

# Physics

Astronomy
Circuit Components
Conductivity & Energy
Dataloggers
Electricity
Flight

Forces, Pressure & Gravity
Gasses & Liquids
LEDs
Light & Optics
Magnets
Materials & Properties

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Full range of Physics products available at:

www.rapidonline.com

# 251 Base.co.uk

For full details and to see more

LEDPSUB 5V DC LED Array

This versatile LED Array from PSU Base enables students

to investigate the link between wavelength and colour.

The unit has 10x coloured LEDs plus a white LED fitted

Hi

into a vertical steel tower. There is a selector switch that allows each individual colour to be selected or all colours

PSU Base products visit www.rapidonline.com

simultaneously.

Order code

53-6921

Order code

53-6920



Order code **53-6912** 



VEMPSU Volt E-M Westminster 16A

The PSU Base Amplifier Unit is a 10W audio amplifier with a speaker. The speaker has an On/Off switch and there are top panel connections for output, speaker input and audio input (including input for tablet/mobile phone).

- Ideal for powering Ruben's tube
- Overall voltage gain of 60
- Output via 4mm sockets
- Input via 4mm sockets or 3.5mm jack (for mobile phone/tablet input)
- Input power 9 to 12V DC
- Power in via 4mm sockets or plug top PSU



### **PEMSUB Power/Energy Meter 20A** 6.5 to 100V DC

This power/energy meter from PSU Base can measure and display four important electrical parameters, load voltage; load current, load power dissipation, and load energy conversion. The results are displayed on a large backlit display.

- Input voltage 6.5 to 100V DC Maximum load 20A
- Connection via 4mm terminals
- **PEMMSUB Power/Energy Meter** 13A 230V Mains Supply

This mains power/energy meter from PSU Base can measure and display four important electrical parameters, load voltage; load current, load power dissipation, and load energy conversion. The results are displayed on a large backlit display.

- Used to study the power consumption of any mains appliance
- Input voltage 13A 230V AC
- · Supplied with 13A input socket and mains cable

### DCMPSUB Digital Colour Mixer + Screens & PSU

This Colour Mixing apparatus is designed to demonstrate a variety of colour concepts. The colour mixer features clear and bright red, green and blue lights, whose intensity may be individually adjusted to produce virtually any colour.

With the primary and secondary masks and screen you can use the colour mixer to demonstrate additive colour mixing, show how white light is produced, and explore the secondary colours of cyan, magenta and yellow. The setup is great for demonstrating how a television produces a full range of colours. With the use of home made coloured filters (e.g. sweet wrappers) investigations into colour transmission and reflection may be performed, as well as Investigations of coloured shadows.

· Power supply included



Order code 53-6917

255.95

### **Power Supplies & Meters**

### eisco

#### **Moving Coil Ammeters and Voltmeters**

B

21500

THANKA THANKA

A range of economical, fully enclosed moving coil Ammeters and Voltmeters with square clear acrylic front covers.

- Range of scales
- Ammeters and voltmeters
- Ideal for the physics laboratory
- 2.5% accuracy
- Scale length 60mm
- Overall size 125 x 80 x 80mm
- Zero adjustment
- · Standard terminals take 4mm plugs or stripped wires
- Eisco PH1074 & PH1080 series

Туре	Range	Order code	1+	
Ammeter	0 to 1A	52-3495	5.06	
Ammeter	0 to 2A	52-3496	5.06	
Ammeter	0 to 5A	52-3497	5.06	
Ammeter	0 to 1A / 5A	52-3498	5.40	
Voltmeter	0 to 5V	52-3499	5.06	
Voltmeter	0 to 6V	52-3500	5.06	
Voltmeter	0 to 15V	52-3501	5.06	
Voltmeter	0 to 30V	52-3502	5.06	
				565614

### Rvellemen

#### **30V, 5A DC Laboratory Dual Power Supply**

This grey DC power supply from Velleman has a dual LED display showing voltage and current and is ideal for laboratory use.

