart Guide (pkg. of 10)	CGUIDE-10
pH Storage Solution	PH-SS
KidWind Basic Wind Experiment Kit	KW-BWX
OHAUS® Balances	vernier.com/ohaus
Solar Energy Exploration Kit	KW-SEEK
Vernier Resistor Board	VES-RB

Coding

vernier.com/scratch

Products	Order Code
Go Direct Force and Acceleration (for use with Scratch)	GDX-FOR

Lab Books

Title	Order Code
Middle School Science with Vernier	Printed book + download: MSV Download only: MSV-E
Exploring Motion and Force with Go Direct Sensor Cart	MSB-CART-E
*Exploring Physical Science**	MSB-PS-E
*Exploring Life Science**	MSB-LS-E
*Exploring Earth and Space Science**	MSB-ESS-E
Solar Energy Explorations	MSB-SOLAR-E
Wind Energy Explorations	MSB-WIND-E
Earth Science with Vernier	Printed book + download: ESV Download only: ESV-E
Climate and Meteorology Experiments	HSB-CM-E

** All experiments from this e-book are included in* Middle School Science with Vernier.

See all our products for middle school science at vernier.com/middle-school

LabQuest 3 Interface and Sensors

Learn more about LabQuest® 3 and sensors at vernier.com/labq3

Looking for Replacement Parts?

Visit vernier.com/replacements

Primary School

Technology engages young students. Our carefully designed hands-on data-collection technology helps primary school teachers introduce young learners to science and STEM. We've created easy-to-use resources to help you educate and inspire your students.

vernier.com/elementary-school

Elementary Science Go Direct Package

This package includes 8 products that work with Vernier Graphical Analysis® Pro and LabQuest® 3.

- Go Direct® Temperature
- Go Direct Light and Color
- Go Direct Motion
- Go Direct 3-Axis Magnetic Field
- Go Direct Gas Pressure
- Go Direct Voltage
- Go Direct Force and Acceleration
- Gas Pressure Sensor Bulb

GDP-EL-DX

Learn more at vernier.com/gdp-el-dx

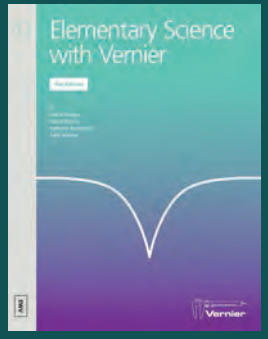
Elementary Science with Vernier Lab Book

This collection of experiments for primary school students includes the topics of temperature, motion, force, magnetism, light, electricity, and gas pressure.

Includes Experiments from These E-books

- *Investigating Temperature*
- *Investigating Gas Pressure*
- *Investigating Motion*
- *Investigating Force*
- *Investigating Light*
- *Investigating Magnetism*
- *Investigating Voltage*

Learn more at vernier.com/ewv



Printed book + download
EWV

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EWV-E

Investigating Wind Energy

Printed book + download
ELB-WIND

Download only
ELB-WIND-E

With the *Investigating Wind Energy* lab book, students conduct investigations to learn about energy transfer, basic electric circuits, and blade design.

Investigating Wind Energy Package

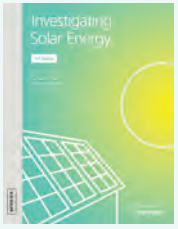
Contains the following products

GDP-EL-WE

- Go Direct Energy
- Vernier Resistor Board
- KidWind MINI Wind Turbine with Blade Design

vernier.com/gdp-el-we

Investigating Solar Energy



Printed book + download
ELB-SOLAR

Download only
ELB-SOLAR-E

The *Investigating Solar Energy* lab book draws on solar energy as a real-world example through which to investigate energy transfer, series and parallel circuits, and other factors that affect solar panel output.

