



Scientrific[®]

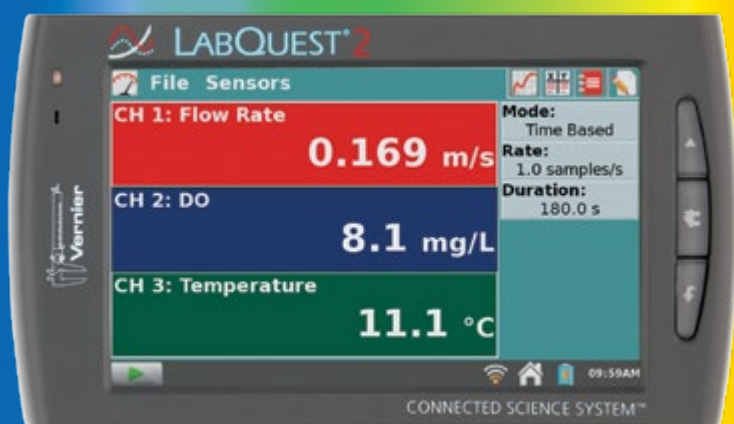
Science Education Resources

SCIENTRIFIC[®]

is Australia's **ONLY** authorised distributor for all Vernier Software and Technology data logging solutions including the



LABQUEST[®] 2



Clicking on some images will take you to that product on our website



ONLINE ORDERING
SCIENTRIFIC.COM.AU

Adam Dune Electronic Balance Range

Dune balances have all the features you need for quick and easy weighing

Compact, easy to use Dune balances offer basic weighing at an unbeatable price. **Advanced overload protection** helps to prevent overload damage plus the overload indicator gives a visual warning of an excessive load. Simple three button operation: on/off, units and tare. Use 6 x AA batteries (not included) or use the included AC adaptor.

ONE YEAR WARRANTY. Features:

- Low battery indicator
- Auto power off
- Overload indicator
- Durable construction
- Large easy to read LCD display
- Simple user-friendly operation
- Splash-proof sealed keyboard
- Lightweight and portable
- Large 145mm square pan
- Grams, ounces
- External Calibration

DCT 201 \$68 200g x 0.1g resolution, **SAVE \$27+** see web for quantity prices

DCT 2000 \$68 2,000 x 1g resolution, **SAVE \$27+** see web for quantity prices

DCT 5000 \$68 5,000 x 2g resolution, **SAVE \$27+** see web for quantity prices

SPECIAL



Triple Beam Balances

Made from pressed steel for both durability and rigidity, 150mm stainless steel pan, built-in ruler and protractor, removable legs, weight holders for extra weights, weigh-below hook for density measurements. **Three year Warranty.**

Capacity 2610g x 0.1g.

TBB2610T with 225g taring **\$150 SAVE \$15**

TBB2610S without taring **\$135 SAVE \$15**

SPECIAL



Adam Core Precision Balances

Adam Core balances are made and priced to suit school labs. They provide reliable readings, classroom durability and simple operation. **Two year Warranty. Features:**

- Built-in ShockProtect™ handles excessive overloads up to 200kgs without a problem
- With AC mains adaptor (or use 6 AA batteries which are not included)
- Large, clear and easy to read 18mm high digits with backlit LCD
- Removable draft shield on CQT 202, CQT 251, CQT 601 and CQT 1501 (i.e. 120mm pan models)
- CQT 202 and CQT 601 can be stacked on top of one another for easy storage
- Auto power off and low battery indicator
- Built in lock-down slot to secure your balance in one place
- Stainless steel weighing pan
- Below balance weighing with hook for density calculations

CQT 202 \$260 200g x 0.01g, 120mm pan, **SAVE \$65+** see web for quantity prices

CQT 601 \$164 600g x 0.1g, 120mm pan, **SAVE \$41+** see web for quantity prices

CQT 2601 \$285 2600g x 0.1g, 145mm pan, **SAVE \$50+** see web for quantity prices

SPECIAL



All prices do NOT include GST

CQT SERIES IN-USE COVER

Helps protect your balance against splashes and spills.

308232033 \$10 in-use cover **SAVE \$10** see web for quantity prices

Adam Highland range

Economical, load protected balances with easy to read backlit 18mm high digits, they can be used with the included mains power adaptor or for portability use the internal rechargeable battery. **Two year Warranty. Features:**

- With **HandiCal™ internal calibration weight** for fuss free calibration
- **ShockProtect™ unique patented protection to 200kg** helps safeguard against overloads
- 120mm stainless steel diameter pan with draft shield
- Can be stacked on top of one another for easy storage
- Security slot, audible overload warning, RS-232 and USB ports

HCB 123 \$549 SAVE \$96 120g x 0.001g

HCB 302 \$447 SAVE \$78 300g x 0.01g

HCB 602H \$499 SAVE \$76 600g x 0.01g

HCB 1002 \$420 SAVE \$205 1,000g x 0.01g

HCB 1502 \$447 SAVE \$78 1500g x 0.05g

HCB 3001 \$447 SAVE \$78 3,000g x 0.1g

SPECIAL



HCB SERIES IN-USE COVER

Helps protect your balance against splashes and spills.

308232030 \$10 in-use cover **SAVE \$10** see web for quantity prices

Adam PGL Precision Balances

Bright backlit display, draft shield on PGL203, below balance weighing, large stainless steel pan. Nine different weighing units. With mains adaptor. Functions include: Weighing, net / total, check weighing, percentage weighing, animal / dynamic weighing, parts counting, density determination. **Three year Warranty. Features:**

PGL 203 \$787 SAVE \$138 200g x 0.001g

PGL 303 \$846 SAVE \$149 300g x 0.001g

PGL 2002 \$787 SAVE \$138 2,000g x 0.01g

PGL 4001 \$660 SAVE \$225 4,000g x 0.1g

PGL 8001 \$820 SAVE \$205 8,000g x 0.1g

PGL 20001 \$1913 SAVE \$337 20kg x 0.1g

SPECIAL



Adam High Resolution (including milligram) Balances

Bright backlit display, draft shield, below balance weighing, stainless steel pan, date and time, weight accumulation, net / total weighing averaging, animal / dynamic weighing, percentage weighing, parts counting, 18 weighing units including one custom unit, security bracket, RS-232 port. With mains adaptor. **Three year Warranty. Features:**

PGW 253e \$946 SAVE \$129 250g x 0.001g

PGW 453e \$1122 SAVE \$153 450g x 0.001g

PGW 453i \$1430 SAVE \$195 450g x 0.001g, internal calibration weight

PGW 753e \$1386 SAVE \$189 750g x 0.001g

PGW 1502E \$858 SAVE \$117 1500g x 0.01g

PGW 2502E \$975 SAVE \$100 2500g x 0.01g

SPECIAL



INDUCTION TUBE - BASIC KIT

Our Basic Induction Kit allows you to perform basic experiments and investigations into magnetism, magnetic fields, induced currents, eddy currents, Lenz's Law and magnetic braking. The kit consists of a clear plastic tube containing a cylindrical neodymium iron boron 'super magnet'. A central hole extends through the tube's end stops and rubber bumpers. Used at its simplest the tube can be inverted back and forth allowing the magnet to drop so that the user gets a feel for the magnet's movement, collision with the end stops, the weight of the apparatus while at rest and with the magnet falling. A plastic draw rod is supplied with a small ferrous tip at one end. Inserting the draw rod into the tube and allowing the ferrous tip to attach to the magnet enables you to move the magnet back and forth by hand. The other end of the draw rod has a hook which allows you to connect the draw rod to mechanical devices, e.g. a small motor with a drive cam, to study repetitive motion effects. Also included are a short aluminium tube and 3 narrow rings which fit neatly over the tube. Two rings are of aluminium, one has a slot cut through it. The third ring is made of plastic that has been painted to look like aluminium. Individually slipping the rings over the Induction Tube and drawing the magnet back and forth allows the study of induced EMF and eddy currents in non-ferrous materials. The Induction Tube can be used both horizontally and vertically while experimenting with the rings and short aluminium tube. Includes an experiment manual.

SC1090 \$135



NEW

DEIONISER - REVERSE OSMOSIS

Our deioniser has been specially built for us and contains two carbon filters plus a reverse osmosis membrane to guarantee a good supply of very pure water, all parts are readily available and are very economic to replace. The deioniser is a great replacement for a traditional, energy wasting electric still. Supplied with flexible hoses to facilitate easy connection to taps etc. Inlets and outlets are clearly marked. The provided hoses and fittings are designed to help restrict the flow of water so that the filter is not overloaded. Unlike a still, a deioniser requires no mains power or cooling water.

- Supplied with a battery operated conductivity meter for monitoring water quality on the fly
- The housing, which can be wall mounted, measures 375 x 345 x 150mm (HWD)
- Flow rate is two litres per minute
- More details are on our website

SC93010 \$395.00 Qty discounts available

NEW

INDUCTIVE BRAKING KIT - TOWER OF TERROR BRAKING DEMO

Also known as the Eddy Current Drag Kit. This kit demonstrates how the brakes work on Dreamworld's Tower of Terror ride. Drop the super magnet onto the thick copper bar and explain its cushioned fall, drag non-magnetic metal bars without the magnet touching them and explain why the magnet veers unexpectedly when it nears the edges as it rolls down the sloping copper bar. Delivers the WOW! factor when teaching Newtons, Faradays, or Lenz's Laws. Weight 2.5kg. Each of the supplied bars is approximately 395x50x10mm. The kit includes:

- A heavy copper bar
- A plastic bar for pendulum experiments
- Plastic spacers
- Two plastic rollers
- A super magnet
- A cord to suspend the plastic bar
- A booklet of inquiry driven activities asks students the following questions:

1. Predict a behaviour
2. Observe the behaviour
3. Raise questions to investigate factors that will affect the behaviour
4. Investigate their own ideas on what causes the observed behaviour
5. Explain the observations

SC15000 \$235

NEW

RED AND GREEN LASER DIFFRACTION KIT

This new product developed for us in conjunction with the ANU is a combination of a red (650nm) and a green laser (532nm) powered by 2 AAA batteries. The dual lasers allow simultaneous analysis of optical phenomena using two wavelengths. Examples of experiments that can be performed include: diffraction patterns through gratings and slits; calculation of laser wavelengths; diffraction in optical communication; calculation of particle and pinhole sizes. Includes: an experiment manual; 1,000 lines per mm diffraction grating; a single slit diffraction grating; a double slit diffraction grating; a blank slide holder. The housing includes two small super magnets allowing attachment to magnetic white boards etc. Overall size of the housing: 90x70x25mm.

The Red and Green Laser Diffraction Kit is pictured with lenses from the HL1985-001 Laser View Kit which are not included.

SC16000 \$295

NEW

VERNIER PROJECTILE LAUNCHER

Use the Vernier Projectile Launcher to investigate important concepts in two-dimensional motion. Launch steel balls at angles between 0 and 70 degrees and over distances up to 2.5m. The solid, heavy base provides an easy-to-use and reliable setup. A unique pneumatic launching system provides excellent repeatability and allows you to set the launch speed. Built-in photogates and angle markings provide easy and accurate measurement of the ball's launch velocity to give precise quantitative analysis of projectile motion. Simply plug the device into a compatible data-collection interface. **Specifications:**

- Launch angle: 0 to 70 degrees
- Launch speed: 0-6m/s
- Launch height: 146mm
- Maximum launch distance: 2.5m
- Internal photogate interval: 50mm
- Steel ball diameter: 17.46mm
- Steel ball mass: 21.8g

Sample experiment topics:

- Investigate the independence of the horizontal and vertical motion
- Use the photogates to measure launch velocity
- Knowing the launch velocity, predict the landing point when a ball is launched horizontally from a table top
- Knowing the launch velocity and launch angle, predict the landing point when a ball is launched at an angle
- Knowing the launch velocity and launch angle, launch a ball through a horizontal or vertical hoop
- Investigate projectile range as a function of launch angle
- Determine which launch angles give the same range
- Determine which launch angle gives the maximum range
- Investigate the repeatability of the launcher
- Use the launcher, a video camera and the video features of Logger Pro to observe the launch path
- Given a specific launch distance, calculate the launch velocity needed to hit the target. Use the photogates to set the device to that launch velocity and test your prediction.
- While designed to be used with Vernier data loggers it could be adapted to use with any photogate based timing device

VPL \$527

NEW



Laser Diffraction Kit being used with two Laser View lenses (not included)





SOLAR ENERGY KIT

The best solar product that we've seen. With eight solar panels that can be connected to increase either current or voltage. An electric motor can be fitted in the support column for mounting on the base or on the solar panel. Boxed with cable and tools. The included book is brilliant - it describes how a solar cell works in detail and shows how to determine the cell configuration for various types of equipment and shows the necessary series or parallel circuits. **Why pay \$30 elsewhere?**

SC52400 \$20 special now just \$15.50 or \$15 each for 5+ or \$14 each for 10+

SOLAR MOTOR

The same solar motor as used in our SC7250, SC52400 and SC52405 Solar Kits. Ideal as a replacement motor or for use in solar kits of your own design.

SC52410 \$4 each or \$3.50 each for 5+ or \$3.00 each for 10+ or \$2.50 each for 20+



SOLAR EDUCATIONAL KIT

This solar kit allows you to build your own solar models and experiment with solar energy. Contents:

- Solar cell
- Small DC motor
- Screws and nuts
- Connection cable
- Colour spinner discs
- Plastic fan
- Four plastic turntables
- Paper aeroplane and bird models
- Solar energy booklet about solar energy

SC52405 \$9 each or \$8.50 each for 5+ or \$8 each for 10+

FUEL CELL CAR AND EXPERIMENT KIT

Use the kit to build a small car powered by either the included solar panel or water powered fuel cell and learn how they work. The manual covers electrolysis, solar cells, fuel cells and experiments.

The fuel cell, when powered by electricity from the solar panel, quickly breaks down distilled water into hydrogen and oxygen. Once enough gas has been produced the solar panel is disconnected and the fuel cell is connected to the car's electric motor. Electricity and water is immediately produced from the recombination of the hydrogen and oxygen. The 64 page manual describes how fuel cells work and includes 30 experiments that use the included digital multimeter to work out voltages, currents, solar cell power, motor and fuel cell efficiency. For ages 10 and up.

620318 \$210 Special \$195

FUEL CELL X7 HYDROGEN POWERED CAR

The new Fuel Cell X7 kit is designed to be accessible to more users, both in terms of content and price. The manual focuses on building a fuel cell car and the instructions are geared toward a younger (12+) audience. The kit has been optimised for simplicity and ease of use.

The full-colour, 16 page manual contains easy, step-by-step instructions for assembling and using the car, as well as scientific explanations. Uses two AA batteries (not included) rather than a solar cell to break down water into hydrogen and oxygen. Use to: assemble a working fuel cell car; discover how fuel cells work; use a unique reversible fuel cell; learn about alternative energies for cars and about fuel cell car design.

628777 \$134

POWER HOUSE - ALTERNATIVE ENERGY - SUSTAINABILITY

Learn about alternative energy and sustainable living by conducting 100 experiments and building energy-related models. Learn about energy-efficient construction materials and passive house design. Experiment with heating, cooling, conduction, convection and insulation. Investigate Earth's climate, the water cycle and solar power. Test passive solar collection methods with a solar collector. Hook up a photovoltaic solar panel to generate electricity from sunlight. Build wind turbines to extract energy from the wind. Construct a greenhouse and learn about the energy conservation tricks used by plants. **Suitable for ages 10 and up.**

Power House provides a comprehensive overview of the many forms of alternative energy and makes environmental protection and energy conservation issues tangible with hands-on models.

The 64 page, full-colour experiment manual provides instructions, scientific explanations and energy-saving tips. A list of kit contents, topics covered and some sample pages from the Experiment Manual are on our website at:

<http://scientific.com.au/document.php?d=45>

625825 \$103



DYNAMO - GENERATOR AC/DC

An imported AC/DC generator with well made brushes. The AC or DC voltage produced can be switched to power the DC motor or the lamp. AC applied to the motor makes it vibrate which can help to explain how a DC motor works. Unscrewing the lamp allows voltage to go to 4mm banana sockets for the connection of an external load. The motor has a colour disc fitted which gives a good indication of speed. Probably the best bench top generator currently on the market. Size: 32x23x30cm (WDH).

EM1443 \$199

EM1443BELT \$6 replacement belt

HYDRO ELECTRIC DYNAMO - GENERATOR

Blades which are attached to a motor/generator are turned by water flowing over them. This unit measures 27x24x17cm and is supplied with hoses to connect to a tap and to expel water into a sink. The output voltage can be switched to drive either a small motor and Newton colour disk, a torch bulb or output to an external device via 4mm banana sockets with a LED indicator.

HEPL001 \$149

STIRLING ENGINE

Stirling engines like steam engines convert heat into mechanical energy. A Stirling Engine is a simple, clean, quiet and efficient energy convertor that can be powered using a variety of heat sources like combustible fuels, nuclear fission, geothermal heat or solar power. This kit uses the sun's heat or a metho burner to expand air in a glass tube. The expanding air pushes a piston which then moves back as the air cools. The reciprocating piston action is converted to circular motion to drive a dynamo. The dynamo then charges a rechargeable battery which powers the included electric car. A meter shows the electrical energy being produced.

When using the sun's energy the engine is mounted in a mirrored parabolic dish which focuses the sunlight onto the cylindrical glass bulb of the Stirling engine.

Use to demonstrate the following energy transformations: solar or chemical energy to heat, heat to mechanical energy, mechanical to electrical energy, energy storage and stored electrical energy to mechanical energy.

620325 \$220 special \$195 includes rechargeable battery

SC5489 \$3.50 rechargeable NiMH battery to suit



KIDWIND BASIC WIND EXPERIMENT KIT



KWA0018 \$106.70

KIDWIND MINI WIND TURBINE WITH BLADE



KWA0043 \$58.80

KIDWIND MINI WIND TURBINE



KWA0041 \$43.20

KIDWIND ADVANCED WIND EXPERIMENT KIT



**KWA0012 \$149.80
KWA0011 \$178.60**

KIDWIND SUN ANGLE SCIENCE KIT



KWC0024 \$57.60

Scientrific is the sole authorised Australian Distributor for KidWind products. Please refer to our website for full product details.

Scientrific has produced a wide range of Australian referenced teaching resources related to the Australian Curriculum: Science. Our resources complement KidWind's teaching resources that are USA based.

OUR TEACHING RESOURCES CAN BE ACCESSED HERE:

<http://scientrific.com.au/page.php?pg=57>

These resources include:

SUSTAINABLE SCIENCE AND ENERGY

Is the wind a source of sustainable energy for the future?

Students can investigate the use of renewable energy as a source of alternative energy for the future. KidWind kits provide excellent opportunities to control and test variables as well as interface with data logging equipment. The following curriculum units align with the Australian Curriculum: Science.

Year 7 Wind Forces and Machines Teaching Guide [pdf]

Year 8 Wind Energy Teaching Guide [pdf]

Year 9 Solar Energy Teaching Guide [pdf]

Year 10 Energy Efficiency Teaching Guide [pdf]

Year 7 Wind Forces and Machines Learning Guide [pdf]

Year 8 Wind Energy Learning Guide [pdf]

Year 9 Solar Energy Learning Guide [pdf]

Year 10 Energy Efficiency Learning Guide [pdf]

OTHER PRIMARY AND SECONDRY RESOURCES YOU WILL FIND ON THE SAME PAGE INCLUDE:

Experiments and products aligned to Australian Curriculum: Science codes by strand and topic:

Year 7 – Year 10 [pdf] links Vernier experiments to Australian Curriculum Codes

Year 8 – Year 10 [pdf] links key experiments in Australian Curriculum (Junior) to equipment including sensors.

Year 11 – Year 12 [pdf] links key experiments in Australian Curriculum (Senior) to equipment including sensors.

KIDWIND SIMPLE HAND GENERATOR KIT



KWA0051 \$31.40

KIDWIND ADVANCED WIND EXPERIMENT NACELLE KIT



KWA0014 \$64.70

KIDWIND WIND TURBINE HUB



KWH0005-1 \$9

KIDWIND GENPACK



KWA0016 \$32.40

KIDWIND FIREFLY



KWA0046-01 \$10.80

KIDWIND BATTERY CHARGING KIT



KWA0030 \$61.20

KIDWIND SOLAR THERMAL EXPLORATION KIT



KWC0020 \$62.30

KIDWIND GEARED TURBINE NACELLE KIT



KWA0022 \$46.80

KIDWIND SCIENCE FAIR WIND PROJECT



KWA0024 \$73.10

TO VIEW THE FULL RANGE OF KIDWIND PRODUCTS, TEACHER RESOURCES AND TEACHING MODULES PLEASE USE OUR WEBSITE AND SEARCH ON "KIDWIND".

www.scientrific.com.au

Prices do not include GST, freight or transit insurance



FRANK HERTZ APPARATUS - IEC

For experiments in the First Excitation Potential of Xenon gas and the Ionisation Potential of Xenon gas. Uses a Thyratron tube as a Xenon gas cell. Current through the tube can be observed directly on a 20 μ A meter, a spot galvanometer or it can be fed into the integral amplifier so that the currents can be read on a multimeter or bench meter. The manual gives a clear explanation of how the Thyratron works, energy levels and the theory behind the experiments. Ancillary equipment required but not included: 0 - 1mA meter or 0 - 50 μ A galvanometer; 0 - 24V DC voltmeter; 12V and 24V (use 2 x 12V supplies in series), 100V DC and 6.3V AC power supplies. A suitable 100V power supply is LB2621-001.