- 4-digit display · Coarse and fine
- adjustments Insulated safety
- terminals
- · Low noise temperature controlled fan
- Setting lock function
- 10mV/1mA setting resolution
- Fuse protected
- Input voltage: 220VAC (± 10%) 50/60Hz
- Output voltage: 0 to 30VDC
- Output current: 0 to 5A
- Output power: 150W max
- Operating temperature: 0 to +40°C,
- Dimensions: 117 x 190 x 270mm
- Manufacturer's part LABPS3005N



**VOLTCRAFT** VC130-1 Digital **Multimeter** See order code 55-9059 for full details of the Voltcraft VC130-1 Digital LCD Multimeter. · Perfect storage solution for classroom multimeters **Class Pack of 16** · Multimeters are held in place by a slotted foam sheet A classpack of 16 Voltcraft VC130-1 Digital LCD Multimeters Order code Туре in a deep Gratnell's Tray with lid. VC130-1 Classpack 16 86-1090 208.42 · Auto-ranging 4-digit display will give direct readings Rapid We bring of energy or power STEM to life e du cation Maximum current input 10A • Maximum voltage 20V DC, 14V AC · All electrical connections via 4mm sockets **TRVFM** Galvanometer This galvanometer is suitable for DC only ■RVFM with 4mm terminals, 35-0-35mV. **Geiger Counter** 1. din Туре Order code 1+ 52-2644 32.54 Galvanometer **=**RVFM Low Voltage Premium Joulemeter APP JOULE & MI clicks as well as a visible count on the LCD display. Robust, portable and compact • Detects alpha, beta and gamma radiation · Events register as audible clicks · Records events on a resettable LCD digital counter • Integral Geiger-Muller (GM) tube This premium joulemeter is capable of measuring energies Internal high voltage electronic inverter from 1mJ to 9999J or power from 1mW to 200W in AC rad by a single alkaline DD2 battery not included or DC circuits.

 Two ranges available selected by switch labelled mJ/mW and J/W

Max. power	Order code	1+	
200W	52-2672	215.00	
			550599



A robust, portable and compact Geiger counter unit capable of detecting alpha, beta and gamma radiation and recording events on a resettable digital counter. It has an integral Geiger-Muller (GM) tube which is maintained at high voltage by a small electronic inverter. Events register as audible

rowered by a single analite in a battery, not meladed.				
Туре	Order code 1+			
Geiger counter	06-1577 273.90			
		553700		



### **Science Kits**





Order code **70-0363** 









Order code

70-0357



For more details and to see our full range of Thames & Kosmos products visit www.rapidonline.com





LED Pack A considerable range of LEDs and LED related products are neatly packaged in this classroom kit.

# Order code **13-0122**



Wire Starter Pack A substantial kit containing a wide array of wire related consumables.





A comprehensive range of essential electronic consumables offering a huge saving over individually purchased items.

Order code **13-0108 £66.61** 



This respectable sized kit contains a wide range of high quality electrical consumables suitable for even the most ambitious students.

> Order code 13-0114 £30.00

Electricity Class Pack A cost-saving classpack containing a selection of commonly used electrical accessories.

Order code 70-1012

For full contents and to see our full range of Rapid money saving Classpacks visit **www.rapidonline.com** 

#### **Physics** 253

### **Forces, Pressure** & Gravity

#### **TRVFM Spring Balances** with Metal Scales

A range of spring balances with rectangular plastic bodies and metal scales.

- Zero adjuster
- Suspension ring and load hook
- · Graduated in both grams and Newtons



Туре	Order code 1+	
0 to 100g / 1N	06-2169 1.12	
0 to 250g / 2N	06-2170 1.12	
0 to 500g / 5N	<b>06-2171</b> 1.12	
0 to 1000g / 10N	06-2172 1.12	

### **=**RVFM

#### **Plastic Spring Balance Scales**

These colour-coded spring balances have a robust transparent plastic body with chrome-plated rings at the top and hooks at the bottom. Capacities range from 100g up to 5kg. They are graduated in both grams and Newtons.

- · Bevelled top for use on an inclined plane
- Zero adjustment

· Can be used for both force and mass

measurements

- · Clear plastic tube allows students to see the action of the spring
- · Fitted with chrome plated hooks and rings
- Overall length 285mm
- · Length of tube: 160mm
- 20mm diameter

Capacity	Colour	Order code	1+	
100g / 1N	Dark brown	06-2177	2.02	
250g / 2.5N	Blue	06-2178	2.02	
500g / 5N	Green	06-2179	2.02	
1000g/10N	Light brown	06-2180	2.02	
2000g / 20N	Red	06-2181	2.16	
3000g / 30N	White	06-2182	2.16	
5000g / 50N	Yellow	06-2183	2.57	
			5	38893

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### eisco

### **Brass Weight Hangers**

A range of individual brass mass weight hangers for use with slotted masses.