Investigating Solar Energy Package

Contains the following products

GDP-EL-SE

- Go Direct Energy
- Go Direct Surface Temperature
- Solar Energy Exploration Kit
- Vernier Resistor Board

vernier.com/gdp-el-se

Featured Products

Go Direct Sensors

Sensor		Order Code
Go Direct 3-Axis Magnetic Field		GDX-3MG
Go Direct Energy		GDX-NRG
Go Direct Force and Acceleration		GDX-FOR
Go Direct Gas Pressure		GDX-GP
Go Direct Light and Color		GDX-LC
Go Direct Motion		GDX-MD
Go Direct Sound		GDX-SND
Go Direct Surface Temperature		GDX-ST
Go Direct Temperature		GDX-TMP
Go Direct Voltage		GDX-VOLT
Go Direct Weather		GDX-WTHR

Go Direct Charge Station

Go Direct Charge Station		GDX-CRG

Coding

vernier.com/scratch

Go Direct Force and Acceleration (for use with Scratch)		GDX-FOR

See all our products for primary school science at vernier.com/elementary-school

Sensors & Accessories

The Vernier Sensor Advantage

Outstanding Performance

With over 40 years of experience developing technology for education, we design our sensors for active, hands-on experiments. Vernier sensors are rugged, classroom-proven technology that are well supported and easy to use. The sensors provide consistent, high-quality results for the demands of the classroom.

Connect & Collect

Simply connect, and you're ready to collect. All Vernier sensors on the following pages are automatically detected and set up for data collection when used with Vernier software.

Go Direct Sensors

Our Go Direct® sensors connect directly to a computer, Chromebook,™ or mobile device via Bluetooth® wireless technology or USB connection. Most sensors include a rechargeable battery to power the sensor when used wirelessly.

LabQuest Sensors

Our LabQuest® sensors require an interface from the LabQuest family, such as LabQuest 3 or LabQuest Mini. The interface sends information from the sensor to the data-collection and analysis software on a device such as a computer, Chromebook, or mobile device.

For more information on sensor compatibility, visit vernier.com/sensors

Generous Warranty

Buy with confidence. Most Vernier sensors are covered by a 5-year limited warranty. During the warranty period, Vernier will repair or replace the item if there is a defect in materials or workmanship. Outside the warranty, Vernier will attempt to repair most products, often at no charge.

Go Direct Sensors

Sensor	Order Code
Go Direct 3-Axis Magnetic Field	GDX-3MG
Go Direct Acceleration	GDX-ACC
Go Direct Blood Pressure	GDX-BP
Carts and Tracks	
Dynamics Cart and Track System with Go Direct Sensor Carts	DTS-GDX
Go Direct Sensor Cart (Green)	GDX-CART-G
Go Direct Sensor Cart (Yellow)	GDX-CART-Y
Go Direct Centripetal Force Apparatus (requires Go Direct Force and Acceleration)	GDX-CFA
Go Direct CO_2 Gas	GDX-CO2
Go Direct Colorimeter	GDX-COL
Conductivity Probes	
Go Direct Conductivity	GDX-CON
Go Direct Platinum-Cell Conductivity	GDX-CONPT
Go Direct Constant Current System	GDX-CCS
Go Direct Current	GDX-CUR
Go Direct Cyclic Voltammetry System	GDX-CVS
Go Direct Drop Counter	GDX-DC
Go Direct EKG	GDX-EKG
Go Direct Electrode Amplifier	GDX-EA
Go Direct Energy	GDX-NRG
Go Direct Ethanol Vapor	GDX-ETOH
Go Direct Force and Acceleration	GDX-FOR
NEW Go Direct Force Plate	GDX-FP
Gas Pressure Sensors	
Go Direct Gas Pressure	GDX-GP
Go Direct Wide-Range Pressure	GDX-WRP
Go Direct Wide-Range Pressure	GDX-WRPL
Go Direct Hand Dynamometer	GDX-HD
Heart Rate Monitors	
Go Wireless® Exercise Heart Rate	GW-EHR
Go Wireless Heart Rate	GW-HR
Go Direct Ion-Selective Electrode Amplifier	GDX-ISEA
Ion-Selective Electrodes (ISE)*	
Go Direct Ammonium ISE	GDX-NH4
Go Direct Calcium ISE	GDX-CA
Go Direct Chloride ISE	GDX-CL
Go Direct Nitrate ISE	GDX-NO3
Go Direct Potassium ISE	GDX-K
Go Direct Light and Color	GDX-LC
Go Direct Melt Station	GDX-MLT
Go Direct Mini GC	GDX-GC
Go Direct Motion	GDX-MD
Go Direct O_2 Gas	GDX-O2
Go Direct Optical Dissolved Oxygen	GDX-ODO
Go Direct ORP	GDX-ORP
NEW Go Direct PAR	GDX-PAR
pH Sensors	
Go Direct Glass-Body pH	GDX-GPH
Go Direct pH	GDX-PH
Go Direct Tris-Compatible Flat pH	GDX-FPH
Go Direct Photogate	GDX-VPG
Go Direct Polarimeter	GDX-POL
Go Direct Projectile Launcher	GDX-PL
NEW Go Direct Pyranometer	GDX-PYR
Go Direct Radiation Monitor	GDX-RAD
Go Direct Respiration Belt	GDX-RB
Go Direct Rotary Motion	GDX-RMS
NEW Go Direct Salinity	GDX-SAL
NEW Go Direct Soil Moisture	GDX-SM
Go Direct Sound	GDX-SND