AP1870-001 \$215



GEIGER COUNTER AND RATE METER - IEC

A rugged, portable, microprocessor controlled, battery operated instrument with a built-in Geiger-Muller tube. Detects and counts Alpha, Beta or Gamma particles continuously or over periods of 10, 60, or 100 seconds, also displays the Counting Rate per second or per minute. An audible counting 'click' can be turned on or off. Three 'AA' batteries (included) last about 100 hours or use an optional mains plug pack. Five press buttons give easy control of all counting and rate functions. Auto power off. When turned back on the last reading taken, the preset high voltage and operating mode are restored. With instructions and work sheets.

AP1884-001 \$541 SPECIAL \$525 **PA4096-020 \$21.50** optional mains adaptor



AP2668-001

MAGIC 'GEIGER COUNTER' RADIOACTIVE SOURCE - IEC

Simulates a radioactive source and Geiger Counter without any dangers. Use to determine half lives, to find the Exponential function 'e', for experiments in random numbers and Poisson's distribution curve. Audible 'clicks' simulate particle emission and counting. LED display shows the number of particles remaining in the 'source' enabling you to see the decay occurring over time, it also shows the elapsed time for plotting decay against time. Pressing a button, magically renews short or long life 'sources'. Uses 9V battery (included), 12V supply or mains plug pack (not included). With teacher notes and work sheets.

AP2668-001 \$193 SPECIAL \$175 **PA4096-020 \$21.50** optional mains adaptor



DRM-BTD

GEIGER COUNTER FROM VERNIER

This Digital Geiger Counter is a stand-alone unit (it requires no data logger) that consists of a Geiger-Muller tube and a digital rate meter mounted in a small, rugged plastic case with an LCD screen. The unit is battery operated and can be used for measurement of alpha, beta, and gamma radiation. It can be used to explore radiation statistics, measure the rate of nuclear decay, monitor radon progenies, determine half lives, check radiation shielding and background radiation.

An added feature is that it can be connected to Vernier data loggers like the LabQuest 2 or a computer running Vernier Logger Pro software with a Vernier interface to collect, graph or create table data for storage or analysis.

DRM-BTD \$513



PHOTO ELECTRIC EFFECT - PLANCK'S CONSTANT - IEC

With LCD, integral Photo Tube, amplifier, voltage or current meter, 12V lamp, apertures and filters. In operation light is passed through the filters to establish its wavelength, the light then strikes the cathode of the Photo Tube releasing electrons. Applying a reverse potential stops the current flow, this potential is read on the meter and is proportional to the photons' energy. It can be shown that the energy level is dependent on the light's wavelength not its intensity. Calculate Planck's Constant by graphing energy versus wavelength.

AP2341-001 \$449 SPECIAL \$430



MASS OF ELECTRON APPARATUS - IEC

Used to determine the ratio of charge to the mass of an electron. A 'Magic Eye' vacuum tube shows the electron path on the surface of an anode. Tube voltages can be obtained from an LB2621-001 or LB2622-001 Power Supply. A Constant Current Power Supply (e.g. LB2622-001, see below) powers an Air Cored Solenoid (EM0090-001, see below) which is placed over the tube. As current passes through the solenoid the electron path is studied on the tube's anode. As the magnetic field increases the electron path starts to curve. The radius of curvature is measured and the dynamics of the electron are calculated.

AP2120-001 \$94 use with Air Cored Solenoid **EM0090-001 \$68.30**



AIR CORED SOLENOID - IEC

700 turns of 3 amp enamelled copper wire. Use with a Current Balance or Mass Of Electron apparatus for experiments on the magnetic effects of an electric current, size: 160x77x67mm.

EM0090-001 \$68.30



POWER SUPPLY - CONSTANT CURRENT - IEC

Used with the Mass Of Electron Apparatus to energise the Magic Eye tube's anode and heater circuits or for any application that requires a 25V DC constant current source. The constant current output compensates for resistance and temperature changes in connected equipment to ensure a steady current and accurate results. Switched monitoring of either the output current or voltage. Mains operated. Outputs: filtered 250V DC at 1mA; 25V DC at constant current of 0.1 to 2 amps; 12V AC at 1 amp.

LB2622-001 \$342



MILLIKAN'S APPARATUS - IEC

Perform Millikan's experiment with charged particles moving in an electric field or observe Brownian motion. Complete with a telescope and graticule for focusing through one of the two windows provided. A tiny amount of latex is atomised and passed through a latex rubber tube which induces a static charge. The particles pass through a hypodermic needle into the cell where they cross the path of an intense white light focused at the centre of the cell. The charged latex particles, with a diameter of approximately 1 micron, present at the focal plane near the centre of the cell, can be clearly seen through the telescope as bright dots.

Cell voltage can be adjusted or reversed. As the voltage between the cell plates is increased the charged particles move towards the plate of opposite potential to the particle. Decreasing the voltage sees the charged particles reverse direction. Using a stopwatch the rate of movement of particles can be measured and by calculation the mass of a single electron can be deduced.

AP2131-001 \$550 Special \$495 with built-in power supply

AP2130-001 \$429 requires 12 and 300 volt external power supplies

BLOOD PRESSURE METER

Simple to use and gives a fast, accurate measurement of blood pressure and heart rate. Attach to upper arm (fits arm circumference of 23 to 33cm), just above the elbow, using the adjustable velcro band. Pressing the "Start" button inflates the band and begins the measurement process, measuring systolic, diastolic and heart rate using the oscillometric method. In just seconds, the LCD panel displays the results. Time and date display, auto power off and carry case. Stores memories for up to 3 individuals, 30 memories each. With instruction booklet and 4 x AA batteries. Range: Pressure 0-300mm Hg, Pulse 40-199 beats/minute. Accuracy: Pressure +/-3mmHg, Pulse +/-5% Max.

SC2222 \$90 EDUCATIONAL SPECIAL PRICE \$65

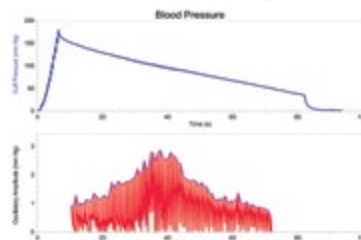


VERNIER BLOOD PRESSURE SENSOR

The Blood Pressure Sensor is a non-invasive sensor designed to measure human blood pressure. It can be used to measure systolic and diastolic blood pressure utilising the oscillometric technique. The sensor includes a standard adult size adjustable cuff (27 cm to 39 cm), pump bulb and pressure transducer. A smaller cuff (sold separately) is available for younger students (18.4 cm to 26.7 cm) which includes a pump bulb and valve

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

BPS-BTA \$185



VERNIER EKG AND EMG SENSOR

The EKG sensor can be used to make standard 3-lead EKG recordings and graphically display the cardiac voltages produced during the contraction of the heart. It can also make surface EMG recordings which measure the electrical signals produced during muscle contractions of muscles in your arm, leg or jaw.

When used as an EKG sensor it measures electrical signals produced by the heart using three disposable electrodes and produces an EKG graph which demonstrates to students the contraction and repolarisation of the heart's chambers. It can also show the cardiac changes which occur due to exercise or psychological stress.

• 100 disposable electrodes are included with the sensor.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

EKG-BTA \$259



VERNIER HAND GRIP HEART RATE MONITOR

The Hand-Grip Heart Rate Monitor is ideal for determining a person's heart rate at rest or during and after exercise. The sensor consists of wireless hand grips and a receiver module that plugs into any of our data-collection devices. The hand grips sense the electrical signals generated by the heart, much like an ECG. For each pulse detected, a signal is transmitted to the receiver module and the individual's pulse rate is calculated. **Specifications:**

• Receiver range: 80-100cm

• Transmitter transmission frequency: 5kHz ±10%

• Receiver current consumption: 30-55µA

• Transmitter operating temperature: 0-60°C

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

HGH-BTA \$210



VERNIER SPIROMETER

The Vernier Spirometer uses a differential pressure transducer to perform a variety of tests related to air flow and lung volume. The sensor includes a removable flow head (22 mm ID, 30 mm OD) for easy cleaning and sterilisation. The Spirometer is designed to make human respiratory measurements at rest and during moderate activity. The Spirometer package includes 1 sensor handle, 1 flow head, 5 disposable mouthpieces, 1 disposable bacterial filter and 1 nose clip.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

SPR-BTA \$351



VERNIER CO2 GAS SENSOR

The CO2 Gas Sensor measures gaseous carbon dioxide levels in the range of 0 to 100,000 ppm and is great for measuring changes in CO2 levels during plant photosynthesis and respiration. With this sensor, you can easily monitor changes in CO2 levels due to the respiration of organisms from crickets to humans! A 250ml chamber with a probe attachment is included for running controlled experiments with small plants and animals.

• Low range: (0 - 10,000 ppm)

• High range: (0 - 100,000 ppm)

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

CO2-BTA \$439



VERNIER O2 GAS SENSOR

The O2 gas sensor measures oxygen concentration in air. The O2 gas sensor requires no special preparation or calibration - just plug it into your interface and it is ready to take readings. Many of the experiments performed using the CO2 Gas sensor can be performed or complemented using the O2 gas sensor. Due to its wide measurement range, the O2 Gas Sensor can also be used to monitor oxygen concentration during human respiration. Included with the O2 Gas Sensor is a 250-mL bottle to be used as a respiration chamber for studying plants and insects or the rusting of iron. **Specifications:**

• Range: 0 to 27% (0 to 270 ppt)

• Resolution (LabPro): 0.01%

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

O2-BTA \$331



VERNIER BIOCHAMBER 2000

The 2000mL plastic BioChamber 2000 is used with a CO2 Gas Sensor and an O2 Gas Sensor to monitor closed system carbon dioxide and oxygen levels simultaneously, it is particularly useful when monitoring respiration and photosynthesis. The large removable top makes it easy to insert, adjust or remove samples. The BioChamber 2000 has two sensor ports, size 6 rubber stopper can be used to plug an unused port.

BC2000 \$33

A one port 250ml BioChamber is also available: **BC-250 \$11**



DISSECTION AND CHEMISTRY TRAY

A unique multipurpose tray for use in Biology and Chemistry which has been designed for laboratory safety and good practice when performing dissections and chemistry experiments. Overall size: 470x335mm.

• Easily washed and autoclavable, chemical resistant and virtually unbreakable plastic.

• Convenient measuring scales with embossed graduations on edges.

• Lightweight for ease of use and stackable for storage.

• Separate 'clean' compartment for tools and instruments.

• Accepts a special inner mat for animal dissections to permit the use of dissection pins.

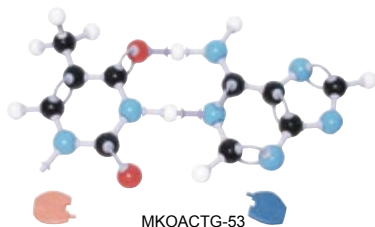
• Has special anchor slits around the edge for fast secure fixing of limb spreading strings.

• Replacement mats are available in packs of 12.

TRAY \$18.00 or \$15 each for 10 or more. **TRAY INCLUDES ONE MAT.**

MAT \$24.00 Pack/12 Spare Mats





MKOACTG-53

MKS122-2	\$81
MKS122-10	\$342
AMDNA-060-12	\$42
AMDNA-060-22	\$73
AMRNA-12	\$25
AMRNA-24PS	\$42
MKOACGT-53	\$53



MMS-001

We stock a full range of Molymod spare parts.

Please see website for details and pricing:

www.scientrific.com.au

MOLECULAR MODELING SETS

MMS-001	\$36	Introductory Organic Set	48 atom parts
MMS-003	\$64	Organic Teacher's Set	111 atom parts
MMS-004	\$64	Organic/Inorganic Teacher's Set	106 atom parts
MMS-007	\$125	Biochemistry Teacher's Set	257 atom parts
MMS-008	\$36	Organic Student's Set	50 atom parts
MMS-009	\$36	Organic/Inorganic Student's Set	51 atom parts
MMS-010	\$40	Biochemistry Student's Set	72 atom parts
MMS-015	\$21	Elementary Organic Set	30 atom parts
MMS-051	\$37	Organic Stereo Chemistry Set	74 atom parts
MMS-050	\$108	Organic Stereo Chemistry Teacher Set	168 atom parts
MMP-AT2	\$13	Atomod™ Organic Student Pack	19 atom parts

BIOCHEMISTRY MODELS

MKS-114	\$52	Fat, glyceryl tristearate, $C_{57}H_{110}O_6$	1 molecule
MKS-115-2	\$25	Glucose	2 molecules
MKS-116	\$27	Sucrose	1 molecule
MKS-117-S	\$23	Saturated fatty acid, stearic acid, $C_{18}H_{36}O_2$	1 molecule
MKS117-U	\$23	Unsaturated fatty, oleic acid, $C_{18}H_{34}O_2$	1 molecule
MKS118-3	\$37	Starch or cellulose	3 glucose units
MKS119	\$34	Cholesterol, $C_{27}H_{46}O$	1 molecule
MKS120-5	\$28	Polypeptide chain	5 peptide units
MKA120-7	\$52	Amino acid set, makes 7 models	125 atoms
MKA121-20	\$150	Amino acid set, makes 20 models	384 atoms in 2 boxes
MKS120-15	\$46	Protein in β -pleated sheet	15 peptide units
MKS121-15	\$46	Protein in α -helix	15 peptide units

ORGANIC MODELS

MKS105-5	\$20	Polyvinyl Chloride (PVC)	5 monomer units
MKS108-5	\$21	Polypropylene (PP)	5 monomer units
MKS109-3	\$26	Polystyrene (PS)	3 monomer units
MKS110-2	\$26	Poly(ethyleneterephthalate) (PET)	2 monomer units
MKS111-2	\$30	Polyamide, Nylon 6.6	2 monomer units
MKS113	\$29	Soap	1 molecule
MKS130	\$25	Detergent	1 molecule

INORGANIC MODELS

MKO100-30	\$26	Diamond	30 atoms
MKO101-45	\$36	Graphite, three layers	45 atoms
MKO102-60	\$36	Buckminster Fullerene, C_{60}	60 atoms
MKS103-24	\$20	Sulphur, three S_8 rings	24 atoms
MKO104-30	\$31	Carborundum (silicon carbide)	30 atoms
MKO123-26	\$35	Ice	26 water units
MKO124-36	\$31	Sodium Chloride	36 atoms
MKO127-27	\$31	Sodium Chloride (larger Cl ions)	27 atoms
MKO125-45	\$34	Zin Blende (zinc sulphide)	45 atoms
MKO126-66	\$55	Calcite (calcium carbonate)	66 atoms, pre-assembled
MKO132-30	\$33	Fluorite (calcium fluoride)	30 atoms, pre-assembled
MKO133-30	\$46	Caesium Chloride	30 atoms, pre-assembled
MKO136-38	\$35	Quartz (silicon dioxide)	38 atoms
MMS138-40	\$35	Iron, Zinc, Copper	40 atoms, 3 ass'd models
MKO136-84	\$48	Zeolite single sodalite cage, $(SiO_4)_24$	84 atoms
MKS137-66	\$35	Silicon Dioxide, "diamond" type, linear o_2	66 atoms
MKO140-24	\$19	Zeolite cage	24 grey spheres

MOLECULAR ORBITAL MODELS

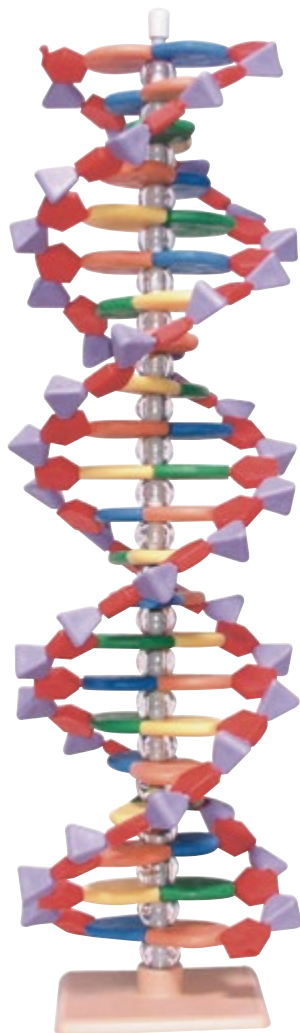
MOS900-4	\$69	Parts for 4 organic molecular models showing orbitals
MOS901-14	\$46	Parts for 14 different atomic orbital models
MOS902-8	\$35	Shapes of molecules set, parts for 8 sets
MOK404	\$53	Benzene hybridised
MOK405	\$49	Benzene unhybridised
MOK409	\$37	Methanoic (formic) acid, dimer

MOLYMOD™ DNA and RNA MODELS

DNA model, 2 base pairs on stand
DNA model, 10 base pairs on stand
miniDNA™, 12 layer model kit, 23cm tall
miniDNA™, 22 layer model kit, 46cm tall
miniDNA™- RNA, 12 base model kit Ribonucleic Acid
miniDNA™- RNA, 24 base, protein synthesis kit
Atom parts for the 4 DNA bases, GCAT

NEW
LOWER
PRICES

MOLYMOD™ SETS and MODELS



AMDNA060-22

Molymod™ and miniDNA™ are trademarks of Spiring Enterprises

Molymod™ is a quality product made in the UK. You can be sure that our genuine Molymod parts have the CORRECT holes in the RIGHT places unlike the not-so-cheap knock-offs.



Scientrific®

Science Education Resources

Note where we have given the resolution of a Vernier sensor we have used the resolution of a 12 bit interface like the LabQuest, LabQuest2, LabQuest Mini or Go!Link. For older interfaces please check our website for resolutions.

ANEMOMETER WITH TRIPOD STAND

A very economic anemometer that measures wind speed from 0.64 to 107.82 km/h. Can also display wind speed as km/h, feet/min, mph, metres/sec or knots, windchill and air temperature. Displays the current, maximum and average wind speed. Has a beaufort scale display. Can be handheld or fixed to the supplied tripod.

Dimensions: 115(H) x 45(W) x 16(D)mm less stand.

SC5033 \$60

VERNIER ANEMOMETER

The Vernier Anemometer is an impeller-type anemometer that measures wind speed in the range of 0.5 to 30 m/s. Fits in your palm for wind study measurements in the field. A threaded camera mount on the back of the anemometer and an accessory rod allows you to position it in wind tunnels or in front of fans for wind turbine experiments.

The KidWind Project® (page 5) has worked closely with Vernier to produce a series of experiments to quantify the power and energy output of Kid Wind's wind turbines, solar cells and fuel cell products. We have found this hardware and software easy to use and it provides a large amount of data for a variety of simple or complex experiments that students commonly perform. **Available experiments include:**

- Creating a Power Curve for a Small Wind Turbine
- Analysing AC Generators and Wind Turbines
- Quantifying Power/Energy from classroom sized Wind Turbines, Solar Panels and Fuel Cells
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.
- Determining Solar Thermal System Efficiency
- Determining Solar Panel Efficiency

ANM-BTA \$157

VERNIER PYRANOMETER

The Pyranometer measures the power of electromagnetic radiation in watts per square meter. It is sensitive to near-infrared, visible and UV radiation, this is where 90% of solar energy is concentrated. It reads in Watts per square meter, making it ideal for experiments with solar cells and calculating their efficiency. It is weatherproof and has a dome-shaped top to allow it to handle a wide range of sun angles. It comes with a 6 meter cord. **Specifications:**

- Irradiance Range: 0 to 1100 Watts/m2 (in full sun)
- Repeatability: ±1%
- Cosine Response, zenith angle: 45° 1%; 75° ±5%
- Current draw: 300 µA
- Resolution 0.3 Watts/m2
- Materials: Anodized aluminum with case acrylic lens
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.
- Absolute Accuracy: ±5%
- Long-Term Drift: Less than 3% per year
- Wavelength range: 370 nm to 1140 nm
- Output signal: 0 to 4.4 V (dark to full sunlight)
- Diameter: 2.4cm, Height: 2.75cm

PYR-BTA \$351

VERNIER RELATIVE HUMIDITY SENSOR

The Relative Humidity Sensor contains an integrated circuit to monitor relative humidity. This sensor can be used for weather studies, monitoring greenhouses or even for determining days when static electrical discharges could be a problem.