- Made from solid brass · Each hanger is marked for easy
- identification
- Eisco PH0258H series

We recommend using these hangers with only Eisco slotted masses as other brands of slotted masses may not fit.

Mass	Order code	1+	
10g	52-3409	0.664	
20g	52-3410	0.909	
50g	52-3411	1.52	
100g	52-3412	3.16	
			565571

### eisco

#### Brass Slotted Mass Weights

A range of individual brass mass weights with slots, allowing them to be used on suitable mass hangers.

- · Made from solid brass
- · Each mass is marked for easy
- identification Eisco PH0258G series

We recommend using these masses with only Eisco mass hangers as other brands of mass hanger may not fit.

209

Mass	Order code	9 1+	
1g	52-3402	0.39	
2g	52-3403	0.429	
5g	52-3404	0.46	
10g	52-3405	0.501	
20g	52-3406	0.807	
50g	52-3407	1.52	
100g	52-3408	2.65	
-			565570

### 📚 INVICTA

#### **Stackable Weights**



A set of 80 clearly marked stackable weights for use with most scales and balances.

• Supplied with 20 each of 1g, 2g, 5g and 10g • Suitable for Foundation and Key Stages 1 & 2 (ages 4 to 11)

туре	Urder code	1+	
Stackable weights	52-1592	8.79	

#### **=**RVFM **Pendulum Bobs for Simple** Pendulums

A range of bob weights ideal for use as simple pendulums.

Range of diameters Range of materials

		muų z
Diameter	Material	Order code 2+
13mm	Lead	06-2218 0.551
19mm	Lead	06-2219 0.777
		Price each
Diameter	Material	Order code 1+
13mm	Brass	06-2221 0.873
19mm	Brass	<b>06-2222</b> 1.55
		MOQ 3
Diameter	Material	Order code 3+
13mm	Steel	06-2224 0.427
		MOQ 2
Diameter	Material	Order code 2+
19mm	Steel	<b>06-2225</b> 0.615
25mm	Steel	06-2226 0.819
		5388

### **=**RVFM

**Expandable Springs - Hooke's Law** 



These expandable springs are ideal for demonstrating Hooke's Law.

- · Ideal for showing resolution of forces, kinetic energy measurement. etc.
- Expandable springs are 50mm x 15mm dia., and will recover from a 400mm approx. stretch
- Available in packs of 25 and 100

Туре	Order code	1+	
Expandable springs (25)	37-0416	2.17	
Expandable springs (100)	06-6022	8.55	

### **=**RVFM **Rubber Bands**



A choice of popular sizes of rubber bands, ideal for general use in the home, office, school, or workshop.

Supplied in boxes weighing 454g

	-		
Size	Dimensions (mm)	Order code	1+
No 10	31.75 x 1.6	34-9970	6.04
No 14	50.8 x 1.6	34-9972	7.21
No 16	63.5 x 1.6	34-9973	5.56
No 18	76.2 x 1.6	34-9974	5.56
No 19	88/9 x 1.6	34-9975	5.39
No 24	152.4 x 1.6	34-9977	5.39
No 30	50.8 x 3.2	34-9978	5.54
No 32	76.2 x 3.2	34-9979	5.56
No 33	88.9 x 3.2	34-9980	5.39
No 34	101.6 x 3.2	34-9981	5.64
No 35	114.3 x 3.2	34-9982	3.49
No 38	152.4 x 3.2	34-9984	5.39
No 63	76.2 x 6.3	34-9985	5.39
No 64	88.9 x 6.3	34-9986	5.56
No 65	101.6 x 6.3	34-9987	5.44
No 69	152.4 x 6.3	34-9988	5.56
No 75	101.6 x 9.5	34-9989	8.75
No 89	152.4 x 12.7	34-9990	7.56
			190330

Physics





Education

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<sup>2</sup>hysics



06-2193 112.40 **Wooden Inclined Plane Apparatus** An inclined wooden plane ideal for experimenting with friction. The plane is hinged to the wooden base and

- · Clamp also serves as an index
- Supplied complete with:Metal roller 75 x 25mm

### ■RVFM

### Air Powered Rocket Launcher

This Rocket Launcher is a working device that helps students to visualise the principle of action and reaction forces

A 2 Litre plastic bottle (not included) is used as a rocket. Students can create a variety of rocket designs using empty fizzy drink bottles as part of a design and make project. The launch pad has a

solid, durable metal base and is equipped with a simple triggering mechanism. It is powered by an ordinary bicycle pump and can launch the rocket to surprising heights.