** Ion-Selective Electrodes require excellent chemical technique and careful calibration to obtain accurate results; they are not recommended for primary or middle school students.*

Spectrometers	
Go Direct Emissions Spectrometer	GDX-SPEC-EM
Go Direct Fluorescence/UV-VIS Spectrophotometer	GDX-SPEC-FUV
Go Direct SpectroVis® Plus	GDX-SVISPL
Go Direct UV-VIS Spectrophotometer	GDX-SPEC-UV
Go Direct Visible Spectrophotometer	GDX-SPEC-VIS
Go Direct Spirometer	GDX-SPR
Go Direct Static Charge	GDX-Q
Go Direct Structures & Materials Tester	GDX-VSMT
Temperature Probes	
Go Direct Surface Temperature	GDX-ST
Go Direct Temperature	GDX-TMP
Go Direct Thermocouple	GDX-TC
Go Direct Wide-Range Temperature	GDX-WRT
Go Direct Voltage	GDX-VOLT
Go Direct Weather	GDX-WTHR

LabQuest Sensors

Sensor	Order Code
Accelerometers	
3-Axis Accelerometer	3D-BTA
25-g Accelerometer	ACC-BTA
Low-g Accelerometer	LGA-BTA
Anemometer	ANM-BTA
Barometer	BAR-BTA
Blood Pressure Sensor	BPS-BTA
Charge Sensor	CRG-BTA
CO_2 Gas Sensor	CO2-BTA
Colorimeter	COL-BTA
Conductivity Probes	
Conductivity Probe	CON-BTA
Platinum-Cell Conductivity Probe	CONPT-BTA
Constant Current System	CCS-BTA
Current Probes	
Current Probe	DCP-BTA
High Current Sensor	HCS-BTA
Diffraction Apparatus	DAK
Digital Control Unit	DCU-BTD
Drop Counter	VDC-BTD
EKG Sensor	EKG-BTA
Electrode Amplifier	EA-BTA
Energy Sensor	VES-BTA
Ethanol Sensor	ETH-BTA
Flow Rate Sensor	FLO-BTA
Force Sensors	
Dual-Range Force Sensor	DFS-BTA
Force Plate	FP-BTA
Gas Pressure Sensors	
Gas Pressure Sensor	GPS-BTA
Pressure Sensor 400	PS400-BTA
Goniometer	GNM-BTA
Hand Dynamometer	HD-BTA
Heart Rate Monitors	
Exercise Heart Rate Monitor	EHR-BTA
Hand-Grip Heart Rate Monitor	HGH-BTA
Instrumentation Amplifier	INA-BTA
Ion-Selective Electrodes (ISE)*	
Ammonium ISE	NH4-BTA
Calcium ISE	CA-BTA
Chloride ISE	CL-BTA
Nitrate ISE	NO3-BTA
Potassium ISE	K-BTA
Light Sensor	LS-BTA
Magnetic Field Sensor	MG-BTA
Melt Station	MLT-BTA
Microphone	MCA-BTA
Motion Detectors	
Dynamics Cart and Track System with Motion Encoder	DTS-EC
Motion Detector	MD-BTD
O_2 Gas Sensor	O2-BTA
ORP Sensor	ORP-BTA
PAR Sensor	PAR-BTA
pH Sensors	
Glass-Body pH Electrode BNC (requires Electrode Amplifier)	GPH-BNC
pH Sensor	PH-BTA
Tris-Compatible Flat pH Sensor	FPH-BTA
Photogate	VPG-BTD
Polarimeter (Chemical)	CHEM-POL
Power Amplifier	PAMP
Projectile Launcher	VPL
Pyranometer	PYR-BTA
Radiation Monitor	VRM-BTD
Relative Humidity Sensor	RH-BTA
Respiration Monitor Belt (requires Gas Pressure Sensor)	RMB
Rotary Motion Sensor	RMV-BTD
Salinity Sensor	SAL-BTA
Soil Moisture Sensor	SMS-BTA
Sound Level Sensor	SLS-BTA
Spirometer	SPR-BTA
Temperature Probes	
Extra-Long Temperature Probe	TPL-BTA
Stainless Steel Temperature Probe	TMP-BTA
Surface Temperature Sensor	STS-BTA
Thermocouple	TCA-BTA
Wide-Range Temperature Probe	WRT-BTA
Turbidity Sensor	TRB-BTA
UV Sensors	
UVA Sensor	UVA-BTA
UVB Sensor	UVB-BTA
Voltage Probes	
30-Volt Voltage Probe	30V-BTA
Differential Voltage Probe	DVP-BTA
Voltage Probe	VP-BTA