Specifications:

- Range: 0% to 95%
- Resolution: 0.04 %
- Typical Accuracy: ±5%
- Power draw: 200µA @ 5 VDC
- **Response Time for a 90% change in reading:**
In still air: 60 minutes (typical)
With vigorous air movement: 40 seconds (typical)
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

RH-BTA \$122

VERNIER SOIL MOISTURE SENSOR

The new Soil Moisture Sensor uses capacitance to measure the water content of soil. Simply insert this rugged sensor in the soil to be tested and the volumetric water content of soil is reported in percent. Use it to conduct experiments in ecology, environmental science, agricultural science, horticulture, biology and more. Some possible uses:

- Measure the loss of soil moisture over time due to evaporation and plant uptake
- Evaluate optimum soil moisture contents for various species of plants
- Monitor soil moisture content to control irrigation in greenhouses
- Enhance your Bottle Biology experiments
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

SMS-BTA \$167

VERNIER UVA AND UVB SENSOR

Have you ever wondered if you can get sunburnt on a cloudy day or whether those cheap sunglasses let ultraviolet light through? Investigate these issues and others with the UVA and UVB Sensors from Vernier. Two different UV sensors are available - one responds primarily to UVA radiation (approximately 320 to 390nm), the other responds primarily to UVB radiation (290 to 320 nm). **Suggested experiments:**

- Compare ultraviolet transmission of various plastics and glasses
- Compare ultraviolet intensity on cloudy and sunny days
- Study the absorption of ultraviolet by sunscreen lotions and clothing
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

UVA-BTA \$187 UVB-BTA \$189

WATER QUALITY TEST KIT - HANNA

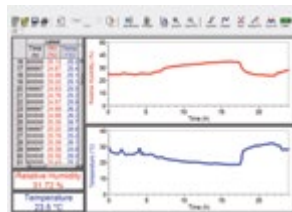
A complete water quality testing solution. A 72 page Teacher's Guide includes classroom activities to introduce students to each topic along with detailed field-testing procedures. The supplied study course (US Curriculum) is a valuable tool to help students understand the importance of our environment. All chemical kits can be replenished. Each kits contains: overhead transparencies with summaries of each parameter; laminated instruction cards with step-by-step field testing procedures; activity worksheets with instructions and goals, blank tables for recording test results with space for hypotheses, comments etc. A backpack hold all of the kit's components. Includes:

- 110 tests for Acidity & Alkalinity, 100 tests for Carbon Dioxide, Dissolved Oxygen, Hardness, Nitrate and Phosphate
- Hanna's pHep@4 waterproof pH/temperature tester
- Hanna's DiST@5 waterproof Conductivity/Total Dissolved Solids (TDS) tester
- Secchi disc for turbidity tests

3817BP \$820 (A soil test kit **3896BP \$822** is also available see our website www.scientrific.com.au for details)



NEW





VERNIER COLORIMETER

This 4 wavelength Colorimeter is great for Beer's Law experiments, determining the concentration of unknown solutions such as phosphates or nitrates in water. The new design includes a one-button automatic calibration feature. Fifteen 3.5 mL cuvettes are included. A package of 100 replacement cuvettes (with 20 lids) is available.

Wavelengths: 430nm, 470nm, 565nm, 635nm

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

COL-BTA \$203

OPTICAL DISSOLVED OXYGEN SENSOR - VERNIER

The Vernier Optical Dissolved Oxygen Probe makes it easy to measure the dissolved oxygen concentration in water, it uses luminescent technology to provide fast, easy and accurate results, making it a terrific choice for biology, ecology and environmental science courses. Students can measure dissolved oxygen concentration in water or perform a wide variety of experiments to determine changes in dissolved oxygen levels.

• Plug-and-play technology – **no filling solution, warm-up time, stirring or calibration necessary**

• Built-in temperature and pressure compensation
• Switch setting to measure mg/L or % saturation
• Response Time: 90% of final reading in 40 seconds
• Requires: LabQuest, LabQuest 2, LabQuest Mini*

• Easy maintenance
• Range: 0 to 20 mg/L (or ppm), 0 to 100%
• Resolution: 0.006 mg/L

*With Logger Pro software for Win. or Mac.

ODO-BTA \$668

VERNIER TURBIDITY SENSOR

For use in: Chemistry, Biology, Water Quality, Physical Science, Earth Science.

Use the Turbidity Sensor to measure the turbidity of freshwater or seawater samples. Its small, sleek design and simple set up make it easy to use at the collection site or when you return to the classroom. The Turbidity Sensor measures turbidity in NTU (the standard unit used by most water collection agencies and organisations). Calibration can be done in about one minute using a high quality Hach StablCal® 100 NTU standard (included). Chemistry and biology teachers can also use this sensor to monitor precipitates formation or algae and yeast populations.

• Range: 0 to 200 NTU

• Accuracy: ± 2 NTU on readings up to 25 NTU

• Accuracy: $\pm 5\%$ on readings above 25 NTU

• Resolution 0.25 NTU

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

TRB-BTA \$197

VERNIER FLOW RATE SENSOR

The Flow Rate Sensor allows you to easily measure stream velocity for **environmental** or **earth science** studies. Using this durable sensor students can measure the flow of a stream at different points in m/s. Using flow rate data your students will be able to calculate discharge values for the stream in m³/s or determine the sediment transport of the stream. The impeller rod separates into four sections for easy transport and convenient storage. The Flow Rate Sensor comes equipped with a five-meter cable so your data collection equipment can stay on shore while you measure flow rate in the stream. Three riser rods are included which enable the impeller to be placed at fixed depths.

• Range: 0 to 3.5 m/s

• Accuracy: $\pm 1\%$ of full-scale reading

• Resolution: 0.0012 m/s

• Temperature range (can be placed in): 0 to 70°C

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

FLO-BTA \$227

VERNIER CONDUCTIVITY SENSOR

Great for testing total dissolved solids (TDS) or conductivity in water samples. **Biology** teachers can use this probe to demonstrate diffusion of ions through membranes or to monitor changes in ion levels in aquatic systems. **Chemistry** students can use it to investigate the difference between ionic and molecular compounds, strong and weak acids or ionic compounds that yield different ratios of ions.

• Low Range: 0 to 200 μ S/cm (0 to 100mg/L TDS or 0 to 1.63 x 10⁻³ mol/L as NaCl)

• Mid Range: 0 to 2000 μ S/cm (0 to 1000mg/L TDS or 0 to 0.017 mol/L as NaCl)

• High Range: 0 to 20,000 μ S/cm (0 to 10,000mg/L TDS or 0 to 0.19 mol/L as NaCl)

• Accuracy: $\pm 1\%$ of full-scale reading for each range

• Response: 100% in 15 seconds, 98% reading in 5 secs.

• Temperature compensation: automatic from 5 to 35°C

• Temperature range: 0 to 80°C

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

CON-BTA \$167

VERNIER SALINITY SENSOR

The Salinity sensor is ideal for use in the following topics: Biology, Chemistry, Earth Science, Physical Science and Water Quality. The Salinity sensor easily and accurately measures the total-dissolved salt content in water. Salinity is an important measurement in seawater or in estuaries where freshwater from rivers and streams mixes with salty ocean water. The salinity level in seawater is fairly constant, at about 35 ppt (35,000 mg/L), while brackish estuaries may have salinity levels between 1 and 10 ppt. The Salinity sensor measures in the 0 - 50 ppt range, making it suitable to check water with a wide variety of salinities, from freshwater to ocean water or even hyper-saline environments.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

SAL-BTA \$162

VERNIER PH SENSOR

The Vernier pH sensor is ideal for acid-base titrations and has many uses in Chemistry, Water Quality and Physical Science. The high quality Ag-AgCl combination electrode used ensures that the pH sensor has many uses in primary schools, secondary schools and university. **Features:**

• pH range: 0 to 14 pH units

• Temperature range: 5 to 80°C

• Resolution 0.005 pH units

• Sealed, gel-filled, epoxy body, Ag/AgCl, 12-mm OD

• Response time: 90% of final reading in 1 second

• Includes a soaking bottle with storage solution.

• Accessories: pH Buffer Capsules order code **PHB \$21** and

• pH Storage Solution order code **PH-SS \$28**

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

PH-BTA \$139

VERNIER FLAT PH SENSOR TRIS COMPATIBLE

The Tris-Compatible Flat pH Sensor is a highly versatile sensor. Because the glass membrane is flat instead of being a bulb, it is easier to clean and allows for flat surface measurements or smaller sample sizes. It features a sealed, gel-filled, double-junction electrode making it compatible with Tris buffers and solutions containing proteins or sulphides. The flat glass shape also makes it useful for measuring the pH of semi-solids such as food or soil slurries.

• pH range: from pH0 to pH14

• Temperature range: 0– 100°C

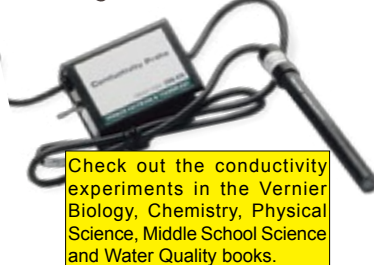
• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*

*Includes free Logger Lite software for Win. or Mac.

FPH-BTA \$175



NEW
NO warm up
NO Calibration
NO Filling Solution



Check out the conductivity experiments in the Vernier Biology, Chemistry, Physical Science, Middle School Science and Water Quality books.



Tip detail



Tip detail

**RECHARGEABLE BATTERY POWERED MICROSCOPES WITH LED LIGHTING
IDEAL FOR FIELD AND EXTRA SAFE FOR WET AREAS**

Three great microscopes for field or lab work where you may not want to use mains power for flexibility of movement or for safety around wet samples etc. These microscopes use LED's for illumination. The LED's give a far whiter light than incandescent lamps and are powered by rechargeable NiMH batteries which give a minimum of 10 hours use when fully charged. Supplied with built-in rechargeable batteries and 240V mains adaptor.

STEREO MICROSCOPE WITH RECHARGEABLE BATTERIES

A high quality Stereo Microscope with 45° inclined eyepieces featuring:

- Ten times wide field eyepieces (WF10x)
- Rotating 2x and 4x objectives that give 20x or 40x total magnification
- Slip clutch focusing
- Both top (incident) illumination and bottom (transmitted) illumination.

This microscope uses a mains powered plug-pack to charge the built-in rechargeable NiMH batteries. When fully charged the batteries will power the LED lights for at least 10 hours. This microscope is ideal for both lab and field use. If you don't want to use the batteries just use the mains plug-pack. As the LED's are powered by just 6 volts they are very safe when used only with the batteries for wet work like examining pond life in Petri dishes.

MS24LED \$265 each or **\$257** each for 5+

MONOCULAR WITH RECHARGEABLE BATTERIES

A high quality microscope suitable for junior and senior students. Magnification of 40x, 100x and 400x. Features:

- 45° inclined 360° rotatable head
- Wide-field 10 times eyepiece (WF10x) with pointer
- Coarse and fine focusing
- Fixed NA0.65 condenser
- Iris diaphragm
- 4x, 10x and 40x objectives, the 40x objective is spring loaded
- Variable LED lighting for the correct illumination of any object

This microscope uses a mains powered plug-pack to charge the built-in rechargeable NiMH batteries. When fully charged the batteries will power the LED lights for at least 10 hours. This microscope is ideal for both lab and field use. If you don't want to use the batteries just use the mains plug-pack. As the LED's are powered by just 6 volts they are very safe when used only with the batteries for work with wet samples or slides.

MMLED \$250 each or **\$240** each for 5+

MMECH \$30 Optional Mechanical Stage

TRINOCULAR MICROSCOPE WITH RECHARGEABLE BATTERIES

A top of the range microscope that gives spectacular visual images through the eyepieces or the optional digital cameras. Unlike cheaper microscopes this microscope has **high quality planar objectives** which, unlike cheaper objectives, give a flat field of view ensuring the entire viewable area is in focus. Like all of our microscopes this one uses LED lighting and is powered by rechargeable batteries making it ideal for field or wet area use. Comes with a mains adapter to recharge the batteries.

- Co-axial coarse and fine focus
- Dual layer ball bearing co-axial stage
- Variable LED lighting for the correct lighting regardless of the specimen
- 45° inclined 360° rotatable head
- Wide-field 10 times eyepiece (WF10x) with pointer
- 4x, 10x and 40x objectives
- Abbe condenser
- Iris
- Mechanical stage

B204T \$715 no camera

B204T-3M \$1195 with 3 mega pixel camera and C-Mount

B204T-5M \$1285 with 5 mega pixel camera



5 mega pixel camera with C-Mount adaptor for fitting on a B204T microscope

USB CAMERA KITS FOR MICROSCOPES

High quality USB colour cameras for use with monocular or binocular microscopes including those above. With software for Mac OSX, Windows 7/8, XP and Vista. Time Lapse capture, stills and AVI movies can be saved. View LIVE images on a computer screen or show to your class using a data projector. **Includes:**

- A glass calibration slide for screen and software calibration allows objects to be measured
- Adaptors to fit the camera to a 23mm monocular microscope or 30 and 30.5mm dia. binocular microscopes

We recommend a 3.0 mega pixel camera for most users. A 5.0 or more mega pixel camera would only be used for work up to about 40x magnification, most monitors and data projectors cannot show this number of pixels

MCAM3.0 \$445 3.0 mega pixel (2048x1536) camera kit

MCAM5.0 \$480 5.0 mega pixel (2592x 1944) camera kit

MCAM10 \$870 10 mega pixel (2592x 1944) camera kit

USB DIGITAL MICROSCOPE

Quickly, easily and economically turn your computer into a digital microscope. Capture high resolution images or video and display them on your PC using a simple USB connection. With built-in LED lighting and up to 200 times magnification. Great for school and laboratories. Powered by your computer's USB port. • Size: 110(L) x 33(Dia)mm.

Features:

- 2 megapixels CMOS image sensor
- Manual focus from 10mm to infinity
- AVI Video format
- Auto White Balance
- USB 2.0 interface

- Mac or Windows 2000/XP/Vista/7
- Video capture 640x480
- Magnification ratio: 50x - 200x
- JPG and BMP still image formats
- Auto Exposure
- Image capture: 1600x1200, 1280x1024, 640x480, 320x240

SC5123 \$75 SPECIAL \$68

SC5135 ~\$112 5 megapixel camera due soon, check website for availability, details and definite price



MS24LED



MMLED



B204T-3M



Camera with 23 mm diameter 0.5x eyepiece adaptor (on left), 30 and 30.5mm adaptors



PROSCOPE MICRO MOBILE

A ProScope Micro Mobile (PMM) kit will turn your iPad, iPad Mini, iPhone 4, iPhone5 or iPod Touch into a mobile microscope. A durable, impact resistant, nylon and ABS sleeve fits around the 'i' device to position the microscope lens over the device's camera lens. 12 adjustable-brightness LEDs surround the lens to evenly illuminate the subject. Includes a small stabilising frame and a rechargeable lithium-ion battery for hours of field operation without draining the battery of your 'i' device.

Videos are listed on our website showing how to use the PMM for viewing slides, hair and skin.

Each kit includes:

- ProScope Micro Mobile base unit
- A sleeve to suit the device the kit is designed for
- USB charging cable(2 hour recharge)
- One year warranty
- 20x-80x specially coated lens for image quality and colour
- Adjustable nylon lens cone
- Stand for hands free use

NEW

PMM-BASE \$202 base unit with stand, lens, USB cable, with **no** sleeve

PMM-IP5K \$234 base unit with stand, lens, USB cable and iPhone 5 sleeve

PMM-IP4K \$234 base unit with stand, lens, USB cable and iPhone 4/4S sleeve

PMM-IPT4K \$234 base unit with stand, lens, USB cable and iPod Touch 4G sleeve

PMM-IPADK \$234 base unit with stand, lens, USB cable and iPad 2/3/4 sleeve

PMM-IPMINIK \$234 base unit with stand, lens, USB cable and iPad Mini sleeve

PMM-IP4SL \$31 iPhone 4/4S sleeve only

PMM-IP5SL \$31 iPhone 5 sleeve only

PMM-IPADSL \$31 iPad sleeve only

PMM-IPMINISL \$31 iPad Mini sleeve only

PMM-IPT4SL \$31 iPod Touch 4G sleeve only

PMM-POLAR \$47 Polarising filter

If you have multiple "i" devices you don't need a PMM-BASE for each, just buy a sleeve for each and simply swap the PMM-BASE

PROSCOPE DIGITAL CAMERA / MICROSCOPE

The **ProScope HR** with its 1/4" 1.3M pixel colour sensor captures images at 1280x1024 pixels which more than doubles the resolution of the original and discontinued ProScope.

The **ProScope HR2** with its 1/3" 2M pixel colour sensor captures images at 1600x1200 pixels.

The ProScope HR and HR2 be used hand-held, on a stand or on a tripod for high quality image or movie capture to your computer via a USB 2 port. They can also attach to a traditional microscope using an optional C-mount adaptor and Microscope Tube adaptor. Cameras include ProScope HR software for Windows and Mac, the software enables you to capture still images, movies or time-lapse images. Note "BT" replaces the "BD" part-code prefix used in some catalogues.

Lenses are inter-changeable between the original ProScope, ProScope HR and ProScope HR2.

Options:

BT-HR	\$211	ProScope HR Camera NO lenses, with software
BT-HR2	\$322	ProScope HR2 Camera NO lenses, with software
BT-HR-50	\$378	ProScope HR Camera with 50x lens, with software
BT-HR2-50	\$489	ProScope HR2 Camera with 50x lens, with software
BT-10	\$243	1-10X zoom lens
BT-30N	\$259	30X lens (with non reflective option)
BT-50	\$178	50X lens
BT-100	\$243	100X lens
BT-200	\$243	200X lens
BT-400	\$406	400X lens
BT-CMT-IR	\$80	C Mount, Camera mount adaptor
BT-LTA	\$178	Microscope Tube adaptor (requires BT-CMT)
BT-STAND	\$156	Stand, black, new model
BT-CASE	\$81	Sturdy black carry case

A 50X lens is perfect for examining hair follicles or observing perspiration form and evaporate on the fingertips.



BT-400, BT-100 and BT-200 look similar

It is generally **CHEAPER** to make your own kit using the part-codes above rather than buying the kits below.

PROSCOPE BASIC KIT

Basic starter kit allows you to easily capture still images, movies or time lapse photography. The included 50X lens is perfect for examining hair follicles, observing perspiration form and evaporate and much more. Capture high-resolution microscopic images. The included software runs on both Windows (including Windows 8) and Mac. **Kit contents:** ProScope HR (1.3M pixel) or HR2 (2M pixel), USB cable and 50X Lens, (also sold as BT-HR-50 or BT-HR2-50).

BD-HR2B \$492 **BD-HRB \$351**

PROSCOPE BIOLOGY KIT

Use the ProScope HR or HR2 as a dissecting microscope or attach it to your regular microscope for even more magnification. The included software runs on both Windows (including Windows 8) and Mac. **Kit contents:** ProScope HR (1.3M pixel) or HR2 (2M pixel), 1-10X Lens, 50X Lens, C-Mount Adaptor, Microscope Lens Tube Adaptor, Camera Stand, rugged carry-case and software.

BD-HR2-BIOL \$1144 **BD-HRBIOL \$1056**

PROSCOPE DELUXE KIT

In addition to everything that comes with the ProScope Biology Kit, the Deluxe Kit includes 100X and 200X lenses for greater magnification. The included software runs on both Windows (including Windows 8) and Mac. **Kit contents:** ProScope HR (1.3M pixel) or HR2 (2M pixel), ProScope HR Software, 50X Lens, 1-10X Lens, 100X and 200X lenses, C-Mount Adaptor, Microscope Lens Tube Adaptor, Camera Stand, Rugged Hard Plastic Case.

BD-HR2-DLX \$1673 **BD-DLX \$1,585**

MICROSCOPE CLEANING KIT

Put together by us to make microscope cleaning easy, it contains three items:-

DUST OFF AEROSOL 250g can of high pressure gas, to remove dust from lenses.

COTTON WIPES pack of 25 lint free cotton wipes, each 110mm x 110mm

FOAM BUDS (not cotton) on long stems to reach inside objectives etc. pack of 20

SC4578 \$22 Kit containing Dust Off, cotton wipes and buds

SC6250 \$13 foaming Optical Instrument Cleaner aerosol (may differ from picture)

SC7731 \$13.50 Lens Cleaning Pen for cleaning eyepieces, camera lenses etc.



PMM-BASE



PMM-IP5K
iPhone not included



PMM-IP4K
iPhone not included



BT-HR2-50
(BD-HR2B)



BT-HR-50
(BD-HRB)



BD-HRBIOL



BD-DLX



Optical Instrument
Cleaner and Microscope
Cleaning Kit

VERNIER LABQUEST 2 INTERFACE SYSTEM

LabQuest 2 is the ultimate data logger with GPS, 3 accelerometers, light, sound and temperature sensors built in, please visit our website for more details or contact us to arrange a demonstration.

The LabQuest 2 is the most powerful and intuitive interface for science education, it will also engage your students and enable them to conduct hands-on science in your classroom or in the field. Designed for science and STEM education the LabQuest 2 has a wide range of connection options. Students love the high resolution screen, wireless connectivity and robust data-collection capabilities. It's the perfect solution for classroom laboratory experiments and the built-in GPS sensor makes it ideal for field work as well.

Data can be collected, viewed and analysed by a network of three students using iPads in a workgroup using Vernier's Graphical Analysis for iPad app or by an entire class of students using computers and a standard web browser. Data can also be shared by a computer connected to a projection screen (using Vernier's LabQuest Viewer program) or by email.

Explore science in the lab and in the field with its full colour, easy to use touch-screen. Collect, view, analyse and annotate data on LabQuest 2 or on computers, iPads®, iPhones® and other mobile technology with a compatible web browser like Firefox, Chrome and Safari.

- Collect, view and analyse data on another device with a compatible web browser
- Show students how to use LabQuest by projecting your LabQuest screen - LabQuest Viewer (sold separately)
- Collect, view and analyse data with Graphical Analysis™ for iPad® (sold separately)
- Use Graphical Analysis™ for iPad® to simultaneously provide access to data for the entire lab group
- Portrait and Landscape views
- Curve fits and modelling
- Includes 5 built-in sensors:
 - GPS sensor
 - Microphone
 - 3 Axis Accelerometer
 - Ambient Temperature sensor
 - Light sensor
- High-resolution touch screen
- Built-in data-collection software
- 100,000 samples per second
- Wi-Fi and Bluetooth connectivity

LABQ2 \$589

VERNIER LABQUEST 2 CHARGING STATION

Charge and store your LabQuest 2 with the LabQuest Charging Station. Its compact size makes it the ideal solution for any laboratory and the multi-bay charging capabilities save you valuable lab set-up time.