- Visualise the principle of action and reaction forces · Design and make rockets using empty 2 litre fizzy drink bottles
- Solid, durable metal base
- · Simple triggering mechanism
- · Powered by a standard bicycle pump
- · Can launch rockets to surprising heights

Туре	Order code	1+	
Rocket launcher	06-2234	40.56	

### ■RVFM

#### **Projectile Apparatus/Falling Body Apparatus**

This apparatus demonstrates that horizontal and vertical motion are independent of each other. It consists of a wooden block with a pivoted 'L' section spring-



loaded metal launching bar with a trigger catch. When the catch is released, one ball drops vertically while the other is projected horizontally. Observation will show that both balls will hit the floor at the same time.

- Wooden block 190 x 58 x 30mm approx.
- · Supplied with 2 steel balls

· Storage recess in the wooden block

Projectile apparatus 06-2153 12.69	Туре	Order code	1+	
	Projectile apparatus	06-2153	12.69	

## eisco

Young's Modulus Apparatus



Young's modulus apparatus from Eisco, complete with ceiling bracket, two self-centering chucks and tension weight.

The apparatus includes a spirit level mounted in two rectangular cast iron frames with one end resting on the point of a micrometer screw fitted in one frame, the second end of the spirit level pivoted in the second frame.

The micrometer is provided with a vertical scale 10mm on either side of the zero and vernier reading 0.01mm.

- Supplied in case
- Manufacturer's part PH0328A

Туре	Order code	1+				
Young's modulus apparatus	52-4215	31.41				
				568102		



A ring has four cords

can have masses hung from them. When the forces are balanced, the ring rests in the centre of the table. Each of the 4 cords pass over a pulley which guides them at the required angle and reduces friction on the edge of the table.



1+

9.88

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**=**Rapid

This apparatus can be used to demonstrate the verification of the laws of composition and resolution of forces.

It is comprised of a machined aluminium table 40cm in diameter, on a heavy vertical support rod and tripod base

attached to it that

#### **Physics** 255

### **Motion, Motors** & Accessories

### elsco

#### **Kinetic Gas Theory Demonstration** Apparatus

This apparatus allows students to study the motion and behaviour of molecules in gases

An electric motor running at 4 to 12V DC vibrates a small platform inside a transparent tube, so that a number of small steel balls is vibrated violently inside the tube.

An increase in the violence of the vibration simulates an increase in gas temperature and an increase in the weight of the 'float' simulates an increase in gas pressure.

- Demonstrates kinetic gas theory Supplied with balls
- and 2 floats
- Includes instruction manual
- CE approved Eisco type PH0203

Туре	10469	Order code	1+
Kinetic theory	app.	52-3415	27.88

### **=**RVFM **Light-up Kinetic Wheel**



An updated version of a classic toy from the '60s. The wheel is held to the track magnetically and runs along due to kinetic and potential energy, which means that only small wrist movements are required to keep it in motion.

LED flashing light effect

- · Pleasing, therapeutic motion
- Length 26cm

Туре	Order code	1+	
Light-up kinetic wheel	52-9864	3.42	

Order code

52-9890 11.29

### ■RVFM

Gvroscope

A well made classic Gyroscope that will apparently defy gravity and balance on the smallest point whilst spinning.

- · Supplied with pull-cord and strand
- Detailed explanation and instructions
- Display box
- Height 11cm

Туре

Gyroscope



# eisco

**Basic and Advanced Ripple Tank Kits** 



These ripple tank kits are supplied complete with all accessories needed for wave investigations.

Each water wave behaves similarly to a curved lens. The crest of the wave is seen as a bright region and the trough is seen as a dark region.

The ripple tanks have a mechanical vibrator attached to a wave generator that produces either point wavelets or parallel wave fronts.

- · Advanced model is supplied complete with a power supply and wave controller · Basic model requires additional power supply
- and controller

Туре	Order code	e 1+		
Advanced ripple tank	52-3442	213.51		
Basic ripple tank	52-3383	68.98		_
Controller (52-3383)	52-3704	10.99		
			5	CEEE

### ■RVFM

#### Vibration Generator and Accessories Set

A set of basic equipment for the study of vibration and resonance. The set includes a vibration generator, resonant vibration strips and a longitudinal wave spring. The Vibration

Generator is essentially a loudspeaker. A coil



wound on a thin aluminium tube moves within a permanent magnetic field whenan alternating current is applied to it, e.g., from your laboratory signal generator. The coil is supported by 2 guide control mechanisms for optimum performance.