USB-Only Sensors

Sensor	Order Code
Go! Motion®	GO-MOT
Go!Temp®	GO-TEMP
OHAUS® Balances	vernier.com/ohaus
Vernier Flash Photolysis Spectrometer	VSP-FP

Accessories & Replacement Parts

Sensors

Part Name	Order Code
Blood Pressure Sensors	
Small Blood Pressure Cuff	CUFF-SM
Standard Blood Pressure Cuff	CUFF-STD
Large Blood Pressure Cuff	CUFF-LG
CO_2 and/or O_2 Gas Sensors	
250 mL Nalgene® Bottle (1 opening)	CO2-BTL
BioChamber 250 (250 mL) (2 openings)	BC-250
BioChamber 2000 (2000 mL) (2 openings)	BC-2000
Colorimeters	
Cuvette Lids (pkg. of 100)	CUV-LID
Cuvette Rack	CUV-RACK
Plastic Cuvettes (Visible Range) (pkg. of 100)	CUV
Conductivity Probes	
Conductivity Low Standard (500 mL)	CON-LST
Conductivity Middle Standard (500 mL)	CON-MST
Conductivity High Standard (500 mL)	CON-HST
Dissolved Oxygen Probe (Go Direct,® order code GDX-ODO)	
Go Direct Optical Dissolved Oxygen Replacement Cap	GDX-ODO-CAP
Optical DO Probe Metal Guard	ODO-GRD
Dissolved Oxygen Probe (Non-optical, order code DO-BTA)	
DO Calibration Solution (60 mL)	DO-CAL
DO Filling Solution (130 mL)	FS
DO Polishing Strips	PS
DO Probe Membrane Cap	MEM
Drop Counters	
Microstirrer	MSTIR
Reagent Reservoir, 2 Valves, and Tip	VDC-RR
Stopper Stem	PS-STEM
Plastic 2-Way Valve	PS-2WAY
EKG Sensors	
EKG Electrodes (100)	ELEC
Electrode Amplifier (Go Direct, order code GDX-EA)	
Go Direct pH Electrode BNC	GDX-PH-BNC
Go Direct Glass-Body pH Electrode BNC	GDX-GPH-BNC
Go Direct Flat pH Electrode BNC	GDX-FPH-BNC
Go Direct ORP Electrode BNC	GDX-ORP-BNC
Electrode Amplifier (LabQuest®, order code EA-BTA)	
pH Electrode BNC	PH-BNC
Glass-Body pH Electrode BNC	GPH-BNC
Flat pH Electrode BNC	FPH-BNC
ORP Electrode BNC	ORP-BNC
Energy Sensors	
Vernier Resistor Board	VES-RB
Vernier Variable Load	VES-VL
Ethanol Sensors	
Ethanol Cap Assemblies (pkg. of 3)	ETH-CAPS
Ethanol Stopper	ETH-STOP
Ethanol Tape	ETH-TAPE
Force Sensors	
Reflex Hammer Accessory Kit	RFX-ACC
Replacement Accessory Rod	ACC-ROD
Springs Set	SPRINGS
Dual-Range Force Sensor Replacement Parts Kit	DFS-RPK
Bumper Launcher Kit	BLK
Hoop Bumpers for Bumper and Launcher Kit	HOOPS-BLK
Gas Chromatographs	
GC Septa (pkg. of 4)	GC-SEP