LQ2-CRG \$218

VERNIER LOGGER PRO 3 SOFTWARE

Vernier's Logger Pro 3 for Windows and Mac is an easy to use data logging storage and analysis solution with an intuitive and easy to use graphical interface. Some of its many features:

- Comes with more than 200 experiments
- Collect and analyse multiple data runs
- XY graphs, log graphs, tables, histograms, strip charts
- Supports 4 analogue and 2 digital sensors simultaneously
- Data Share wirelessly to any compatible web browser
- Extensive analysis tools including video analysis
- Import videos and images
- Auto-save feature protects data during long runs
- Date and time-of-day stamps for long-term collection
- Double y-axis graphs for plotting unlike units on 1 graph
- Collect data from multiple LabQuests, LabQuest 2s, LabQuest Minis, LabPros, Go! devices or Ohaus balances
- Includes a generous site licence for a single school campus or in the case of a university, a single department at a single campus. The licence includes use on home computers belonging to teachers and students currently attending the licensed school campus or university department.
- Supports GPS data collection
- Auto-ID sensor recognition
- FFT graphs
- Remote collection support
- Video capture and analysis
- Vernier Spectrometer support
- Synchronise videos to sensor data
- Text notations,
- Adjustable parameters for total control over calculations
- Easy unit switching

LP \$404

VERNIER LABQUEST MINI

The LabQuest Mini brings the power of Vernier's award-winning LabQuest technology to teachers who don't need the versatility of a standalone device. The LabQuest Mini is the perfect solution for educators collecting data with a computer using the included **FREE Logger Lite software**. Upgrading to Logger Pro software provides unparalleled power, analysis and even video analysis. Scientific recommends Logger Pro for all high school and university customers. Connects quickly and easily to your Windows or Mac computer with the included USB cable. **Features:**

- * 100,000 samples per second maximum sampling
- * Five sensor ports give you the flexibility to choose from over 50 compatible sensors
- * FREE Logger Lite software gets your students quickly collecting, graphing and analysing data
- * Compact design and USB powered for quick and easy set up. No power supply required.

LQ-MINI \$263

VERNIER GO!LINK

The Go!Link is a very easy to use, complete data collection solution. It accepts any one of over 40 Vernier sensors at a time. Simply install the FREE Logger Lite software on your Windows or Mac computer's, plug the Go!Link into a USB port and you're up and running. It's that easy to collect, display and analyse data! Go!Link is the quickest, hassle free and most economic data logging solution going. It can also be used with optional Logger Pro software.

GO-LINK \$108

TEACHER PACK OF EIGHT GO!LINKS

Save funds by purchasing a Go!Link Teacher pack containing 8 Go!Link sensors with a **FREE copy of Logger Lite!** Connect 8 sensors to 8 different computers or connect multiple sensors to one or more computers! Recommended for primary school. Secondary schools should consider the LabQuest Mini or LabQuest 2.

GL-TP \$834

VERNIER GO!TEMP

The Go!Temp is a temperature probe that connects directly to a USB port! Includes **FREE Logger Lite software** for Windows and Mac operating systems. Simply install the software, connect your Go!Temp and you're up and running and ready to measure, record and graph temperatures. Quick, hassle free and real value for money. Ideal for primary school and home schooling.

GO-TEMP \$69

2013-2014 Shortform

Errors and Omissions Excepted

Copyright © 2011 - 2013 Scientific® Pty Ltd

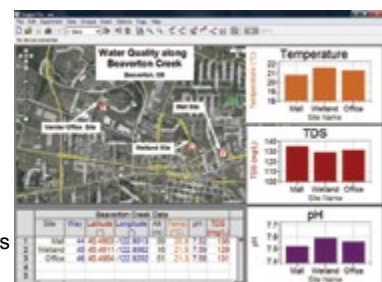
Prices do NOT include GST



LabQuest GPS data display



Temperature data - evaporation comparison with two stainless steel sensors



GPS data exported from Logger Pro to Google maps





TEACHER PACK OF EIGHT GO!TEMPS

An economical way for many students to collect temperature data. Save funds by purchasing a Go!Temp Teacher pack containing 8 Go!Temp sensors and a **FREE copy of Logger Lite!** Connect 8 sensors to 8 computers or connect multiple sensors to one computer!

GT-TP \$527

VERNIER GO!MOTION

Now you can connect a motion detector directly to your computer. Use it to collect position, velocity and acceleration data. Great for ball drops and throws, air tracks etc. Includes **FREE Logger Lite software for Windows and Mac** computers. Easy to use: simply install the software, plug the Go!Motion into your USB port, now you're up and running and ready to collect, store and analyse data. **Go!Motion features:**

- Students learn experientially as they graph the motion of a ball, a cart on a ramp, pendulum motion or themselves
- Easy to use, allowing students to focus on learning scientific concepts instead of setting up the experiment
- Sensor head pivots, flip the head halfway to study the motion of a cart or flip 180° to record motion data from a tripod
- The sensitivity switch lets you customise settings to your experiment.
- Measure motion data as close as 15cm and as far away as 6m.

GO-MOT \$192

TEACHER PACK OF 8 GO!MOTIONS

Save school funds by purchasing Go!Motion Teacher packs. A pack includes 8 Go!Motion sensors with **FREE Logger Lite software for Windows and Mac**. A Go!Motion Teacher Pack enables you to connect 8 Go!Motions to 8 different computers or connect multiple Go!Motions to one or more computers!

GO-MOT-TP \$1491

VERNIER GAS PRESSURE SENSOR

The Gas Pressure Sensor has the resolution and range for use in all subject areas. Chemistry teachers will find that it has enough range for Boyle's law experiments (0 to 2.1 atm) while providing greatly improved resolution for vapour pressure or pressure-temperature experiments (0.40 mm Hg). For biology teachers, the package includes airtight tubing clamps for transpiration experiments, as well as special fittings for respiration experiments in small containers.

Includes:

- Plastic tubing with 2 Luer-lock connectors
- 2 airtight tubing clamps
- 2-way valve
- Range: 0 to 210kPa (0 to 2.1atm or 0 to 1600mmHg)
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*
- 2-hole rubber stopper with two Luer-lock adaptors
- 1-hole rubber stopper with one adaptor
- 20mL syringe
- Resolution: 0.05kPa (0.0005atm or 0.40mm Hg)

*Includes free Logger Lite software for Win. or Mac. View key ACS experiments this sensor can be used in: <http://scientific.com.au/page.php?pg=57>

GPS-BTA \$146

VERNIER MOTION DETECTOR

The Vernier Motion Detector is like a sonar device in that it emits ultrasonic pulses and waits for an echo. The time it takes for the reflected pulses to return is used to calculate distance, velocity and acceleration. The range is 0.15 to 6 meters. The Motion Detector has a pivoting head, rubber feet and a threaded hole for mounting on a tripod or similar threaded device. **Common uses include:**

- Tossing a ball and using the Motion Detector to measure the acceleration due to gravity.
- Determining the speed and acceleration of gliders on an air track or carts on a track eg the Vernier VDS track.

Specifications:

- Range: 0.15 to 6.0 meters
- Frequency of the ultrasound: 49.4 kHz
- Size: approximately 146 x 38 x 57mm
- Requires: LabQuest, LabQuest 2 or LabQuest Mini*
- Typical Accuracy: ± 2 mm
- Resolution: 1.1 mm
- Weight: approximately 283g

MD-BTD \$139

VERNIER WIRELESS DYNAMIC SENSOR SYSTEM

The Vernier Wireless Dynamics Sensor System combines a 3 axis accelerometer, force sensor and altimeter into one unit that communicates wirelessly with your computer via Bluetooth®. It can also be used as a stand-alone data logger. It's more than just a wireless sensor; it's a complete data collection system completely free of friction due to cables. The WDSS has a memory that retains up to 240,000 data points even after it has been turned off.

Includes: rechargeable batteries and charger (can use AAA batteries), bumpers for collisions, hooks for mounting either end, mounting hardware for dynamic carts and a manual. **Cable free recording uses:**

- Dynamics cart / collision trolley motion
- Dynamics cart / collision trolley collisions
- Altitude on rides etc
- Maximum sampling rate: 1,000 samples / sec.
- Resolution: 0.006N (<10N); 0.03N (>10N)
- Accelerometer (3 axis) range: +/-50m/s² (+/-5 g)
- Can be used with: LabQuest, LabQuest 2, LabQuest Mini*
- Measuring pendulum forces
- Measuring centripetal acceleration
- Studying pendulum motion
- Amusement park ride forces
- Acceleration on a swing
- **Specifications:**
- Altimeter range: +/- 200m, resolution 1m
- Force range: +/-50N
- Resolution: 0.04m/s²
- Requires Logger Pro software for Win. or Mac.

WDSS \$448

VERNIER OPTICS EXPANSION KIT

Great for Physics, photography and astronomy. Add the Vernier Optics Expansion Kit to your Vernier Dynamics System (VDS, see next page) to conduct optics experiments, such as image formation with lenses and light intensity versus distance. You can even use the kit to build a basic telescope. **Typical uses:**

- Investigating the Inverse Square Law from a point source
- Real images and the Thin Lens Equation
- Aperture, light intensity and F-Stop
- Light and distance
- Aperture and depth of field
- Colour mixing (requires Colour Mixer Kit - not included)

The Optics Expansion Kit parts snap on to the following, not included, parts: VDS track, Track or Track-Long. The light source is an energy efficient LED which is cool to the touch. A rotating disc on the light source enables you to select: a radiant object, a point source, a 2 by 1cm "L" or parallel lines for resolution experiments. **Includes:**

- Three lenses of: 100, 200, -150mm focal length in holders
- Aperture screen and holder
- Light Sensor holder
- Combination LED point and luminous light source
- Screen and holder
- Power supply

OEK \$307

REQUIRES: A Vernier **TRACK \$210** or **TRACK-LONG \$404** or **VDS (Vernier Dynamics System) \$492**

OPTIONAL EQUIPMENT: **CM-OEK Colour Mixer Kit (\$273)**, interface and sensors if used for data logging



Optics Expansion Kit on TRACK



CM-OEK Colour Mixer

VERNIER LOW-G ACCELEROMETER

This is Verniers most popular accelerometer and is suitable for most experiments. Use it for studying the one-dimensional motion of: a car (real and toy), an elevator, a pendulum bob or an amusement park ride.

- Range: $\pm 5g$ (± 50 m/s²)
- Resolution: 0.03 m/s²
- Size: 48mm x 25mm x 19mm
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link*
- Accuracy: $\pm 0.05g$ (± 0.5 m/s/s)
- Frequency Response: 0 - 100Hz
- Weight: less than 57g
- *Includes free Logger Lite software for Win. or Mac.

LGA-BTA \$157



VERNIER ETHANOL SENSOR

This sensor can be used in a wide range of tests and experiments. It can be used to determine the rate of ethanol production during fermentation and can also be used to measure the discrete amount of ethanol in a given sample.

- Range: 0% to 3%
- Resolution: 0.01% for concentration: 1-2%
- Resolution: 0.001% for concentration: 0-1%

Experiments: See our website for links to both teacher and student experiments in:

- General Biology: Sugar Fermentation (Ethanol):
- Inquiry-Based Biology: Sugar Metabolism with Yeast (Ethanol)

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

ETH-BTA \$192



VERNIER DROP COUNTER

Precisely record the number of drops or calibrate the drop size to record volume of titrant added during a titration to perform fast, accurate titrations. The Vernier Drop Counter (VDC) automatically converts the number of drops into volume. Use with other sensors e.g. a pH, Conductivity or ORP sensor to perform conductimetric or potentiometric titrations. Take the tedium out of titrations and leave time for your students to focus on the chemistry.

The VDC can be used with your own burette or with the included dispensing vessel which has been designed to keep the drop size consistent and make drop rate regulation simple and easy. Mounts on a retort stand or STIR (above).

• Requires: LabQuest, LabQuest 2, LabQuest Mini, SensorDAQ, • Requires Logger Pro software for Win. or Mac.

VDC-BTD \$175



VERNIER SOUND LEVEL METER (DB)

Unlike the Vernier microphone which measures uncalibrated sound pressure the Vernier Sound Level Meter measures sound levels from 30 dB to 130 dB. The Sound Level Meter has an LCD display, which allows you to use it as a stand-alone device OR you can connect it to any Vernier data logging interface using the included cable. **Possible uses:**

- Make and test a model of an ear and ear canal
- Monitor sound levels at concerts, malls, school halls and rooms
- Monitor sound levels outside and inside a car equipped with a stereo system

Specifications:

- Sensor: 13.2mm electric condenser microphone
- Display: 18mm 3-1/2 digit LCD
- dBA range: 30dBA to 130dBA (500Hz to 10kHz)
- Range Selector: 30 to 80, 50 to 100, 80 to 130dB
- Accuracy: 1.6 % at 94dB
- Use with but does not require: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link
- Power: One 9-volt battery
- Weighted ranges: dBA and dBC
- dBC range 30dBC to 130dBC (30Hz to 10 kHz)
- Resolution: +/-0.1dB
- Response: Slow, 500ms; Fast 200ms

SLM-BTA \$291



Wish List i.e. the things I need to teach with!

Order code	Description	Qty.	Cost	Requested by



DUAL AMMETER AND VOLTMETER - ANALOGUE

Eight ranges can now be measured on just one meter. Simply slide the selector switch left or right to measure volts or amps and to access the correct volt or amp terminals. Amp ranges: 100 μ A, 100mA, 1A and 5A, Volt ranges: 100mV, 1V, 10V and 50V. Size: 165L x 56H x 115W (mm).

SC13150 \$35 SPECIAL \$20 each FOR 5 OR MORE

MULTIMETER - DIGITAL - BEST SELLING

Why buy bench meters when you can save heaps plus get extra features: fuse protection (easier and cheaper to replace than a bench meter), transistor and diode checker. With probe type test leads and 9V battery. Note the SC5000 does not include the optional SC2260 Multimeter Case. Size: 78x27x125mm.

Ranges: DC volts - 200mV, 2V, 20V, 200V, 1000V AC volts - 200V and 750V

DC amps - 200 μ A; 2ma, 20ma, 200mA; 10A Resistance - 200, 2k, 20k, 200k, 2M

SC5000 \$9.50 meter without case or **\$8.50** each for 10 or more

SC5505 \$2.50 Pack of 10 fuses (M205, 200mA) to suit SC5000

SC2260 \$5.00 Zipped vinyl storage case. Size: 125x95x30mm.



SC5000 meter shown in SC2260 case

ENVIRONMENT METER AND DIGITAL MULTIMETER

Multimeter and environment meter that includes: a sound level meter; light (lux) meter; indoor humidity meter and temperature meter. The light and humidity meters are ideal for environmental and agricultural studies or checking greenhouse and hydroponic setups. Includes a non-contact AC voltmeter for locating power cables.

Specifications:

- Basic DCV accuracy: 1%
- DC voltage: 400mV, 4V, 40V, 100V, 250V ($\pm 1\%$)
- DC current: 400 μ A, 4mA, 40mA, 400mA, 10A ($\pm 1\%$)
- Resistance: 400 Ω , 4k, 40k, 400k, 4M, 40M ($\pm 1.5\%$)
- Temperature: -20°C to 750°C ($\pm 1.2\%$)
- Frequency: 5Hz, 50Hz, 500Hz, 5kHz, 500kHz, 10MHz ($\pm 1.2\%$)
- AC voltage: 400mV, 4V, 40V, 100V, 250V ($\pm 1\%$)
- AC current: 400 μ A, 4mA, 40mA, 400mA, 10A ($\pm 1.2\%$)
- Capacitance: 50nF, 500nF, 5 μ F, 50 μ F, 100 μ F ($\pm 3\%$)
- Dimensions: 170 x 78 x 48mm (HWD)

SC5039 \$110 SPECIAL \$89



VERNIER CURRENT PROBE

Use the Current Probe to measure currents in low-voltage AC and DC circuits like "battery and bulb" circuits, it can also be used in electrochemical experiments. Use with the Differential Voltage Probe to explore Ohm's law, phase relationships in reactive components etc. Use multiple sensors to explore series and parallel circuits. **Specifications:**

- Range: ± 0.6 A
- Maximum voltage on any input: ± 10 V
- Input Impedance (between inputs): 0.1 Ω
- Supply voltage: 5 VDC
- Input Impedance (to ground): 10 M Ω
- Resolution: 0.31 mA

DCP-BTA \$69



VERNIER DIFFERENTIAL VOLTAGE PROBE

Use the Differential Voltage Probe to measure low-voltage AC and DC circuits. This system is ideal for use in most "battery and bulb" circuits. Use it with the Current Probe to explore Ohm's law, phase relationships in reactive components, and much more. This differs from the Vernier Voltage Probe in that neither clip is connected to ground. Use multiple sensors to explore series and parallel circuits. **Specifications:**

- Input voltage range: ± 6.0 V
- Maximum voltage on any input: ± 10 V
- Input Impedance (to ground): 10M Ω
- Differential Impedance: >20 M Ω

DVP-BTA \$69



VERNIER VOLTAGE PROBE

One Voltage Probe is included with each LabPro. This sensor can be used just like a standard volt meter. In physics classes, it can be used to measure the potential in direct-current or alternating-current circuits. In chemistry, physical science, or middle school science classes, students can measure voltages developed in a variety of electrochemical (voltaic) cells. Can't be used with other sensors in the same circuit (use DVP-BTA with other sensors). **Specifications:**

- Range: -10 to +10V
- Resolution (LabPro): 0.005 V (5 mV)
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

VP-BTA \$21



ELECTRICITY KIT ADVANCED - IEC

This kit is designed to perform important basic experiments with electricity. Use it to study electric circuits, switches, lamps, voltage, current, resistance, Ohm's law, series and parallel circuits, the heating effect of electric current, fuses, conduction through liquids, magnetism, electromagnetism, inductance and capacitance. The kit also permits the study of AC electricity, electromagnetic induction, laminated cores, transformers, inductors, eddy current losses and heating, impedance and reactance. Supplied in an aluminium case. **DESIGN FEATURES OF THE KIT and CONTENTS:**

- The ventilated housings for the components are transparent so the components are easily visible to the students
- The front labels are bright, simple and easy to read and there are labels on the sides of the housings
- Connections are by printed circuits for extreme reliability and strong 4mm banana plugs
- All cables have banana plugs moulded to the cables for maximum strength and reliability
- The multimeters are digital with 9V batteries fitted, ranges: AC and DC Volts and Amps, Ohms, Capacitance up to 20 μ F
- Small parts are housed in strong plastic containers with labels to show the contents
- Reels of copper and resistance wires are provided for basic experiments and the study of fuses
- Both 25V and 12V lamps are provided for various experiments
- AC/DC Power Supply
- Digital Signal Generator
- Aluminium Disk & Axle
- Laminated "U" and "I" cores
- 3 Digital Multimeters
- 3 Lamps + spare bulbs
- Motor generator
- A 300, 1200 & 2x600 turn coils
- 3 Resistors
- 1 Potentiometer
- Connecting Leads
- Parts to makes 2 motors
- 2 Capacitors
- 1 Connector
- Alligator Clips
- Plate electrodes
- Thompson's Ring
- Compasses
- 2 Switches
- Roll Copper Wire Roll
- Constantan Wire
- Roll Fuse Wire
- D Sized Battery Holders
- Bar Magnets

EM1763-020 \$1112



BANANA PLUGS AND ALLIGATOR CLIPS

Black or Red Banana Plug, approximately 45mm long. Sold as a pack of 10.

SC15145 \$4 SPECIAL \$2 each FOR 10 OR MORE Black, pack of 10

SC15142 \$4 SPECIAL \$2 each FOR 10 OR MORE Red, pack of 10

Alligator Clips with coloured plastic sleeves and 'release levers' making them ideal for little fingers. Wire can be soldered or connected via the screw terminal to the alligator clip. Alternatively you can remove the coloured plastic sleeve and connect a 4mm banana plug to the built-in socket. Also available without plastic sleeves. Approximately 60mm long. Sold as a pack of 10.

SC15133 \$4 SPECIAL \$2 each FOR 10 OR MORE Black, pack of 10

SC15130 \$4 SPECIAL \$2 each FOR 10 OR MORE Red, pack of 10

SC15127 \$4 SPECIAL \$2 each FOR 10 OR MORE Un-insulated, pack of 10



SC15142



SC15130

HOOK-UP LEADS AND CABLE SETS

Heavy duty stranded, copper cored insulated leads terminated at both ends with 60mm long alligator clips, ideal for lighting and similar circuits and where multiple alligator clips are to be connected to one another. Sold as a pack of ten.

SC15157 \$16 SPECIAL \$8 each FOR 5 OR MORE Black, pack of 10

SC15160 \$16 SPECIAL \$8 each FOR 5 OR MORE Red, pack of 10



SC15157

Bagged packs of ten mixed colour leads. Length, including alligator clips, is approximately 500mm. The alligator clips are soldered on. Comprises: two red, black, white, green and yellow leads. Available in standard or heavy duty versions. Cheaper and easier than making your own leads.

SC5502 \$8.10 pack or **\$6.20** per pack for 10+, clip length 50mm, heavier duty cable 2mm dia.

SC5501 \$5.30 pack or **\$3.95** per pack for 10+, clip length 40mm, standard duty cable 1.5mm dia.



KNIFE SWITCHES

These sturdy knife switches feature plated brass poles and knives making them ideal for general use. Comes with binding posts for easy wire connections. Pictured is a double pole, double throw switch.