GC Syringe, 1 µL Hamilton	GC-SYR-MIC
Gas Pressure Sensors	
Gas Pressure Sensor Bulb (1)	GPS-BULB1
Gas Pressure Sensor Bulb (set of 4)	GPS-BULB4
Pressure Sensor Accessories Kit	PS-ACC
#1 1-Hole Rubber Stopper	PS-STOP1
#5 2-Hole Rubber Stopper	PS-STOP5
Luer-Lock Connector	PS-LUER
Plastic 2-Way Valve	PS-2WAY
Plastic Tubing	PS-TUBING
Plastic Tubing Clamps (pkg. of 100)	PTC
Stopper Stem	PS-STEM
Syringe (20 mL, plastic)	PS-SYR
Syringe (20 mL, plastic) (pkg. of 10)	PS-SYR10
Heart Rate Sensors	
Heart Rate Hand Grips	HR-GRIP
Exercise Heart Rate Strap	HR-STRAP
Polar Transmitter Module	HR-TRANS
Ion-Selective Electrodes	
ISE Ammonium Replacement Module†	NH4-MOD
ISE Calcium Replacement Module†	CA-MOD
ISE Nitrate Replacement Module†	NO3-MOD
ISE Potassium Replacement Module†	K-MOD
ISE Ammonium Low Standard (500 mL)	NH4-LST
ISE Ammonium High Standard (500 mL)	NH4-HST
ISE Calcium Low Standard (500 mL)	CA-LST
ISE Calcium High Standard (500 mL)	CA-HST
ISE Chloride Low Standard (500 mL)	CL-LST
ISE Chloride High Standard (500 mL)	CL-HST
ISE Nitrate Low Standard (500 mL)	NO3-LST
ISE Nitrate High Standard (500 mL)	NO3-HST
ISE Potassium Low Standard (500 mL)	K-LST
ISE Potassium High Standard (500 mL)	K-HST
Melt Stations	
Melt Station Capillary Tubes (pkg. of 100)	MLT-TUBE
Motion Detectors	
Go! Motion® to Computer Cable	GMC-USB
Motion Detector Cable	MDC-BTD
Motion Detector Clamp	MD-CLAMP
pH and ORP Sensors	
Microstirrer	MSTIR
pH Buffer Capsules (10 each of pH 4, 7, 10)	PH-BUFCAP
pH Storage Bottles (pkg. of 5)	BTL
pH Storage Solution (500 mL)	PH-SS
Photogates	
Cart Picket Fence	PF-CART
Go Direct Photogate Timing Cable	VPG-CB-GDX
Go Direct Time of Flight Pad Cable	TOF-CB-GDX
Laser Pointer	LASER
Laser Pointer Stand	STAND
Photogate Bar Tape Kit	TAPE-VPG
Picket Fence	PF
Pulley Bracket	B-SPA
Ultra Pulley Attachment	SPA
Polarimeters (Chemical)	
Polarimeter Sample Cells (pkg. of 4)	CELLS-POL

† ISE modules have a life expectancy of 1 to 2 years. We recommend that you do not purchase ISE replacement modules too far in advance of their expected time of use; degradation occurs while replacement modules are stored on the shelf.

Power Amplifier (order code PAMP)	
Accessory Speaker	PAAS-PAMP
Projectile Launchers	
Goggles (set of 2)	GGL-VPL
Time of Flight Pad	TOF-VPL
Steel Balls (set of 6)	STB-VPL
Projectile Stop	PS-VPL
Independence of Motion Accessory	IOM-VPL
Wax Tape (300 ft.)	WXT-VPL
Rotary Motion Sensors	
Rotational Motion Accessory Kit	AK-RMV
Rotary Motion Motor Kit	MK-RMV
Rotary Motion Sensor Replacement Pulley	RMV-PULLEY
Rotary Motion Sensor Replacement Parts Kit	RMV-RPK
Salinity Sensors	
Salinity Standard (500 mL)	SAL-ST
Spectrophotometers/Spectrometers	
Cuvette Lids (pkg. of 100)	CUV-LID
Cuvette Rack	CUV-RACK
Plastic Cuvettes (visible) (pkg. of 100)	CUV
Plastic Cuvettes (UV-VIS) (pkg. of 100)	CUV-UV
Quartz Cuvettes (pkg. of 2)	CUV-QUARTZ
Fluorescence/UV Quartz Cuvette (pkg. of 1)	CUV-QUARTZ-FUV
Spectrophotometer Optical Fiber (for GDX-SVISPL, GDX-SPEC-UV, GDX-SPEC-FUV)	VSP-FIBER
Vernier Emissions Fiber (for GDX-SPEC-EM, GDX-SPEC-VIS)	VSP-EM-FIBER
Spirometers	
Disposable Bacterial Filter (pkg. of 10)	SPR-FIL10
Disposable Bacterial Filter (pkg. of 30)	SPR-FIL30
Disposable Mouthpiece (pkg. of 30)	SPR-MP30
Disposable Mouthpiece (pkg. of 100)	SPR-MP100
Noseclip (pkg. of 10)	SPR-NOSE10
Noseclip (pkg. of 30)	SPR-NOSE30
O_2 Gas Sensor to Spirometer Adapter	O2-SPR
Structures & Materials Testers	
Truss Tester Accessory	VSMT-TRUSS
Turbidity Sensor (order code TRB-BTA)	
Turbidity Accessories Replacement Kit	TRB-ACC
Turbidity Bottles (pkg. of 6)	TRB-BOT
Voltage and Current Probes	
Inductor	IND
Large Capacitor	VCB2-CAP
Miniature Alligator Clips for Vernier Circuit Board	VCB-GATOR
Optional Breadboard Kit for the Vernier Circuit Board 2	VCB2-OBBK
Replacement Lamps for Vernier Circuit Board	VCB-BULB
Resistivity Rods	RRS
Vernier Circuit Board 2	VCB2

Dynamics Cart and Track System

Part Name	Order Code
For any Cart	
Cart Guide (pkg. of 10)	CGUIDE-10
For any Cart and Track System	
Adjustable Two Foot Leveler	AL-VDS
Adjustable End Stop	AS-VDS
Anti-Roll Pegs	VDS-ARP10
Axles and Wheels for Cart	WHEELS-VDS
Cart Picket Fence	PF-CART
Cart—Plunger Cart (plastic)	DTS-CART-P
Cart—Standard Cart (plastic)	DTS-CART-S
Motion Detector Bracket	DTS-MDB
Optics Accessories	page 55
Photogate Bracket	PGB-VDS
Pulley Bracket	B-SPA
Vernier Dynamics System Replacement Parts Kit	VDS-RPK
For Dynamics Cart and Track Systems Only (Plastic Carts)	
Cart Fan	DTS-CFAN
DFS/Accelerometer Fasteners	DTS-ACC
Eddy Current Brake	DTS-ECB
Friction Pad DTS (for plastic carts)	DTS-PAD
Mass DTS (hexagonal bars)	DTS-MASS
Motion Detector Reflector Flag	DTS-FLAG
For Vernier Dynamics Systems Only (Metal Carts)	
Friction Pad (for metal carts)	PAD-VDS
Mass for Dynamics Carts (500 g block)	MASS

BTA/BTD Cables & Adapters

Part Name	Order Code
Analog Cables and Adapters	
Analog Bare Wire Cable	CB-BTA
Analog Breadboard Cable	BB-BTA
Analog Protoboard Adapter	BTA-ELV
Analog Sensor Extension Cable (2 m)	EXT-BTA
Digital Cables and Adapters	
Digital Bare Wire Cable	CB-BTD
Digital Breadboard Cable	BB-BTD
Digital Protoboard Adapter	BTD-ELV
Digital Sensor Extension Cable (2 m)	EXT-BTD