SC13858 \$3.00 SPECIAL \$1.80 each FOR 5 OR MORE SPST, single pole, single throw

SC13861 \$3.50 SPECIAL \$2.20 each FOR 5 OR MORE SPDT, single pole, double throw

SC13864 \$4.60 SPECIAL \$3.10 each FOR 5 OR MORE DPST, double pole, single throw

SC13867 \$5.50 SPECIAL \$3.70 each FOR 5 OR MORE DPDT, double pole, double throw.



SC13867

MES LAMPHOLDER BASE - PACK OF 10

Base with screw terminals and mounting screw holes, takes screw-in torch bulbs.

SC92005 \$7 SPECIAL \$4 pack of 10 **why pay up to \$1.20 EACH (yes "each" is correct) elsewhere**

Search TORCH BULB on our website for suitable lamps.



RESISTANCE COILS - AUSTRALIAN MADE - IEC

1% tolerance for accuracy. Current rating varies with the resistance value, dissipation is about 5W continuous or up to 10W intermittent. Australian made.

EM2702-001 0.5Ω \$16

EM2703-001 1Ω \$16

EM2704-001 2Ω \$16

EM2705-001 5Ω \$16

EM2706-001 10Ω \$16

EM2707-001 20Ω \$16

EM2708-001 50Ω \$16

EM2709-001 100Ω \$16

OR \$14 each for 10+ (can be mixed)



RESISTANCE SETS - AUSTRALIAN MADE - IEC

Set of 7 resistors: 10, 20, 50, 100, 200, 500 and 1000 ohms. In robust housing with 4mm socket connections to each resistor. Each resistor can take 12 volts. 190x75x65mm. Low voltage use only.

EM2710-001 \$78 OR \$72 each for 5+



EM2710-001
EM2710-002 is very similar

Set of 8 resistors: 1, 2, 3, 5, 10, 15, 20 and 25 ohms. Maximum applied voltage is from 4 to 12 volts depending on the resistor's value. 190x75x65mm. Low voltage use only.

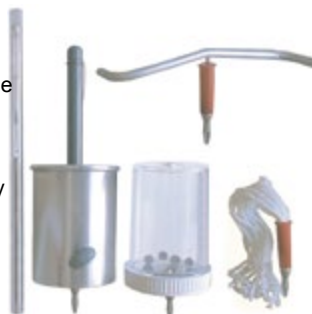
EM2710-002 \$87.80

VAN DE GRAAFF ACCESSORY KIT

Seven VDG accessories manufactured by and only available from Scientrific®:

- NEON LAMP in tube, it lights in an electric field and can show polarity of charge
- WOOLLEN STRANDS on a 4mm plug, when charged the wool stands on end
- FARADAY PAIL on a 4mm plug, made of spun aluminium
- CONDUCTIVE BALL on a plastic rod, the ball swings madly in an electric field
- CONDUCTIVE BALLS in a phial with 4mm plug, the charged balls dance madly
- POINT DISCHARGE PIN and WHIRLER pivot, shows point discharge
- WHIRLER spins on the point discharge pin to demonstrates 'electric wind' and repulsion of similar charges

SC1002 \$120



VAN DE GRAAFF GENERATOR - IEC

BRAND NEW MODEL WITH NEW CENTRAL COLUMN AND TRUE VARIABLE SPEED CONTROL. Features an extremely easy belt change and really solid, almost indestructible, mirror finished 250mm diameter stainless steel dome and 80mm diameter discharge ball. Overall height is 800mm. Made by IEC in Australia and so all parts are readily available.

We've taken this Van de Graaff to trade displays and teachers just loved it! A powerful DC motor (which enables true speed control rather than the torque control in previous models) drives a pulley located above the base. The external pulley makes changing the belt very easy. The discharge ball is attached to a wand which can be left free standing in a holder on the side of the base. Output is approximately 400kV.

EM4134-101 \$480 introductory special \$450



VAN DE GRAAFF BELTS - IEC

NEW SILICON VAN DE GRAAFF BELTS GREAT FOR HUMID ENVIRONMENTS

Have you ever experienced a problems getting a good spark in humid conditions? Then you will be pleasantly surprised using one of these new belts which are **designed to work in humid conditions!** Why? Because rubber belts tend to absorb atmospheric moisture (humidity) whereas these silicon belts will not!

PA4137-010S \$24.40 SILICONE belt for all IEC 200kV models (200mm diameter domes)

PA4138-010S \$24.40 SILICONE belt for all IEC 400kV models (300mm diameter domes)



AIR CORED SOLENOID - IEC

700 turns of 3 amp enamelled copper wire. Use with a Current Balance or Mass Of Electron apparatus for experiments on the magnetic effects of an electric current. Size: 160x77x67mm. Commonly used as pictured with the Current Balance (below).

EM0090-001 \$68.30



EM1230-001 Current Balance mounted on EM0090-001 Air Cored Solenoid

CURRENT BALANCE

Used with the IEC Air Cored Solenoid (as pictured) to investigate the forces between electric fields and a current carrying wire. The assembly attaches to the end of an IEC Air Cored Solenoid. Made of a tough printed circuit board with an integral pointer to indicate balance as the attached rider weight is adjusted. In operation 0 to 6V DC is applied to the current balance's 4mm sockets and is varied by a rheostat (not included), another power supply (0 - 20V DC) is connected to the Air Cored Solenoid. Small weights (not included) are used to restore balance as voltage is varied and currents in both circuits are recorded. Meters are not included. For accuracy a Constant Current Power Supply (see LB2622-001) should be used to overcome current changes caused by heating in conductors.

EM1230-001 \$55.60



EM2220-001

MUTUAL INDUCTION APPARATUS - IEC

Two movable coils with a removable iron core, the primary inner core has 450 turns of heavy wire and sits within a secondary coil of 1300 turns of fine wire. Ideal for magnetic field and induction experiments to demonstrate that an induced potential is produced either by the movement of a permanent magnet or an electromagnet or by the change of current in one coil. With instruction sheet and experiments. Outer coil 125 x 50mm.

EM2220-001 \$75.10

ELECTRIC MOTOR KIT - HODSON - IEC

Designed to help teach electromagnetism and demonstrate how electric motors work. **Makes 2 motors.** Simple to assemble with easily wound armatures. Once assembled the motor is sturdy allowing easy storage and handling as a working unit or it can be dismantled and re-used. Needs a "D" cell or a 1 to 2 volt supply. Even runs off AC by giving the rotor a starting twist! Parts: rotors, axles, end plates, magnets, iron yokes, reels of wire, instructions, storage jars and assembly sheet. The original **GENUINE IEC AUSTRALIAN** made product, not a knock-off. All parts are available as spares.

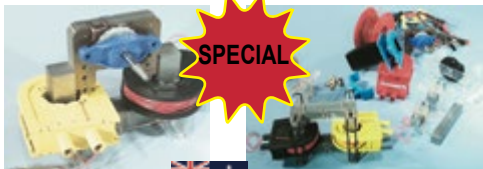
EM2193-201 \$29.30 NOW JUST \$27 per set for 5 sets or more. Each set makes **two** motors.

**INDUCTION KIT - HODSON - IEC**

The genuine designed and made in Australia IEC Induction Kit not an imported knock-off. This is the best product we have seen to help teach: Induction and transformer action, magnetic fields, eddy currents - losses and laminations, Thomson's ring experiment, measuring currents, AC/DC motor theory, magnetic braking, Lenz's Law.

With laminations to make 'U' and 'I' cores plus solid iron bars, coil bobbins, coil winder, squirrel cage (induction) motor, magnetic spinner for basic AC motor, cylindrical and bar magnets, axle for magnetic spinner, conductive disc for eddy current experiments and magnetic damping, compass, reels of wire, labels, aluminium ring for Thomson's Ring experiment, plastic frames, cables, alligator clips, Instruction and Experiment Manual. All parts are available as spares.

EM1973-001 \$161 or \$148 each for 5+



Squirrel cage motor

Complete Hodson Induction Kit

HAND DRIVEN IEC MOTOR GENERATOR SET - IEC

The IEC Hand Driven Motor / Generator is a precision 2 pole rotor with a DC split ring commutator plus AC slip rings. It can be used as a motor or as a generator. It is complete with a removable MES torch bulb in a holder with 4mm banana plugs. Two LED's mounted in the end of the motor provide an indication of voltage input or generator output and voltage polarity.

The **Generator** can be run by attaching the provided horseshoe magnet to the top of the motor frame and turning the hand-crank. For a brighter output the MES lamp and holder can be connected.

The **Motor** can be run by attaching the provided horseshoe magnet to the top of the motor frame and connecting the motor to a 6 volt DC power supply after removing the MES torch bulb and holder.

While the above configurations will suffice for most school users there are many other possible experiments that will have tremendous appeal for advanced school users, TAFEs and universities.

The motor can also be used with the electromagnets in the EM1973-001 Hodson Induction Kit (above).

EM1758-001 \$108



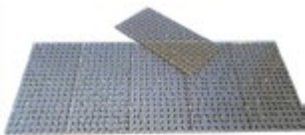
Terminal side of EM1758-001

MAGNETIC THEORY PLATE

A transparent 100x75x6.3mm plastic plate holds small, free to rotate metal bars. A magnet placed on the plate makes each bar take up the shape of the magnet's magnetic field. The metal bars are blackened for greater visibility. Great for overhead use.

Contains 162 metal bars, arranged in 9 x 18 rows. This new product contains far more bars than the product we used to sell. This product is also innovative as it has small lugs that allow multiple plates to be attached along the long side. Pictured are 5 plates attached side by side with a 6th lying atop. The plates can be detached for easy storage or permanently glued to create a larger plate.

SC7192 \$16 each

**VERNIER MAGNETIC FIELD SENSOR**

This sensor, which uses a Hall Effect transducer, is sensitive enough to measure the earth's magnetic field. It can also be used to study the Inverse cube relationship and fields around permanent magnets, coils and electrical devices.

- Low Sensitivity: Range: -6.4 mT to +6.4 milliTesla mT
- High Sensitivity: Range: -0.032 mT to +0.032 mT
- Accuracy: $\pm 1\%$ of F.S.
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, GoLink*
- Resolution 0.004 mT
- Resolution 0.0002 mT
- Operating Temp: 0 - 70°C
- *Includes free Logger Lite software for Win. or Mac.

MG-BTA \$102



MG-BTA with tip at right angle and straight

INDUCTION (RHUMKORFF) COIL - IEC

High voltage induction coil with a removable secondary winding. The fused primary is wound on a laminated electrical-steel coil, it requires 4 to 6V DC, input is via 4mm banana sockets. The vibrating contacts are easily adjusted and are made of tungsten. The coil produces a 25mm spark between adjustable needle points which plug into 4mm sockets. Removing the points allows the high voltage to be fed to other equipment.

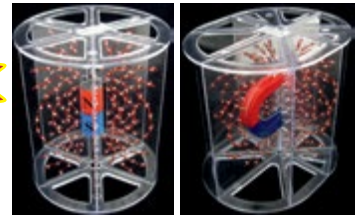
EM3450-001 \$303



EXTRA LARGE MAGNETIC FIELD DEMONSTRATOR

A large, two part, easy to see Magnetic Field Demonstrator. One demonstrator has a cut-out to take the supplied horseshoe magnet, the other one has a cut-out for the supplied cylindrical magnet. The myriad of small, free spinning compass needles show the magnetic lines of force. Visually stunning, easily seen by seated students.

SC14000 \$79 SPECIAL \$59



MAGNETIC FIELD DEMONSTRATOR

Very fine iron filings are suspended in a clear fluid enclosed in a plastic case with see-through top and sides. When shaken the filings disperse evenly. Bringing a magnet under the case allows the filings to take up the shape of the magnet's field. Students can then describe the magnet's magnetic field by observing the filings. Size: 102 x 190mm.

SC7195 \$22

MAGNETIC FIELD DEMO - 2 PIECE WITH MAGNETS

This two piece Magnetic Field Demonstrator consists of a see-through cube and plate made from clear acrylic. Inside the cube and plate are iron filings suspended in a clear viscous liquid. Also supplied are a horseshoe, bar and cylindrical magnet. The three magnets and casings are packed in protective styrofoam.

The Cube is approximately 75x75x75mm, the core is hollow allowing for the cylindrical magnet to be inserted.

The Plate is approximately 155x90x10mm, it is ideal for use on an overhead projector.

SC13999 \$67 SPECIAL \$42



Magnetic Field demo 3 piece Oil Filled SC13996

ELECTROMAGNETIC FIELD COIL DEMO SET

Copper wire coils are wound through sealed, clear plastic cases containing iron filings suspended in oil. In operation about 3 volts DC is applied to any one coil, the iron filings then take up the shape of the magnetic field around the coil / conductor. The shapes are: rectangular coil / straight conductor, round coil / circular conductor and spiral coil / solenoid. The coils can be mounted on an overhead projector for classroom viewing. Note these units need some tapping to get a really well defined field.

SC13996 \$70

QUALITY AUSTRALIAN ALNICO MAGNETS

SC6030 \$11 pair of 75x10x15mm Alnico bar magnets with keeper and wooden spacer

SC6031 \$13 horseshoe Alnico magnet 50mm high, 30mm between the poles



NEW LARGER SUPER MAGNETS

A pair of very strong, extra large 'Super Magnets' made from Neodymium Iron Boron (NdFeB). Size: 28.2mm long x 19mm diameter. Supplied with or without protective plastic sleeving. We strongly recommend the sleeving to prevent the magnets chipping and possibly causing an eye injury. These magnets are not quite as strong as our SC4400N or SC4401N super magnets.

SC5881 \$17 pair unsleeved

SC5882 \$23 pair sleeved



Unsleeved and Sleeved Super magnets

MAGNET - SUPER

Sintered from Neodymium Iron Boron. Super magnets can be up to thirty times stronger than an iron magnet and will lose just 1% of its magnetism in the first ten years. 22mm diameter x 10mm thick. They're so strong that they are almost inseparable without magnet tongs!

SLEEVING: "Super" magnets are brittle and can chip and create flying pieces. For magnet protection and personal safety we can fit plastic sleeving, we strongly recommend the sleeving.

SC4400N \$10 each, unsleeved or **\$90** for 10

SC4401N \$13 each, sleeved or **\$120** for 10

MAGNET - TONGS

Designed, manufactured and sold only by Scientrific®. Super magnets are so incredibly strong that they are very hard to separate but these tongs make super magnet separation a breeze. Supplied as two tongs. Suitable for our SLEEVED magnets - see above.

SC1009 \$26 (for 22mm sleeved magnets)



Magnet not included

MAGNET - REMAGNETISER

Designed, manufactured and sold only by Scientrific®. A "SUPER" neodymium iron boron magnet is encased in a heavy duty plastic body to overcome the problems of chipping and magnet separation when using bare super magnets. With directions to easily remagnetise bar or horseshoe magnets. Lots of other uses e.g. showing magnetic fields. Size: 140x30x10mm.

SC1008 \$35



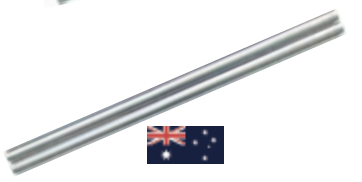
SC1008

'MAGNETIC' TUBE KIT - RESONANCE TUBE

Designed, manufactured and sold only by Scientrific®. Consists of a 990mm long aluminium tube and a similarly sized PVC tube. The PVC tube is painted to make the tubes look alike.

When a sleeved or unsleeved 22mm 'Super Magnet' is dropped down the aluminium tube it takes about 10 seconds to 'float' down the aluminium tube! When dropped down the PVC tube it falls 'normally'. Students have to explain why the 'Super Magnet' reacts so differently in the apparently identical tubes BOTH of which are NON-MAGNETIC. Another use for the aluminium tube is to strike it on its end to demonstrate resonance - adjust the resonance by sliding your hand along the tube.

SC1011 \$59



ELECTROMAGNET - IEC

Australian made by IEC. Twin 10mm diameter iron cored solenoids are attached to a strong iron bar with lifting hook. Plated to prevent rust.

With bottom bar and hook allows objects or weights to be suspended for experiments in magnet strength, efficiency and work performed. Overall size: 100x100mm. Takes up to 12 volts DC.

EM1820-001 \$52.70





BALANCES - SPRING

A range of QUALITY spring balances imported by us to provide better prices for our customers. Marked in grams on one side and Newtons on the other. With a zero adjustment. Colour coded for easy identification.

SC13564 \$5 2.5N blue

SC13567 \$5 5N green

SC13570 \$5 10N brown

SC13573 \$5 20N red

SC13576 \$5 30N white

SC13579 \$5 50N light brown

SC7057 \$10 10,000g/100N white

BOSSHEAD - HEAVY DUTY

Heavy duty German designed bosshead, made of die cast alloy with a nickel plated screw head. Supports rods up to 20mm. You will be hard-pressed to break this very solid bosshead!

SC14137 JUST \$5.50

BURETTE CLAMP

Double Burette Clamp made from die-cast aluminium with plastic covered spring jaws. Takes burettes up to 25mm OD, fits on a support rod up to 13mm OD.

SC14161 \$8.60

SUSPENSION CLAMP

This Suspension Clamp is ideal for suspending thermometers and drying tubes. Made from cast aluminium, the aluminium hook is located 11cm from the support rod and the overall length is 16.5cm. This clamp can be used with retort stand rods that have a diameter of up to 13mm.

SC14185 \$4.60

APRON - LIGHTWEIGHT PLASTIC

A lightweight, re-usable green plastic apron with velcro ties. Overall size, excluding ties, is 88cm high by 78cm wide. All edges are hemmed. If the aprons are too long the material can be easily cut.

SC92012 \$50 per pack of 10 **OR** 5 packs or more just **\$45** per pack of ten

LAB (DUST) COATS

A range of imported, low cost, white, Lab Coats (Dust Coats) with two external pockets and an undivided internal breast pocket. Made with hidden press studs for 'doing up'. Raglan sleeves. Made from Poly/Cotton.

SC4981 \$25 each SEE WBSITE FOR SIZES AND ORDERING INFO

DABCO UNITRAYS

The Dabco Unitray is made from high impact styrene and has many applications including the storage and transportation of small pieces of lab equipment eg dissection equipment, containers or bottles. Benefits include: better storage, safer equipment and chemical handling and convenient transportation.

The Unitray can be used with and without a 10 place insert (sold separately).

With the insert fitted the tray is divided into ten spaces big enough to hold:

- 10x50ml Dropper Bottles or
- 10x25ml Dropper Bottles.

With the insert removed the tray can hold 10 x 60ml Plastic Dropper Bottles.

SC9100 \$4.20 each or **\$4.00** each for 10+ or **\$3.80** each for 25+ **Unitray with Insert**

SC9103 \$2.90 each or **\$2.70** each for 25+ **Unitray WITHOUT Insert**

SC9106 \$1.30 each, **Unitray Insert only**

DABCO UNITUBES

Dabco Unitubes are incredibly useful in science laboratories in both primary and secondary schools plus TAFE's and universities. UniTubes are a free-standing set of six **numbered** tubes used for the lab testing of chemicals, growing botanical specimens etc. Being free-standing they require no test tube rack. Made from safe, recyclable, clear polycarbonate. The low cost alternative to glass test tubes.

SC9109 \$3.40 each or **\$3.10** each for 10+ or **\$3** each for 25+

SAFETY GLASSES

Clear, wide distortion free lenses made of durable polycarbonate for medium impact resistance. Upper safety lip helps to stop particles entering from above. Comfortable, strong protective side arms, vented to prevent fogging. Large enough to go over spectacles. Well priced. Good fit. AS1337 compliant.

SC2050 \$4.95 each or **\$4.40** each for 12+ or **\$3.90** each for 100+

These safety glasses are of a lighter construction than the ones above. They have a much finer arm and don't have a wide lip over the brow. Not large enough to go over spectacles. Made of medium impact resistant polycarbonate, coated for scratch resistance. Comfortable to wear. Unisafe brand. AS1337 compliant.

SC4955 \$3.80 each or **\$3.50** each for 12+

SAFETY GLASSES STORAGE SOLUTION

Here is a great storage solution for safety glasses. Simply hang on the wall using the large eyelets or hang over a door using the provided hooks. Stores up to 20 pairs of safety glasses. Made of sturdy PVC sheet with reinforced edges. Backing is a very serviceable navy blue, pouches are of clear plastic. Very economical and cheaper than making your own. Size: approximately 1345x475mm.

SC9010 \$25 SPECIAL \$20

STOPWATCHES

New Model at a GREAT PRICE

A new stopwatch at an incredibly low price. Displays: hours, minutes, seconds, day, date, month, 12 and 24 hour mode, lap times to 30 minutes, accuracy 1/100th second. Daily alarm and hourly chime.

SC13795 \$6.20

MOST POPULAR STOPWATCH

Runs on an included AA battery. No protruding knobs to break. Resolution: 1/100th second. Lap times to 30 minutes, auto restart, 12 or 24 hour clock, with date. Soft pouch, lanyard, desk mount. Recommended.

SC7060 \$22 or **\$20** each for 10 or more



SC2050



SC4955



SC9010

SC13795



SC7060

BALL AND RING - IEC

Demonstrates diametral expansion of metal due to heat. 200mm long.

HL0200-001 \$16 or **\$14.40** each for 5+



HEAT CONDUCTIVITY RING - IEC

Australian made by IEC. Metal ring with brass, aluminium, iron and copper strips with small dimples to take wax. Heating the ring reveals different thermal conductivities before the wax melts. 250x250x10mm.