LabQuest 3, LabQuest 2, and Original LabQuest

Part Name	Order Code
LabQuest Battery Boost 3	LQ-BOOST3
LabQuest Charge Station	LQ3-CRG
LabQuest Power Supply	LQ3-PS
Vernier Mini USB Cable	CB-USB-MINI
Vernier USB Type C to Mini USB Cable	CB-USB-C-MINI
For LabQuest 3 Only	
LabQuest 3 Battery	LQ3-BAT
LabQuest 3 Lanyard	LQ3-LAN
LabQuest 3 Stand	LQ3-STN
For LabQuest 2 and Original LabQuest Only	
LabQuest Tether (pkg. of 5)	LQ-TETH-5
LabQuest Lanyard	LQ-LAN
LabQuest SD Card	LQ-SD
LabQuest Stylus (pkg. of 5)	LQ2-STYL-5
For LabQuest 2 Only	
LabQuest 2 Lab Armor	LQ2-ARMOR
LabQuest 2 Stand	LQ2-STN
LabQuest 2 Battery	LQ2-BAT
For Original LabQuest Only	
Original LabQuest Battery	LQ-BAT

Go Direct

Part Name	Order Code
Go Direct Charge Station	GDX-CRG
Go Direct Sensor Cart Charge Station	GDX-CART-CRG
Go Direct Sensor Clamp	GDX-CLAMP
Go Direct USB Radio	GDX-RADIO
Vernier Micro USB Cable	CB-USB-MICRO
Vernier USB Type C to Micro USB Cable	CB-USB-C-MICRO

Additional Replacement Parts Available Online
Visit vernier.com/replacements

Index

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V

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Satisfaction Guarantee

Vernier has been selling science education software and data-collection hardware since 1981. We pride ourselves on the quality and affordability of our products and our service to our customers. If at any time you are unhappy with any of our products or service, please get in touch.

Vernier Science Education
13979 SW Millikan Way
Beaverton, OR 97005-2886

vernier.com • info@vernier.com
Toll Free: 888-VERNIER (888-837-6437)
Fax: 503-277-2440

Product Usage

Vernier products are designed for educational use. Our products are not designed nor are they recommended for any industrial, medical, or commercial process, such as life support, patient diagnosis, control of a manufacturing process, or industrial testing of any kind. We design our products with the specifications and features that educators and students need to be successful. In our effort to keep our products affordable and easy to use, we may not meet the specifications or include the features that an industrial scientist or medical professional might want.

Equipment Return

Any product that does not meet your needs may be returned within 30 days for a full refund. Equipment returned after 30 days may be subject to a restocking fee.

A Return Merchandise Authorization, available from Vernier, is required for any product return. Equipment returned for exchange or credit must be in new condition and in its original packaging.

Prices and Shipping

Prices are effective January 1, 2024 and supersede previously published prices. Prices are in US dollars and are FOB shipping point. Shipping charges vary depending on the weight and dimensions of the total order, and method and location of shipment. Taxes and wire transfer fees are the responsibility of the purchaser.

International Sales

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Technical Support

We are readily available to help you with individual questions about our software and hardware—simply email exports@vernier.com, or chat with us live on our website.

Our email newsletter makes it easy to access new ideas, learn about new products, and get inspired by fellow educators. Sign up at vernier.com/newsletter

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How to Order

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STEM with Vernier

Science

Vernier technology is used in 150 countries in biology, biotechnology, chemistry, Earth science, environmental science, physical science, physics, and water quality courses. From primary schools to graduate studies, you can rely on Vernier technology for hands-on learning when science is the key focus of your STEM program.