HL0910-001 \$27.30



CALORIMETER - COMPLETE WITH INSULATION BOX AND LID

Student calorimeter, electrically heated with double aluminium cups. Consists of an inner 70 x 65mm diameter aluminium can and an outer 100 x 100mm aluminium can. For heat insulation the two aluminium cans are separated by a removable 'can' of polystyrene insulation. The removable top incorporates a thermometer holder, stirrer and a removable heater with 4mm banana sockets. A separate cover is provided for when the heater is not used. The heating coil has a resistance of 3 Ohms. A 6 volt supply is required for operation.

SC13759 \$20.00

CALORIMETER - JOULE'S - IEC

Used to determine Joule's equivalent. A 50mm diameter nickel coated copper calorimeter cup with plastic lid. The lid supports a 2 ohm heating element, a stirrer, thermometer hole and 4mm sockets for connection to 6 volts. Refer to Calorimeter - Insulation Cup and Lid for outer insulation.

HL0840-001 \$25.40

HL0830-001 \$5.70 Polystyrene Insulation Cup and Lid To suit HL0840-001 Calorimeter

SPARES:

PA0840-003 \$3.30 2Ω element

PA0840-002 \$18.10 Insert 2Ω & stirrer

PA0840-010 \$2.60 stirrer



HL0830-001

HL0840-001

HOTPLATES - IEC

Hotplate temperature control options:

Simmerstat - provides continuous adjustment of plate temperature from warm to approximately 400°C, but does not hold the temperature to a specific set temperature, good for boiling water.

Thermostat - provides continuous adjustment of plate temperature to 300°C, maintains the temperature with greater accuracy. Plate size: 200mm wide, 280mm deep.

CH1920-001 \$250 SPECIAL \$225 Simmerstat

CH1922-001 \$315 SPECIAL \$283.50 Thermostat

CH1921-001 \$280 SPECIAL \$252 easy to clean, non stick PTFE coated top plate, Simmerstat



CH1922-001

HOTPLATES WITH MAGNETIC STIRRERS - IEC

Heating and stirring can operate together but are separately controlled. Variable speed from approximately 150 to 1,500 RPM. Simmerstat controlled Hot Plates will heat faster than thermostat controlled models but thermostats give better temperature control. Plate size: 200mm wide, 280mm deep. **NOTE: Purchase Spin Bars separately**

CH2092-001 \$480 SPECIAL \$432 Thermostat (pictured)

CH2090-001 \$415 SPECIAL \$373.50 Simmerstat

CH2093-001 \$510 SPECIAL \$459 Thermostat, non-stick, easily cleaned PTFE coated plate



CH2092-001

MAGNETIC STIRRER ONLY - IEC

Variable speed from approximately 150 to 1,500 RPM. Epoxy or PTFE coated top for easy cleaning.

NOTE: Purchase Spin Bars separately

CH2080-001 \$295 SPECIAL \$265 Epoxy coated

CH2081-001 \$325 SPECIAL \$290 PTFE coated



CH2080-001

MAGNETIC STIRRER SPIN BARS - IEC

Please purchase spin bars to suit stirrers separately as they are not supplied with stirrers:

PA3802-005 \$6.60 25mm spin bar

PA3802-010 \$7.60 40mm spin bar



VERNIER MAGNETIC STIRRER AND 'RETORT STAND'

This high-quality, variable speed multi-function magnetic stirrer has a stirring capacity of 800mL in a 1L beaker. It works efficiently with beakers with a volume as small as 50mL and with a range of different sized and shaped magnetic stirring bars. Three LED's illuminate the solution. Use with the included mains adaptor or use four C batteries (not included). Includes: Stir Station, magnetic stirring bar, mains adaptor, removable 'retort stand' and a Vernier Micro-stirrer that sits on pH and similar sensors to stir the liquid closest to the sensor tip.

STIR \$236

Stir Station (beaker, sensor & holder not included)

OVEN - DIGITAL TEMPERATURE CONTROL - IEC

Australian made double walled oven with stainless steel interior and an enamelled steel exterior. This is a FAN circulated oven with digital temperature control from 30°C to 150°C with an accuracy of +/-1°C, ideal for use not just as an oven but also as a dessicator or drying oven or possibly use as a cheap incubator if very stable temperatures are not required.

- Resolution is 0.1°C up to 99.9 degree; resolution is 1°C at 100 degrees and over.

- Accuracy: +/- 3°C typical at 100°C or +/- 4°C typical at 150°C

- Exterior: 310x330x435mm LxWxH; interior 250x250x250mm. 15 kg

- Power: 240V AC 3 AMPS.

CH2251-001 \$1151



CH2251-001 pictured CH2250-001 is similar

OVEN - THERMOSTAT

Similar to the OVEN above but with less precise thermostat control of +/-5°C around the set point from 20°C to 110°C.

CH2250-001 \$795

DIGITAL THERMOMETER - WATERPROOF

This waterproof thermometer with its 130mm long stainless steel probe is ideal for both liquid and soil temperature measurements. A slip-on cover and clip allows for safe pocket storage. Temperature range: -10 to 200°C, Resolution 0.1° C, Accuracy +/-1°. Auto shut off to conserve battery, one second sensing time

SC6526 \$34



VERNIER SURFACE TEMPERATURE SENSOR

The Surface Temperature Sensor uses an exposed thermistor that provides an extremely rapid response time, it is ideal for situations in which low thermal mass or flexibility are required. It is ideal for measuring skin temperature. For use in air only.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.
STS-BTA \$41

THERMOMETER - RED SPIRIT

Spirit filled thermometers fitted with a removable triangular anti-roll device. Length is approximately 300mm. Marked in one degree increments from -10°C to 110°C, the immersion level is also marked. The end of the thermometer has a small loop formed in the glass allowing it to be suspended from a string or hook. Sold as a pack of 10.

SC92009 \$30 pack of 10

THERMOMETER TRAYS

Made by us out of the same durable, chemical resistant, waterproof and wear resistant plastic as our magnet storage trays. To standardise, the tray is the same size as our magnet storage trays (220 x 330mm). Each tray holds 10 thermometers up to 310mm in length. Also takes thermometers with small anti-roll slip-ons. Available with anti-roll, 330mm long spirit filled thermometers, marked in one degree increments from -10 to 110°C.

SC1220 \$23 thermometer storage tray only

SC1221 \$53 tray with 10 **SC92009** anti-roll thermometers

VERNIER STAINLESS STEEL TEMPERATURE SENSOR

For use in: Chemistry, Biology, Physics, Water Quality, Physical Science and Earth Science. This rugged and durable temperature probe has a sealed stainless steel shaft and tip that can be used in organic liquids, salt solutions, acids and bases.

• Range: -25° to 125°C
 • Resolution (12 bit): • 0.08°C (- 25°C to 0°C) • 0.03° C (0°C to 40°C)
 • 0.1° C (40°C to 100°C) • 0.25° C (100°C to 125°C)

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.
TMP-BTA \$51

VERNIER WIDE RANGE TEMPERATURE PROBE

The Wide-Range Temperature Probe can be used across a wide temperature range from -20°C to 330°C. The high upper limit of the sensor allows for melting point determinations of most organic compounds. It uses Resistance Temperature Detection (RTD) technology to ensure a $\pm 0.1^\circ\text{C}$ accuracy throughout its temperature range, as well as excellent stability and repeatability. Its sealed stainless steel shaft can be used in organic liquids, salt solutions, acids, and bases. At 18 cm in length, it is long enough to extend into boiling flasks and other common glassware. Its 6 mm diameter allows it to fit snugly into openings designed for thermometers. Each unit is individually calibrated.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.
WRT-BTA \$139

NON-CONTACT INFRARED THERMOMETER WITH LASER POINTER

A professional infrared thermometer to safely measure high temperatures. With a range of -50 to 1000°C, it's suitable for educational, laboratory, research and industrial use. The laser pointer allows for accurate measurement. The unit can be mounted on a tripod with trigger lock for unattended min/max logging. **Features:**

• Supplied in a robust case • Automatic data hold • Min/Max/Avg/Difference logging
 • Backlit LCD • Tripod mount • Trigger lock
 • High and low alarm • Dimensions: 230(L) x 100(H) x 56(W)mm

SC5037 \$162.70

TRIPOD - STAINLESS STEEL

At last an incredibly well made tripod that won't fall to pieces or rust! Made from super durable and strong stainless steel rod with polished welded joints. Stainless steel also has the advantage of being a poor heat conductor making the legs that little bit cooler. Height: 200mm, top: 130x130x130mm, base: 210x210x210mm. With non-slip, non-marking rubber feet. Specially made for and only available from Scientrific.

SC92000 \$10

STAINLESS STEEL MESH MAT FOR STAINLESS STEEL TRIPOD

Made specifically for us to suit our SC92000 stainless steel tripod, not available elsewhere. The mesh size has been selected to minimise hot spots while ensuring maximum durability. Our brief was for a super safe product that could not fall off our tripod or be easily caught on cuffs and the factory really delivered! Because stainless steel (S/S) is a poor heat conductor this mat is safer than iron ones. Suits tripods with up to 145mm long sides. Sold as a pack of 5.

SC92002 \$14 pack of 5 S/S Mesh Mats

SC92004 \$64 a set of 5 S/S tripods and S/S mesh mats containing 5 x SC92000 and 5 x SC92002

GAUZE MATS -STAINLESS STEEL

Stainless Steel 15 x 15cm gauze mats sold as a pack of 10 or individually with folded safety edges that will NOT RUST. **SC14347 \$22** pack of 10. Made from incredibly sturdy thick 0.5mm stainless steel wire strands, aperture size 2.3mm. **LW3647-30 \$3.20** each, in a slightly lighter material and bigger aperture size.

WATER BATH - IEC

A general purpose stainless steel Water Bath designed to be heated by an IEC Hot Plate or Hot Plate/Stirrer. **Simmerstat controlled Hot Plates will heat faster than thermostat controlled models.** The bath is designed to take several flasks or 2 test tube stands filled with test tubes.

Water temperature can be controlled by the Hot Plate's temperature control, used this way a thermometer must be used to monitor the bath water temperature. For more accurate work without a thermometer, the IEC Temperature Controller CH4240-101 can be slid over the bath to control the Hot Plate's temperature. Used in this way the Temperature Controller plugs into the mains outlet and the Hot Plate is plugged into and controlled by the Temperature Controller to maintain the temperature with an accuracy of about 3°C.

CH4240-001 \$169 Water Bath only without temperature controller

CH4240-101 \$156 Temperature controller for Water Bath - note requires CH4240-001



SC7037
 pictured in
 and out of
 case

SC92000

Tripods so strong
 we've even stood
 on them! Will
 never rust!

SC92000
 and
 SC92002

CH4240-001 and CH4240-101
 Hotplate NOT included

AIR TRACKS - IEC

Air Tracks provide an air cushion allowing motion experiments to be easily and accurately performed with almost no frictional errors. An anodised aluminium air tube is generally supported on an optional sturdy sub-base. Kits with gliders and numerous attachments are provided to cover a large range of experiments. See our website for further information or download the User Manual.

MF0107Z-001 \$610 SPECIAL \$595 2 metre air track tube, complete with assembly & operation kits

MF0105Z-001 \$668 SPECIAL \$655 2.5 metre air track tube, complete with assembly & operation kits

LB2336-001 \$46.80 U-shaped photogate with mounting rod, suitable for AirTrack and other equipment

See our website for replacement or additional parts.



LB2336-001



Air Track, Air Source and accessories (not all are included with an Air Track)

AIR SOURCE AND HOSE FOR AIR TRACKS / TABLES - IEC

A purpose built, 240 volt air source made by IEC to work with their Air Tracks and Air Tables. Complete with a 2 metre flexible hose to connect to old or new IEC Air Tracks / Tables. Designed for low noise with a removable foam housing which also reduces noise. Electronic speed control. With convenient carry handle.

LB0115-002 \$239



VERNIER 3 AXIS ACCELEROMETER

This is really three low-g accelerometers mounted at right angles and all placed in a small box. Uses include:

- Studying the complex motion of an amusement park ride, a bungee jump or a toss in the air
- Measure the acceleration of dynamic / collisions trolleys as they roll down inclines or have force applied to them
- Measure acceleration vs. time on elevators, remote-controlled cars, bicycles or cars
- Use the accelerometer to measure the angle of tilt of an object to the nearest degree
- Range: $\pm 5g$ ($\pm 50 \text{ m/s}^2$)
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

3D-BTA \$175



VERNIER ROTARY MOTION SENSOR

The Vernier Rotary Motion Sensor is a bidirectional angle sensor designed to measure rotational or linear position, velocity and acceleration. It is used for a variety of investigations including:

- Measurement of rotational inertia
- Verification of the Law of Malus
- Measurement of linear position for experiments such as the inverse square law of light
- Measurement of linear position for diffraction patterns or interference patterns
- Requires: LabQuest, LabQuest 2, LabQuest Mini*
- Verification of the conservation of angular momentum
- Studying the motion a physical pendulum
- Requires Logger Pro software for Win. or Mac.

RMV-BTD \$298



VERNIER ROTARY MOTION ACCESSORY KIT

This kit provides a variety of items that add versatility to the Vernier Rotary Motion Sensor. Ideal to study pendulum motion, rotational inertia of disks, rings and point masses and the conservation of angular momentum. The kit includes:

- 2 89mm diameter, 6.35mm thick solid aluminum disks
- 1 steel disk with 29mm central hole
- 1 plastic hub to hold the steel disk on the 3-step pulley
- 1 380mm hollow aluminum rod
- 2 Masses with locking screws
- 1 Ultra Pulley
- 1 Ultra Pulley Swivel Mount, which allows the pulley to be mounted on the Rotary Motion Sensor

AK-RMV \$194



VERNIER DUAL-RANGE FORCE SENSOR

Vernier's most popular force sensor has two ranges: $\pm 10\text{N}$ or $\pm 50\text{N}$. It can be easily mounted on a ring stand or dynamics cart or used as a replacement for a hand-held spring scale. Use it to study friction, simple harmonic motion, impact in collisions or centripetal force. The force sensor is used for multiple experiments that are described in the following Vernier Experiment Books: Physics; Physical Science, Middle School Science.

Specifications:

- 10N Range: -10 to +10 N Resolution: 0.01 N
- 50N Range: -50 to +50 N Resolution: 0.05 N
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

DFS-BTA \$192



VERNIER DYNAMICS SYSTEM (VDS)

This is a stand-alone product i.e. you do NOT need Vernier data loggers to get a great deal of functionality. Vernier took a standard physics teaching tool and made it a whole lot better. The extremely rigid Dynamics Track / Optical Bench ensures that the heavy track stays flat and true and won't sag under use. The protective black anodised finish also makes for a very low friction surface. **Includes:**

- Combination 1.2m dynamics track/optics bench
- Standard cart without plunger
- Magnets for elastic and in-elastic collisions
- Adjustable end stops with magnet holders
- User Manual and a 500g mass
- A Motion Detector mounting bracket
- Mounting hardware for a Dual-Range Force Sensor, WDSS or Accelerometer
- Carts have magnetic and Velcro end caps
- Plunger cart with a spring-loaded plunger
- Velcro dots for elastic / inelastic collisions
- Adjustable levelling feet
- Two photogate brackets
- A rod clamp
- **Optional equipment:**
- Data logging interfaces (any brand)
- Vernier Dual Range Force sensor (DFS)
- Vernier Wireless Dynamics Sensor System (WDSS)
- Vernier Motion Detector (MTD-BTD) or Go!Motion
- Vernier Optics Expansion Kit (OEK)

VDS \$492



Plunger cart from VDS

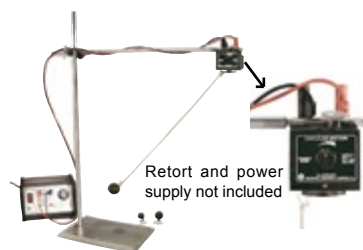
VERNIER PHOTOGATE

A traditional photogate for objects passing between the gate arms or as a laser gate for objects passing outside of the gate. Multiple gates can be connected in a daisy-chain configuration with up to four gates going to a single interface channel. Used to study free fall, air track collisions, pendulum periods, the speed of a rolling object etc. The laser gate mode requires the addition of a laser pointer or similar directed into the laser port. The laser may be some distance from the gate enabling you to measure the speed of larger objects such as a rocket, model car etc. Can be used with non-Vernier equipment like digital timers etc that require an on/off state.

VPG-BTD \$79

- Use with: LabQuest, LabQuest 2, LabQuest Mini
- Requires Logger Pro software for Win. or Mac.





CIRCULAR MOTION KIT - IEC

Genuine new model built by IEC (not a knock-off) with built-in speed control. In use, one of three rubber balls is attached to a disc and is then driven at a constant speed by the small electric motor. You get accurate results and correctly plotted graphs from all circular motion experiments. Mounts on a retort stand (not supplied). With work sheets. Uses 12V AC or DC.

MF0848-001 \$105 SPECIAL \$93



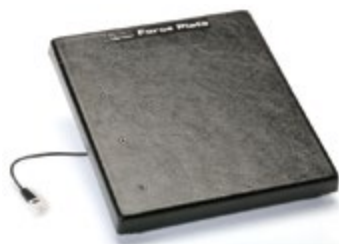
COLLISION TROLLEY - DYNAMICS CART - IEC

Australian made by IEC with safety latch to stop accidental firing. Low mass, low friction wheels are protected within the super strong and rigid non-twist body. With Velcro pads for non-elastic collisions. Accurate cart weight of 600g. Non-slip platform surface. Can be stacked for the doubling or tripling of weight. The original GENUINE product.

MF0945-001 \$110 NOW JUST \$97 a pair

NEW MODEL Exactly the same Australian made Collision Trolley as above but without the 'firing pin' and therefore at a much lower price. Cart weight is just 450 grams.

MF0946-001 \$65 SPECIAL \$58 a pair



VERNIER FORCE PLATE

About the size of a bathroom scale, the Vernier Force Plate measures the forces created by stepping, jumping and other human-scale actions. The Force Plate is great for observing forces during an elevator ride, measuring forces as you lean on a wall or observing impulse forces from soft, squishy balls that are dropped on the Force Plate. Comes with two handles which are ideal for pushing experiments. **Specifications:**

- Ranges: 800N (more sensitive) for pushing experiments
- Resolution: 0.3N or 1.2N
- Maximum non-damaging force: 4500N compression or 900N pull evenly distributed
- Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

FP-BTA \$397

GYROSCOPE AND ROTATING PLATFORM - IEC

Large modified bike wheel gyroscope, 50cm diameter, handles with safety shields and draw cord.

MF1890-001 \$166

Rotating platform for person to stand on while using the gyroscope. Great for precession demos and having fun with your gyroscope, 26cm diameter.

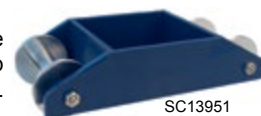
MF1891-001 \$39



HALL'S CARRIAGE

A high impact plastic body with aluminium wheels and axles mounted on steel cone bearings for low friction make up this Hall's Carriage. There is a small hole near the top end of the carriage to allow attachment of a string if desired. Approximate length is 13cm.

SC13951 \$10



KINETIC THEORY MODEL - IEC

New design. A robust 6V DC motor agitates a diaphragm at the base of a transparent acrylic tube. Small metal spheres are tossed about randomly simulating the action of gas molecules under varying pressure, volume and heat. All parts are available separately.

MF1990-001 \$191

PULLEYS - IEC

Pulleys with clamp screws in metal frames for bench fixing, IEC designed. They can also be screwed to a retort stand allowing vertical use from the normally horizontal pulley. Similarly the vertical pulley can be used horizontally when mounted on a retort stand.

MF2590-001 \$13 horizontal mount, nylon 50mm dia. pulley, 28mm jaw

MF2592-001 \$22.10 vertical mount, 70mm dia. aluminium pulley on needle pivots

IEC designed sheaved pulleys with sturdy frames of 1.6mm thick alloy with a strong, durable 50mm diameter nylon pulley, the frame has a hook at each end. The pulley has very low mass and friction. Overall length 115mm. Four models:

MF2560-001 \$7 Single pulley

MF2570-001 \$9 Double

MF2580-001 \$11 Triple

MF2582-001 \$13 Quadruple

MF2600-001 \$11.30 50mm diameter nylon pulley on mounting rod, overall length 210mm

SC7401 \$15 aluminium pulleys in line

SC7402 \$20 three aluminium pulleys in line



MF2592-001



MF2590-001



MF2600-001



SC7402



ROCKET LAUNCHER - AQUAPOD

The AquaPod is a futuristic, one piece plastic bottle launcher made of highly durable ABS plastic. It needs no assembly but does require an ordinary bicycle pump, a bottle and water. The AquaPod can launch a bottle up to 30 metres in to the air and has a built in safety valve that releases pressure at 345kPa in order to keep everyone safe from over-pressurising the entire system.

To use: half fill a 2 litre plastic bottle with water and secure it upside-down over the AquaPod. Use a bicycle pump to pressurise the AquaPod through the valve stem until the check valve inside the front leg releases pressure and water. Stand well back and give the 4.5 metre launch string a short, quick tug to launch the bottle high into the air.

SC5363 \$29

AIR BURST ROCKET

The Air Burst rocket is similar to the AquaPod but does not require water to launch. Details and pictures on our website.

AB001 \$59 Air Burst Rocket System

AB002 \$9 Spare Air Burst Boosters (pack of 60)

AB003 \$15 Spare Air Burst Rockets (pack of 2)

ORIGINAL STUDENT POWER SUPPLY - IEC

Redesigned with a sloping front and carry handles. Popular Australian made and genuine IEC student power supply, output 2 to 12V AC or DC at 5A maximum. With raised 4mm banana sockets and slightly bigger than the LB2629 below. Includes a LED overload indicator and auto resetting circuit breaker. The overload indicator prevents units with a tripped circuit breaker from being declared "dead". Note: the LB2633-001 student power supply has no overload indicator. We prefer not to sell it as we are often asked to repair them when they are in fact OK but were simply overloaded when they were declared faulty.

LB2634-001 \$158 SPECIAL \$126.50 OR \$115 each FOR 10+

STUDENT POWER SUPPLY - IEC

Genuine Australian made Power Supply from IEC with Auto Reset which does not require the user to reset (unlike the imported clone).

Also has automatic overload indicator and protection and safety 4mm shrouded banana sockets. Mains switch is on the back panel. Output: 2 to 12V AC or DC at 5A maximum. In a new smaller 173x130x85mm case, weight 1.9kg. Don't be deceived: Looks similar but not branded IEC? Then it is not made in Australia.

LB2629-001 \$139 SPECIAL \$105 OR \$99 each FOR 10+

LB2629C \$115 includes quality moulded 4mm banana plugs on 850mm long, output leads (pictured)

KNOB

32mm diameter suits all IEC power supplies. For security an Allen Key is used to tighten the screw.

SC5560 \$1.40 knob

SC3320 \$1 Allen Key



VERNIER CONSTANT CURRENT SYSTEM

The Vernier Constant Current System is a DC power source with a built-in current probe designed for use in electro-chemistry experiments, it eliminates the need for a separate power supply when performing electroplating and electrolysis experiments in chemistry. The user can set the current by tuning the dial with the system automatically adjusting the voltage. Use the Constant Current System to explore Faraday's law and determine Avogadro's Number. Rating: up to 0.6 A at 5 V DC.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

CCS-BTA \$113



Cables supplied only with LB2629C

OSCILLOSCOPE

Two channel, 20MHz dual trace oscilloscope (CRO) with large 135mm screen. The dual trace function allows you to apply two separate input signals which can be viewed alone, together or added together. Alternate mode allows two waveforms of different frequencies to be viewed. Controls are well labelled making the CRO simple to set up and use. Sensitivity 5mV (1mV with 5 times magnification) to 5V per division. Manual or auto trigger levels. A five times sweep magnification option gives a minimum sweep of 20ns per division. With 12 month warranty. We sell quality products and can RECOMMEND this oscilloscope. (We know there are cheaper oscilloscopes, we had them but sent them all back!)

SC5024A \$565 NOW JUST \$475 LIMITED STOCK

Includes two probes which are often sold as extras



ADAPTORS - ELECTRICAL

SC5072 \$7 A BNC male plug to two 4mm banana sockets, allowing easy connection of 4mm banana plugs to oscilloscopes, signal generators, amplifiers etc.

SC5073 \$3 BNC plug to RCA socket

SC5073 view of both ends



SC5072

AUDIO OSCILLATOR - SIGNAL GENERATOR - IEC

A compact, broad range signal generator for use as a high impedance signal source or as a high current source to drive a loud speaker, solenoid or similar high current devices. Sine, square and triangular wave output. Mains operated. Frequency range 0.1Hz to 100kHz in six ranges. 0 to 10V peak output into 600 ohms, three position attenuator 0dB, 20dB & 40dB. Dimensions: 327x172x83mm.

LB3754-001 \$386



PRECISION BENCH METERS

Looking for a extremely good quality meters? You won't find better than these quality Japanese and Korean moving coil meters, all are direct current (DC) meters.

SC7523 \$42 0 - 20V

SC7512 \$42 0 - 5A

SC7572 \$42 50-0-50µA

SC7541 \$46 0 - 2 & 20V (two range)

SC7550 \$49 0 - 10mA, 100mA, 1A

SC7552 \$49 0 - 100mA, 500mA, 1A (three range)



ECONOMICAL BENCH METERS

REAL VALUE

Specially imported by us to provide a range of good quality, economical meters. All are direct current (DC) meters.

SC13079 \$15 0-3-10-15V

SC13090 \$15 0-5-15V

SC13093 \$15 0-15V

SC13108 \$15 5A

SC13099 \$15 1 & 5A

SC13096 \$15 50/500mA and 5A

SC13144 \$15 50-0-50µA

SC13141 \$15 500-0-500µA



DIGITAL BENCH METERS

These digital galvanometers, milliammeters, ammeters and voltmeters offer a modern alternative to traditional analogue bench meters. Easy to read 13mm LCD screen. Supplied with a 9V battery. Size: 17L x 10W x 8H (cm). Polarity is not important as negative voltages/currents are displayed with a minus sign.

PA212 \$45 amps to 2A, resolution 1mA

SC13159 \$40 SPECIAL \$25 each **FOR 5 OR MORE** 0 to 10A DC, resolution 10mA

SC13153 \$40 SPECIAL \$25 each **FOR 5 OR MORE** 0 to 20V DC resolution 10mV



LASER RAY BOX

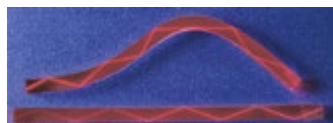
The Laser Ray Box produces five parallel, sharply defined laser 'rectangular' beams to demonstrate light's interaction with other objects. Great to demonstrate light bending or focusing due to REFRACTION and REFLECTION from mirrors, FRESNEL reflections from uncoated lens surfaces, the MONOCHROMATIC nature of laser light and TOTAL INTERNAL REFLECTION. The five laser beams are 1.5cm apart with a wavelength of 650nm. The base of the box has a magnet allowing it to be easily attached to a horizontal or vertical surface. Fully portable as it's powered by rechargeable Ni-Cd batteries and can be recharged with the supplied mains adaptor. Class 2 Laser product, no single beam exceeds 1mW making this product legal for school use. Full colour manual.

IF-583 was **\$399 SPECIAL \$375** Laser Ray Box in a Sturdy case

OPTICAL WAVEGUIDES

Two imported specially formulated rectangular acrylic bars, measuring 1x2x23cm, give an easily understood demonstration of how light can travel through a waveguide (fibre optic cable). The straight bar clearly shows light propagation using total internal reflection, the curved one demonstrates light travelling around curves as in fibre optic cables. Join end to end to extend length.

IF-547 \$99 SPECIAL \$88 includes instructions for use and explanation of fibre optic theory



IF-547, bars in HL1985-001 are very similar

LAMPHOLDER - HIGH POWER - IEC

Quality Australian made lampholder on a sturdy plastic base with 4mm sockets. 12V light bulbs up to 45W can be used, supplied with a 45W lamp.

HL2013-101 \$24.40 or **SPECIAL \$22.50** each for 10+

**MIRRORS - UNBREAKABLE - THICK**

We've had unbreakable mirrors before but not like these. The acrylic substrate is 2.7mm thick and the mirrored surface is sandwiched between the acrylic and a thick protective paint layer. (Not pictured).

IF-AM1 \$4.50 50 x 75mm **IF-AM2 \$9** 125 x 175mm **IF-AM3 \$15** 250 x 300mm

LUX (LIGHT) METER

Four ranges: .01 - 200; 200 - 2,000; 2,000 - 20,000 and 20,000 - 50,000 lux. The silicon photoconductor is on a metre long cord and has a protective cover. Supplied with a battery and a soft carry case. Great for science, environmental studies and photography.

SC5015N \$50

**VERNIER LIGHT SENSOR**

Vernier's Light Sensor approximates the human eye's spectral response and can be used over three different switchable illumination ranges. Use it for inverse square law experiments, studying polarizers, reflectivity or solar energy.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

Ranges:

• Low Range: 0 to 600 lux

• Medium Range: 0 to 6000 lux

• High Range: 0 to 15000 lux

LS-BTA \$97

SPECTROSCOPE DIRECT VISION LIGHT WEIGHT CYLINDER

A durable hand spectroscope with compound prisms and converging lenses made of optical glass. This spectroscope makes observing the spectrum of light sources very simple for students. With adjustable focus. Does not have a reference scale. Approximate Size: 2.2 x 9.7cm.

SC13387 \$30

COLOUR WHEEL - NEWTON'S

A well made colour wheel with 4 sets of the seven colours of the rainbow with some white for a better result when the disc is rotating. The resultant white is very close to perfect. The best result is obtained in daylight rather than under fluorescent lights. The disc is made of thick plastic and is quite sturdy. Strong metal base, stem, and handle. One of the better imported products that we have seen. Disc diameter: 230mm.

SC13957 \$50 why pay \$99 elsewhere? **FANTASTIC VALUE**

FIBRE OPTIC CABLE

One millimetre diameter plastic jacketed cable as used in all of our fibre optic kits, also use with lasers or laser pointers to show how light travels or to transmit data.

SC5136 \$3.50 a metre or **\$3.00** a metre for 10+ metres

**HELIUM NEON LASER**

A mains powered 0.8mW, Class 2, voice modulated HeNe laser in a clear see through case that allows you to examine the HeNe spectrum in the specially selected laser tube. See how the visible wavelengths within the laser tube are quite different to that of the emitted 632.8 nanometre laser beam. The beam can be modulated by an audio signal and the transmitted signal can be received using a suitable receiver. With a 2 year warranty and manual covering safety and common experiments. Great for experiments using Vernier's SpectroVis Plus spectrometer.

IF-HN08M-C \$620 clear cased HeNe laser



IF-HN08M-C

LASER POINTER

A Class 2 laser pointer which can legally be used in schools. Pen sized and very light, perfect for carrying in a pocket. Complete with easily replaced AAA batteries.

CUSTOM391 \$25 or **\$20** each for 5+



LIGHT BOX AND OPTICAL SET / KIT - HODSON - IEC

Australian designed and manufactured new style Hodson Light Box and Optical Kit. Spare parts for the kit are listed below.

HL2060-001 NOT \$111 now just \$95 each

NEW STYLE SPARE PARTS:



- HL2060-020 \$49.80** Light Box only, new style with slit formers
- PA2043-002 \$2.40** Lamp, QI, 12V 30W, new style
- PA2060-015 \$5.70** Experiment manual
- PA2060-026 \$39** Kit top, lenses, mirrors etc.
- PA2060-025 \$73.20** Kit base, light box, filters etc.
- PA2060-019 \$10.20** Foam box, 3 parts
- PA2060-060 \$12** 8 coloured plastic filters
- PA2060-070 \$12** 8 opaque colour plastic cards
- PA2060-011 \$4.00** Parabolic mirror
- PA2060-017 \$3.70** Hinged mirror
- PA2060-043 \$8.50** 45°x45°x90° prism
- PA2060-045 \$8.50** 60°x60°x60° prism
- PA2060-041 \$6.80** Lens biconvex, thick
- PA2060-046 \$10.50** Half round lens
- PA2060-080 \$4.00** 3 slit formers
- PA2060-012 \$4.00** Half round mirror
- PA2060-018 \$4.50** Plane mirror on foot
- PA2060-044 \$8.50** 60°x30°x90° prism
- PA2060-040 \$5.70** Lens biconcave
- PA2060-042 \$5.70** Lens biconvex, thin
- PA2060-047 \$10.50** Rectangular lens
- PA2060-023A \$16.00** Collimating Lens



HL2060-001

NEW STYLE UPGRADE PARTS FOR ALL OLD STYLE IEC HODSON LIGHT BOXES:

- PA2060-049 \$10.80** Lampholder and retainer, cable with moulded plugs, no lamp
- PA2060-050 \$17** Lampholder and retainer, cable with moulded plugs, 2 new style QI lamps
- PA2060-055 \$28.30** Top panel with collimating lens, lampholder, cable, plugs, 2 lamps
- PA2060-024 \$0.50** Light box U Shaped Keeper for new lampholder

OLD STYLE SPARE PARTS:

- PA2041-003 \$2.80** Lamp, old, 12V 36W, \$25 pack Ten
- PA2060-022 \$2.40** Sliding knob & screw
- PA2060-023 \$16** Collimating Lens in holder



PA2060-022



PA2041-003



PA2060-050



PA2060-055

SET OF 6 QUALITY SPECTRUM DISCHARGE TUBES

A new line of neatly packaged, uniform size Spectrum Discharge tubes comprising hydrogen, helium, mercury, nitrogen, neon and argon. Nominal size: 207mm long.

HL3784-001 \$166 set of 6 (just \$27.67 each, not available individually)

SPECTRUM DISCHARGE TUBES

Capillary type tubes, approximately 220 to 240mm long to suit the HL3785-001 (previous page) power supply and most spectrum discharge tube holders. We have tried cheaper tubes but they are NOT AS GOOD AS THESE.

- PA3786-006 Argon** **PA3786-007 Carbon dioxide** **PA3786-005 Helium**
 - PA3786-002 Hydrogen** **PA3786-009 Krypton** **PA3786-001 Mercury**
 - PA3786-003 Neon** **PA3786-008 Nitrogen** **PA3786-004 Oxygen**
 - PA3786-010 Sulphur** **PA3786-011 Water Vapour**
- ALL \$31.20 each**



SPECTRUM DISCHARGE TUBE POWER SUPPLY - IEC

Extra high voltage power supply to operate spectrum discharge tubes. With recessed tube support / socket, support pillar and switch. Mains operated, output: 4kV at 3mA max. Does not include spectrum tubes. The top terminal slides to accommodate different tube lengths up to 297mm. Takes the hassle out of using spectrum discharge tubes with induction coils.

HL3785-001 \$287



STROBOSCOPE - IEC

Used to determine the speed of an object, for strobe photography and lighting effects. Crystal locked and requires no calibration. The frequency of the flash is generally adjusted so that it is an equal to an object's speed, at which point the object is seen to be either stationary or moving slowly backward or forward, depending on the flash frequency. Uses a super bright xenon lamp. For easy control in darkness it has a red LED display showing flash rate per second or revs per minute. Mains operated, includes digital tachometer which is extremely accurate and very stable. The flash can be triggered internally, externally or it can be synchronised to mains voltage.

LB3808-001 \$449 MOST POPULAR VERSION complete strobe scope with no external output

LB3809-001 \$483 with socket to drive an external flash head or torch



ULTRA VIOLET LAMP

A versatile, portable longwave (LW) and shortwave (SW) UV lamp that operates from 4 AA batteries (not included) or the supplied mains adaptor. With an integral UV filter to ensure maximum UV output of 4 watts and minimal output of other light frequencies. With a 60 page book: "Story Of Fluorescence" describing fluorescence in mineralogy, scientific and industry, includes 22 pages of mineral identification.

SC6120 \$165 SPECIAL \$135 includes Story Of Fluorescence book



UV BEADS - AT A FRACTION OF OUR OLD PRICE

These beads are normally a milky white colour but when exposed to UV light they become brilliantly coloured as you can see in the attached picture. Supplied as a bag of approximately 200 mixed colours - red-purple, dark blue, yellow, red, light blue, orange, purple. Bead size is about 8.5 x 6mm with a 4mm hole. Comes with instructions for 5 different activities and suggestions for more.

SC1093 \$10 bag of APPROXIMATELY 200 beads



FLUORESCENT MINERALS - ROCKS

A boxed set of minerals that fluoresce under UV light. The rocks are: Wernerite, Hydrozincite, Calcite in marble, Travertine, Willemite, Selenite Rose, Scheelite, Hanksite, Flourite, Bituminous Coal, Hackmanite, Semi-opal, Turritella agate, Aragonite and Chalcedony. Box size: 285x175x40mm.

SC6650 \$74



MINILAB II

The Ultimate Photonics, Optics and Electronics Laboratory

This is the most impressive kit that we have ever seen, it comes with a 99 page manual with colour illustrations and photos. The MiniLab II is an all-in-one photonics laboratory for the classroom. With 28 fully documented experiments written by experienced science educators, there is no better value photonics package. Complex ideas and experiments are presented in a refreshingly simple format allowing all students an exciting and accessible learning tool. Covering everything from simple ray optics to fibre communication, atomic spectra and even electronics, the MiniLab II will provide teachers with an easy to use and versatile addition to their physics program. All required optical components, mounts and electronic components are included. Lasers, amplifier and inputs are all part of the optical bench. For full functionality other equipment may be required e.g. an oscilloscope. Only available from Scientrific®.

Topics Covered:

Reflection
Refraction through Blocks, Prisms & Lenses
Total Internal Reflection and Critical Angle
Dispersion in an Optical Fibre
Diffraction and Interference using a Laser
Lenses and Chromatic Dispersion
Diffraction: An Introduction
Emission and Absorption Spectroscopy
The Prism Spectrometer
Band Gap Energy
Young's Double Slit Polarisation
Analogue Modulation: Free Space
Optical Fibre Basics and Analog Modulation

Optical Fibre Basics and Digital Modulation
Inverse Square Law
Launching Light into Optical Fibres
Optical Fibre Sensors
Light Intensity in Fibres
Fibre Splicing and Coupling
Signal Multiplexing
Resistors
Capacitors
Light Dependent Resistors
Photodiodes and Phototransistors
Transistors
Transistor Amplifier
Operational Amplifier

MINILAB II \$1195



Three views of the MiniLab II

SPECTROSCOPE

A UK made high definition diffraction spectroscopy that shows a VERY BRIGHT and CLEARLY DEFINED spectrum to make spectroscopy an interesting visual subject for students. For simplicity there is no wavelength reference scale so that teachers can show the visible spectrum simply and clearly. The tubular metal body is very robust to withstand years of student use. Supplied in a protective plastic case. **Uses include:**

- FRAUNHOFER LINES
- FLAME TEST CHEMICAL ANALYSIS
- ABSORPTION SPECTRA THROUGH LIQUIDS
- BRIGHT LINE SPECTRA FROM DISCHARGE TUBES

Features:

- * The large diameter eyepiece aperture allows comfortable viewing of the SINGLE, LARGE and BRIGHT SPECTRUM which is CENTRALLY PLACED in the field of view.
- * The high quality optical components ensure that absorption bands show up clearly - even weak bands that are sometimes difficult to detect.
- * The LINEAR SPECTRUM is generated by a **particularly bright** transmission diffraction grating of 600 lines/mm.
- * No moving parts and no need for adjustment ensures ease of use.
- * Convenient size, 115mm x 25mm.

SC3650 \$102



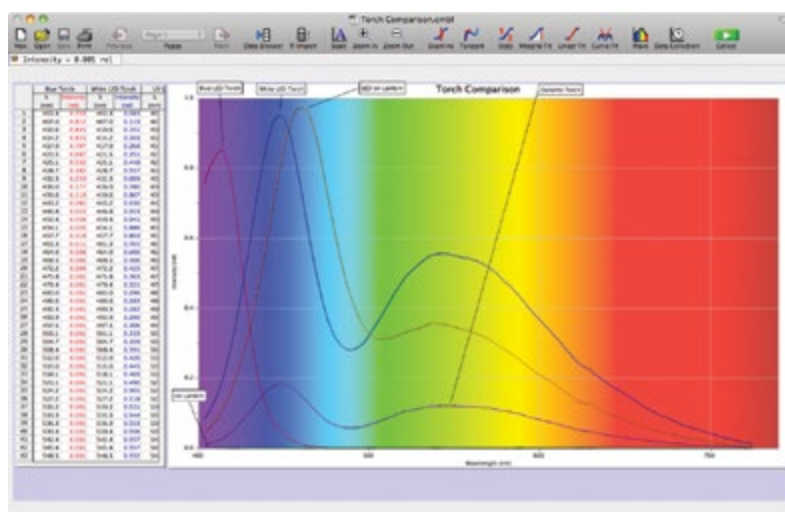
SPECTROSCOPE - STUDENT - IEC

Australian made plastic, direct vision student spectroscopy, fitted with a high efficiency grating which produces a brilliant spectrum even in poor light. The adjustable slit permits maximum resolution and the sharpest bands at predominant wavelengths, viewed directly against a scale graduated in nanometres. Dimensions 190x100x25mm.

HL3791-001 \$31.20



VERNIER SPECTROVIS-PLUS SPECTROPHOTOMETER



SpectroVis Plus uses:

- *Measure absorbance, percentage of transmittance, emissions spectra or fluorescence
- *Conduct Beer's law experiments and investigations
- *Dynamically study absorbance versus time
- *Study absorbance versus time or absorbance versus concentration
- *Conduct experiments on enzyme kinetics
- *Perform colourimetric or fluorescent bio-assays
- *Measure the emissions of gas discharge tubes, flame tests or other light sources, using the SpectroVis Optical Fibre accessory (sold separately).

Features:

- Range: 380-950 nm (VIS-NIR)
- Collects 570 values (1nm between values)
- Optical resolution (~2.5 nm)
- Fluorescence excitation 405 and 500nm
- Portable: 15 x 9 x 4cm
- Collect a full spectrum in < 1 second
- Easy one-step calibration
- Connects directly to LabQuest or to a computer's USB port
- No external power required

REQUIRES

LOGGER PRO SOFTWARE

\$404

Order code LP

www.scientrific.com.au for details

The SpectroVis Plus measures absorbance, transmittance and fluorescence plus the INTENSITY of light sources across the entire visible light spectrum. **Plugs straight into the USB port of a Windows or Mac computer running Vernier Logger Pro software and requires no other interface or power supply.** It is ideal for portable use when used with the hand-held Vernier LabQuest 2 data logger.

Collect a full wavelength spectrum (absorbance, percent transmittance or intensity) in less than one second. Once the peak wavelength is determined, you can easily determine the concentration of a solution (Beer's law) or monitor rates of reaction. With its two different excitation wavelengths, SpectroVis Plus can quantitatively measure the fluorescence spectra of many compounds, such as chlorophyll, fluorescein and GFP etc.