Using Vernier technology, students

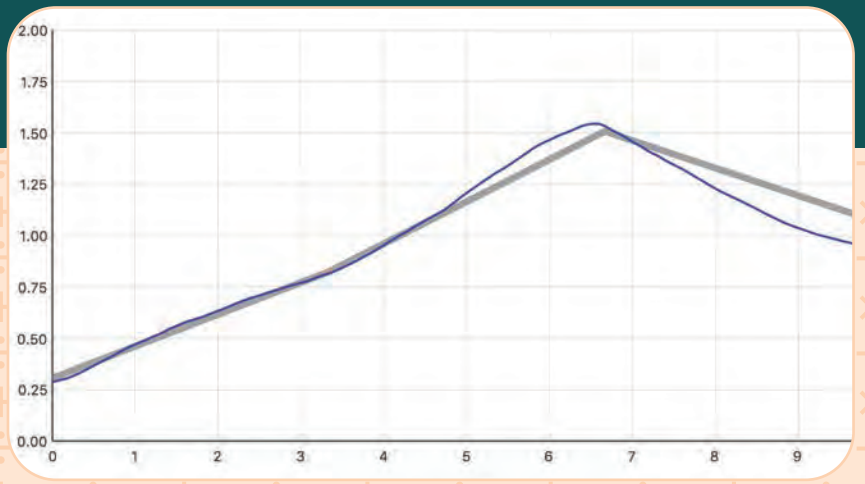
- Ask questions and define problems to investigate
- Plan and carry out investigations
- Decide what data to gather and how much data are needed to produce reliable results
- Analyze and interpret data

Technology

All Vernier technology—from sensors used in hands-on experiments to technology to test design solutions—supports a robust, engaging STEM education.

Maximize Lab Time and Focus on Teaching

- Our software is intuitive and easy to use.
- Students can collect real-time data to test ideas and analyze results.



Engineering

The practices of engineering, when combined with Vernier sensors, allow students to identify problems, design solutions, and test those solutions using sensor data.

Vernier supports hands-on engineering activities

- Engineering design projects
- Feedback and control projects
- Bridge testing and contests
- Structures and materials testing
- Wind and solar energy investigations and design challenges

Math

Computational thinking, visualizing data, and recognizing patterns are all part of scientific investigations and engineering activities using Vernier sensors and software.

Vernier technology engages students and helps them

- Understand grade-level appropriate mathematics and statistics when analyzing data
- Visualize data using a variety of analytical tools to show relationships

Welcome to the Vernier STEM Classroom

Everything we do for secondary school science educators and their students can be found in the Vernier STEM Classroom.

The Vernier STEM Classroom is an integrated approach to using the full catalog of Vernier hardware, software, content, assessment, professional development, and technical support to make a high-quality STEM education possible for all secondary school students.

What is the Vernier STEM Classroom?

Hardware

Designed for education and built to last, **Vernier hardware is durable, dependable, and affordable.** Our comprehensive catalog of science education hardware includes **sensors, probes, interfaces, and lab equipment**—all of which are designed to help students engage with key STEM concepts.

Software

Our award-winning, easy-to-use software brings data collection, visualization, and analysis to students' fingertips. In the process, it helps boost engagement, increases understanding of complex STEM concepts, and brings science to life.

Content

Vernier offers **hundreds of educator-tested, ready-to-use experiments and investigations** that support implementation of Vernier technology.

Assessment

Formative assessments provides valuable information to **help educators monitor student learning and target lessons** to meet the needs of every student to help them succeed.

Professional Development

When it comes to professional development for science educators, **we offer a variety of in-person and online options. From subject-specific webinars to personalized training with our science education experts,** we help educators address their unique challenges and equip them with skills and resources to ensure success.

Technical Support

Our priority is to provide STEM educators with **unparalleled customer service, technical support, and resources so they are always supported when integrating our technology.** Our renowned technical support team includes former educators who draw from their classroom experience to answer educators' questions and find solutions.

Get the whole story at vernier.science/stem-classroom

Vernier®
SCIENCE EDUCATION

Vernier Science Education
13979 SW Millikan Way
Beaverton, OR 97005-2886
USA
phone +1-503-277-2299
fax +1-503-277-2440
www.vernier.com
exports@vernier.com

Vernier Asia Limited
Block B2A, 13F
Hoi Bun Industrial Building
6 Wing Yip Street
Kwun Tong, Kowloon
Hong Kong
Phone: +852-2790-3550
Fax: +852-2790-3551
www.vernier-intl.com
toyue@vernier-asia.com

Vernier Europe Limited
Unit 3
Templemichael Business Park
Ballinalee Road
Longford N39 P296
IRELAND
Phone: +353-43-334 1980
www.vernier-intl.com
venglish@vernier-europe.com

Vernier Science Education is dedicated to providing holistic, high-quality, reliable solutions for today's STEM classrooms.