SVIS-PL \$809

SVIS FIBER \$122 fibre optic cable accessory for emission experiments

PLASTICWARE - NALGENE

A range of quality Nalgene plasticware, not the cheapest just the best
PLASTICWARE THAT IS AS CLEAR AS GLASS!

THE CLEAR BEAKER RANGE THAT'S AUTOCLAVABLE - TRANSPARENT - GRADUATED

Polymethylpentene (PMP) beakers with the transparency of glass, excellent chemical resistance and remarkable heat tolerance - they can be used continuously at 150°C or intermittently at 175°C. Easy to read silk-screened graduations, size code, maximum use temperature and no flame symbol i.e. don't use on hot plates. Non-wetting plastic ensures easy reading as there is no confusing meniscus.

1203-0050	\$5.00	Beaker Griffin Low-form	PMP	50 ml
1203-0100	\$6.00	Beaker Griffin Low-form	PMP	100 ml
1203-0150	\$8.00	Beaker Griffin Low-form	PMP	150 ml
1203-0250	\$10.50	Beaker Griffin Low-form	PMP	250 ml
1203-0600	\$19.20	Beaker Griffin Low-form	PMP	600 ml
1203-1000	\$23.00	Beaker Griffin Low-form	PMP	1000 ml
1203-2000	\$54.00	Beaker Griffin Low-form	PMP	2000 ml
1203-4000	\$77.60	Beaker Griffin Low-form	PMP	4000 ml
1223-1000	\$62.10	Beaker with handle	PMP	1000 ml
1223-3000	\$72.40	Beaker with handle	PMP	3000 ml

Plastic abbreviations:
 PMP: polymethylpentene
 HDPE: high density polyethylene
 LDPE: low density polyethylene
 PC: polycarbonate
 PP: polypropylene



CLEAR GRADUATED MEASURING CYLINDERS

Transparent polymethylpentene (PMP) cylinders with large moulded-in graduations that are easily read. With large ribbed bases for reinforcement and stability. Calibrated at 20°C. Non-wetting - no meniscus to confuse readings.

3665-0010	\$6.00	Graduated Cylinder	PMP	10 ml
3665-0025	\$7.20	Graduated Cylinder	PMP	25 ml
3665-0050	\$9.20	Graduated Cylinder	PMP	50 ml
3665-0100	\$12.30	Graduated Cylinder	PMP	100 ml
3665-0250	\$16.30	Graduated Cylinder	PMP	250 ml
3665-0500	\$22.90	Graduated Cylinder	PMP	500 ml
3665-1000	\$28.50	Graduated Cylinder	PMP	1000 ml

Minimum order quantities apply to some Nalgene lines. We will ring you if this affects your order.



ERLENMEYER FLASKS WITH SCREW CAPS

Transparent polycarbonate flasks with polypropylene screw caps that are liner-less and non-contaminating. Far safer than glass. Both flask and cap are autoclavable but polycarbonate loses some mechanical strength after repeated autoclaving.

Do not autoclave with the cap screwed on, just rest the cap on the flask's top when autoclaving.

4108-0125	\$13.00	Erlenmeyer Flask	PC	125 ml
4108-0250	\$17.50	Erlenmeyer Flask	PC	250 ml
4108-0500	\$27.80	Erlenmeyer Flask	PC	500 ml



A FEW OF THE OTHER QUALITY NALGENE PRODUCTS THAT WE STOCK:

2002-0008	\$2.70	Narrow-Mouth Bottle	HDPE	250 ml
2002-0016	\$3.90	Narrow-Mouth Bottle	HDPE	500 ml
2402-0250	\$6.90	Wash Bottle Unitary™ W/M	LDPE	250 ml
2411-0030	\$4.20	Drop-Dispenser Bottle	LDPE/PP	30 ml
4250-0065	\$4.30	Funnel, Analytical	PP	65 mm
4252-0100	\$6.60	Funnel, Powder, 100mm	PP	100 mm
5972-0320	\$20.50	Test Tube Half-Rack Unwire™	Blue	20 mm
6169-0010	\$3.80	Stirring Rod	PP	24.8 mm
6210-0010	\$5.80	Thistle Tube - Safety	LDPE/PP	343 mm
6219-0068	\$0.50	Disposable Dropper	LDPE	68 mm
6250-9050	\$2.30	Sample Vial	LDPE	50 mL
6320-0010	\$3.00	Forceps	PP	



To see our full Nalgene range please visit:
scientific.com.au

Where you will find more Nalgene products including narrow mouth bottles from 4ml to 1000ml.

VACUUM PUMPS

VACUUM PUMP - MAKES WATER BOIL

A chinese made pump which is quality assured by the US company's quality control. Portable and weighs just 9kg which allows one handed lifting and carrying. Quiet in operation and pulls an impressive 50 micron vacuum at a fast rate of 35 litres per minute. This two stage pump is capable of making room temperature water boil under vacuum. With a 12 month warranty.

SC8012 \$495 SPECIAL \$395 see our website for spare oil and accessories

Quality American made pump, very quiet in operation. Its low weight and carry handle make it very portable. Designed for heavy duty commercial use, so it really romps home for school use.

A maximum performance two stage pump that pulls a very high vacuum of 0.02mm Hg (20 microns) and displaces a massive 93 litres per minute for the serious experimenter. Weight 12kg, 38cm long, 14cm wide, 25cm high. With a 12 month warranty.

SC8002 \$705 see our website for spare oil and accessories



SC8012

AMPLIFIER WITH SPEAKER - IEC

A 500mW audio amplifier with a built-in speaker. A volume control adjusts volume on both the speaker and line output terminals (4mm sockets). Separate speaker on / off switch. Input signals can be applied by 3.5mm jack or 4mm banana sockets. With instructions. Mains operated.

LB0081-001 \$152

KUNDT'S APPARATUS - IEC

This Australian made apparatus is used to study the relationship between wavelength and frequency, the speed of sound, resonance and standing waves. It's also used to reproduce Kundt's experiments on wave motion inside a tube using sound and 'standing waves'. Apart from an audio oscillator, amplifier or oscilloscope (which are not included) no other equipment is needed making the apparatus quick, clean and easy to set up with no messy powders or dust required. The following topics are explained in the included Instruction Sheets:

STANDING WAVES - nodes, anti-nodes, displacement and pressure nodes in open or closed tubes.

RESONANCE - calculation of resonance, waves in tubes, 'Overtones', the fundamental 'Standing Wave'.

Experiments include:

Resonant Frequencies in open and closed tubes; Examining Standing Waves; Resonance at different tube lengths; Speed of Sound in a tube.

SW1996-001 \$291

MICROWAVE APPARATUS - IEC

Compact, portable and easy to use. Wavelength 2.8cm. The transmitter (Tx) operates on 12 volts AC or DC or from the included mains adaptor. The Tx can transmit in several modes and can be modulated by either a microphone or an internal oscillator, making extra equipment unnecessary. Output power of 10mW is ample for both classroom and field work. For total portability the receiver has a 9 volt battery (included), built-in audio amplifier, speaker and signal strength meter allowing it to be carried anywhere with no wires attached, it can also use a mains adaptor. Apparatus includes: diode probe; microphone; wax lens; hollow plastic prism; 3 metal reflector plates; diffraction grating; polarising grill; partial reflector; experiment manual. Australian made.

SW2140-001 \$712 SUPER SPECIAL \$595 SAVE \$135

RIPPLE TANK - IEC

Complete Ripple Tank with variable speed 3 volt ripple generator. Robust, light-weight tank made of high impact plastic with a distortion free glass bottom. The foldaway legs can be adjusted for height allowing use with an overhead projector. Easily adjusted phase relationship between the ripple makers. Window area 380x265mm. Includes: 12V lamp; white screen; set of flat, angled, parabolic and circular barriers; set of 6 single point blades, one straight and one saw tooth blade; ripple generator support and instructions.

SW3430-001 \$283 SPECIAL \$260

RIPPLE TANK PROJECTOR KIT - IEC

Mounts to the side of the Ripple Tank. Enables seated students to easily see the projected image.

PA3430-030 \$108

VERNIER MICROPHONE

For use in: Physics, Physical Science.

This microphone can be used to display and study the waveforms of sounds from voices and musical instruments. It is also great for speed of sound experiments.

• Requires: LabQuest, LabQuest 2, LabQuest Mini*, Go!Link* *Includes free Logger Lite software for Win. or Mac.

MCA-BTA \$69

VIBRATOR FOR VIBRATING STRINGS AND STANDING WAVES - IEC

Used for the measurement of AC frequencies, performing Melde's experiments and displaying standing waves etc. A steel rod is made to vibrate as it passes through the centre of a solenoid and between magnet poles. One end of the rod has a small hole to take a thread which passes over a pulley. The thread is then connected to a scale pan. Load the pan with weights (not supplied) to vary the thread tension. The vibrating rod creates standing waves in the thread. With instructions. Powered by 4 to 8 volts AC or by the Wave-Lab.

SW4220-001 \$117

THE WAVE~LAB - A 'STEREO' AUDIO OSCILLATOR AND AMPLIFIER - IEC

The mains powered Wave~Lab generates two very stable waves with independent frequencies and amplitudes that can be mixed or used independently. Frequency range: 0.1Hz to 40,000Hz, adjustable in steps of 0.1Hz or 1Hz. The waves' phase relationship can be varied from 0 to 360°. One wave (sine, saw-tooth or triangular) can modulate the other in either Amplitude Modulation (AM) or Frequency Modulation (FM) modes. These functions and the resulting wave shapes are easily seen on an oscilloscope (not supplied). A microphone and a line socket accept external signals. The high power outputs from 4mm banana sockets can be connected to: speakers; an oscilloscope; recording timers; mechanical devices e.g. Vibrator For Vibrating Strings SW4220-001. Large LED display shows frequencies, volume and phase settings, it does NOT display the wave shapes. Supplied with: handbook; microphone and headphones. The optional speakers are recommended.

LB3756-101 \$654 SUPER SPECIAL \$595 Wave~Lab **LB2065-001 \$96.60** Pair of Speakers to suit

WAVE MOTION APPARATUS - IEC

Demonstrates the form and propagation of longitudinal and transverse waves. Vertical rods with plastic tips are raised and lowered by cams on a shaft with a scale which is rotated by hand. A strong frame and an aluminium base.

SW4250-001 \$150 SPECIAL \$120

WAVE DEMONSTRATION SPRINGS - IEC

One long spring (20x1800mm) and one slinky spring (65x100mm), both stretch to approximately 5 metres. Both springs are high quality, tempered and corrosion resistant and when stretched along the floor they clearly and simply demonstrate wave motion.

SW4260-001 \$34

SIMPLE OSCILLATION SPRINGS

Manufactured in Australia especially for us, this 360x25mm flexible extension spring can be used with small brass weight-carriers of about 500 to 2000 grams. Vary the weights to show how oscillations change.

SC1021 \$8 each or **SPECIAL: BUY 10 OR MORE FOR JUST \$7** each

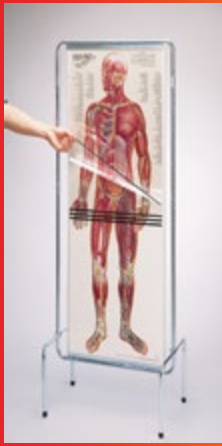


SW4250-001

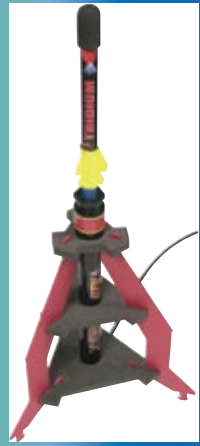


Clicking on a page number will take you to that page

Accelerometer 3 Axis - Vernier	23	Geiger Counter - Vernier	6	Planck's Constant, Photo Electric Effect	6
Accelerometer Low-G - Vernier	15	Generator AC/DC	4	Plastic Apron	20
Adam balances	2	Generator Motor Set	18	Plasticware - Nalgene	29
Adaptors - Electrical - CRO	25	Go!Link - Vernier	13	Popular Vernier Data Loggers	13-15
Air Burst Rocket System	24	Go!Motion - Vernier	14	Power House	4
Air Cored Solenoid	6, 18	Go!Temp - Vernier	13	Power Supply	25
Air Source for Air Track / Table	23	Gyroscope and Platform	24	Power Supply - Constant Current	6
Air Tracks and Air Source	23	Hall's Carriage	24	Power Supply - Student	25
Alligator Clips	17	Hand Grip Heart Rate Monitor - Vernier	7	Projectile Launcher - Vernier	3
Alternative Energy and Transformation	4-5	Heat Conductivity Ring	21	ProScope Digital Camera	12
Ammeters	25	Hotplates	21	Pulleys	24
Amplifier with Speaker	30	Hydro Electric Dynamo	4	Pyranometer - Vernier	9
Anemometer	9	IEC Student Power Supply	25	Relative Humidity Sensor - Vernier	9
Anemometer - Vernier	9	Induction, Electromagnetism	18-19	Remagnetiser	19
Apron - Lightweight Plastic	20	Induction Kit - Hodson	18	Resistance Coils and Set	17
Atomic Physics	6	Induction (Rhumkorff) Coil	18	Resistor Set	17
Audio Oscillators	25	Induction Tube	3	Resonance Tube	19
Balances - Adam Electronic	2	Inductive Braking Kit	3	Ripple Tank	30
Ball and Ring	21	Infrared Thermometer	22	RNA Models	8
Banana Plugs - Alligator Clips	17	iPad ProScope camera	12	Rocket Launcher - Aquapod	24
Beakers, Clear Plastic	29	iPhone ProScope Camera	12	Rocket System - Air Burst	24
Biochambers - Vernier	7	KidWind - Alternative Energy	5	Rocks Fluorescent	27
Biology	7	Kinetic Theory Model	24	Rotary Motion Sensor - Vernier	23
Blood Pressure Meter	7	Knife Switches	17	Safety Glasses	20
Blood Pressure Sensor - Vernier	7	Knob, Power Supply etc	25	Safety Glasses Storage Solution	20
BNC Adaptors - Electrical	25	Kundt's Apparatus	30	Salinity Sensor - Vernier	10
Bosshead - Heavy Duty	20	Lab (Dust) Coats	20	Signal Generators	25
Bottle - Wash	29	Lab Equipment	25	Signal Generator, The Wave-Lab	30
Burette Clamp	20	Lab Essentials	20-23	Simple Oscillation Springs	30
Cables and Hook-up Leads	17	Lab Power Supplies Test Gear	25	Soil Moisture Sensor - Vernier	9
Calorimeter - Joule's & Insulation	21	LabQuest 2 - Vernier	13	Solar Energy Kits and Motor	4
Camera - ProScope HR	12	LabQuest Mini - Vernier	13	Solar Motor	4
Cameras suit microscopes	11	Lampholder - High Power - IEC	26	Solar Thermal Exploration Kit	5
Chemistry	7	Lampholder MES Base	17	Sound and Waves	30
Circular Motion Kit	24	Laser Diffraction Kit	3	Sound Level Meter (dB) - Vernier	15
CO2 Gas Sensor - Vernier	7	Laser Pointer and Stand	26	Spectrophotometer	28
Collision Track - Vernier	23	Laser Ray Box	26	Spectroscope Direct Vision	26
Collision Trolley	24	Lasers - diode, HeNe, pointers	26	Spectroscope - Handheld	28-29
Colorimeter - Vernier	10	Light Box - Hodson	27	SpectroVis-Plus and Fibre	28
Colour Wheel- Newton's	26	Light Sensor - Vernier	26	Spectrum Discharge Tubes	27
Conductivity Ring	21	Logger Pro 3 Software - Vernier	13	Spectrum Tube Power Supply	27
Conductivity Sensor - Vernier	10	Lux (Light) Meter	26	Spin Bars	21
Constant Current Power Supply	6	Magic Radioactive Source	6	Spirometer - Vernier	7
Constant Current System - Vernier	25	Magnet, Alnico, Super & Tongs	19	Spring Balances	20
Current Balance	18	Magnetic Field Demonstrators	19	Stainless Steel Temperature Sensor	22
Current Probe - Vernier	16	Magnetic Field Sensor - Vernier	18	Still - see Deioniser	3
Cylinders Clear Plastic Graduated	29	Magnetic Stirrers	21	Stirling Engine	4
Dabco Unitrays and UniTubes	20	Magnetic Theory Plate	18	Stirring Rod	29
Data Loggers	13-15	'Magnetic' Tube Kit	19	Stopwatches	20
Deioniser - Reverse Osmosis	3	Magnetism	19	Stroboscope	27
Diffraction Kit Red Green Laser	3	Magnet, Neodymium, Super	19	Super Magnets and Tongs	19
Digital Bench Meters	25	Mass and Force Lab Equipment	23-24	Surface Temperature Sensor - Vernier	22
Digital Camera Kits	11	Mass of Electron Apparatus	6	Suspension Clamp	20
Digital Thermometer	21	Measuring Cylinders, Graduated	29	Temperature Sensor Wide Range	22
Disposable Dropper	29	MES Bases	17	Test Tube Half-Rack	29
Dissection - Chemistry Tray	7	Mesh Mat Stainless Steel	22	Thermometer, Digital Soil	21
Dissolved Oxygen Sensor - Optical	10	Mesh Mat Tripod Stainless	22	Thermometer Infrared	22
DNA Models	8	Meters Bench	25	Thermometer, Red Spirit	22
Drop Counter - Vernier	15	Meters - Multimeters	16	Thermometer Trays	22
Drop-Dispenser Bottle	29	Microscope Cameras	11-12	Tray - Dissection and Chemistry	7
Dynamics System - Vernier	23	Microscope Cleaning Kit	12	Tripod Mesh Mat	22
Dynamo	4	Microscope Digital Proscope	12	Tripod - Stainless Steel	22
Eddy Current Drag Kit	3	Microscopes	11-12	TRU - Power Supply	25
EKG and EMG Sensor - Vernier	7	Microwave Apparatus	30	Tube Kit	19
Electrical Accessories	17	Millikan's Apparatus	6	Turbidity Sensor - Vernier	10
Electrical Test Equipment	16	MiniLab II, Photonics, Electronics	28	Unitubes - Dabco	20
Electricity Kit Advanced	16	Molecular Models	8	USB Camera Kits	11
Electric Motor Kit - Hodson	18	Molymod Models	8	USB Digital Microscope	11
Electric Motor - Solar	4	Motion Detector - Vernier	14	UVA and UVB Sensor - Vernier	9
Electromagnet	19	Motor Generator	18	UV Lamp, Book and Beads	27
Electromagnetic Demo Set	19	Motor Generator Set	18	Vacuum Pump	29
Electromagnetism	18-19	Multimeter - Digital	16	Van de Graaff Accessory Kit	17
Energy Transformation	4-5	Mutual Induction Apparatus	18	Van de Graaff Generator, Belts	17
Environment	9	Nalgene Plasticware	29	Vernier LabQuest	13
Environment Meter	16	New products	3	Vernier Logger Pro 3	13
Erlenmeyer Flasks, clear plastic	29	Newton's Colour Wheel	26	Vernier SpectroVis	28
Ethanol Sensor - Vernier	15	O2 Gas Sensor - Vernier	7	Vibrator For Vibrating Strings	30
Fibre Optic Cable	26	Optical Lab Equipment	26-28	Voltage Probe - Differential - Vernier	16
Flow Rate Sensor - Vernier	10	Optical Waveguides, Laser	26	Voltmeters	25
Fluorescent Rocks	27	Optics Expansion Kit - Vernier	14	Wash Bottle	29
Force Plate - Vernier	24	Oscillation Springs	30	Water Bath	22
Forceps	29	Oscillator, Audio	30	Water Quality	9-10
Force Sensor Dual Range - Vernier	23	Oscillators, audio or signal	25	Water Quality Sensors	10
Frank Hertz Apparatus	6	Oscilloscope	25	Water Quality Test Kit	9
Fuel Cell Cars	4	Oven	21	Wave Demonstration Springs	30
Funnel	29	Photo Electric Effect, Planck's	6	Wave-Lab	30
Galvanometers	25	Photogate - Vernier	23	Wave Motion Apparatus	30
Gas Pressure Sensor - Vernier	14	Photonics, Electronics MiniLab	28	Wind Experiment Kits	5
Gauze Mats -Stainless Steel	22	PH Sensor - Flat - Tris	10	Wireless Dynamic Sensor System	14
Geiger Counters, Timers	6	PH Sensor - Vernier	10	Wish List	15



Periodic Table of Elements																																															
IUPAC numbering system										Atomic number				State																																	
Element symbol																																															
1	2											3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18																				
H	He											B	C	N	O	F	Ne							Na	Mg	Al	Si	P	S	Cl	Ar																
Li	Be											Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe		
Na	Mg											K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Cs	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Pb	Bi	Po	At	Rn								
Fr	Ra											Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr																					



You won't find all of the products on this page in this Shortform Catalogue however you will find them on our website



TO GENERATE A QUOTE OR ORDER AND SEE ALL OF OUR PRODUCTS GO TO

www.scientrific.com.au

FAX ONLY ORDER LINE: 1800 171 805

Educational Customers Trading Terms are: Payment Nett 7 days
 Educational Customers: Minimum order value of \$50 excluding GST
 Goods returned for credit may attract a 10 to 20% restocking fee and must be in original condition.
 Prices are for Educational Customers only and are subject to change



Scientrific[®]
 Science Education Resources

PO Box 420
 Yamba NSW 2464
 Phone: 02 6645 8111
 Fax: 02 6645 8125
 ABN 55 056 072 694

www.scientrific.com.au