Coupling the Vibration Generator to external equipment is faciliated by an 8 mm dia. aluminium pin connected to the coil. The pin is equipped with a 4mm hole for a banana plug connector to which various plates and springs, etc., can be attached

- Set includes: Vibration generator
- · Longitudinal spring for wave demonstrations
- Resonant vibration strips

The vibration generator is powered by a laboratory signal generator, not included Technical specification 0.1Hz to 5kHz Frequency range Amplitude 7mm @1Hz, decreasing with increasing frequency

Impedance Max. current	8Ω 1.0A, fuse limited	
Туре	Order code 1+	
Generator + accs.	52-2675 167.73	



**=**RVFM



This kit is ideal for small group experiments in electrostatics. The set is built around the special, dual-purpose electroscope, which in addition to being useful for general electrostatic experiments, is capable of performing measurements of the activity of weak radio-active materials. Positive and negative charges can be produced with the included acetate strips and woollen cloths.

A great variety of experiments can be performed including determining types of charge, measuring the amount of conducted or induced charge with the gold leaf electroscope or by using the polystyrene spheres as hollow conductors, and using the proof plane to investigate the distribution of charges on conductors.

#### Kit includes:

- 1x electroscope with top plate and hook electrode
- 1x packet of gold leaves
- 4x metallised polystyrene spheres
- 1x reel of very fine nylon thread
- 2x polythene plate, 75mm square
- 1x electrophorus plate, 50mm diameter with insulating handle
- 1x proof plane
- 2x aluminium calorimeters
- 1x cellulose acetate strip
- 1x polythene strip with woollen rubber
- 1x stirrup for suspending strip
- Supplied as a set
- Eisco type PH0900

Туре

Туре	Order code	1+
Electrostatics kit	52-3634	22.82



www.rapidonline.com sales@rapidonline.com





- Fits tightly on to a 2mm spindle
- 100mm diameter
- Supplied singly

Туре

MOQ 4 Order code 4+ 3 blade 100mm, single 37-2207 0.248

**Tornado in a Bottle** A simple plug-in plastic joiner enables water to pour from one bottle into another creating



· Joiner fits most fizzy drinks bottles

Bottles not included.

movement.

#### MOQ 3 Tornado in a bottle 70-1516 0.35



of refraction and the pattern of transverse waves with this Refraction / Wave tank. Place different materials into the tank and demonstrate the refraction / internal reflection of those materials and how they vary from one another. • Transparent acrylic tank

Wooden handle

Type

Order code

Refraction/wave tank 06-2246 48 72

### **=**RVFM

#### Newton's 2nd Law of Motion **Demonstration Apparatus**

This apparatus demonstrates that 2 bodies will strike the floor at the same time even when their paths of flight and horizontal



velocity components are different. The 2 balls are released simultaneously - 1 ball is released to drop vertically, the other is projected horizontally.

- Base
- Spring plunger
- 2 steel balls (1 solid, 1 pre-drilled) Instruction sheet

2nd law of motion **06-2201** 8.21

### **Magnets**

### **Experiments for Magnetism Set**



This is the perfect set for children to develop magnetic investigation.

#### The kit is supplied with:

Ω

shaw

- 16 experiments linked to QCA Science Curriculum for Key Stage 1
- A4 background information booklet
- Four wands
- · 20 magnetic marbles
- Two plastic cased magnets
- A super magnet
- Set of floating ring magnets
- Small horseshoe magnet
- · Compass magnet
- Supplied in a purpose made plastic moulded carry box for easy counting in and out
- Suitable for Key Stage 1 (ages 5 to 7)





Type

#### Magnet Kit



This magnet kit includes a selection of magnets and materials, assembled in a plastic tray for easy storage.

#### Kit contains:

Alnico bars, alnico button magnets, ferrite blocks and rings, chrome steel horseshoe magnet, alnico horseshoe magnet and coloured squares of magnetic rubber

Ideal as a classroom resource

**≡Rapid** 

education





Type

#### Ferrite Magnets (Blocks) These ferrite, painted bar magnets are illustrated with red and blue poles, stamped with N and S. Their low-cost. reliability and durability in use make them an ideal general purpose classroom resource • 9 x 9 x 40mm Supplied in packs of 20 Order code 1+ Ferrite block magnets **06-0584** 5.94 n shaw Large Ferrite Block Magnets

**=**Rapid



- of magnetism.
- Wand length 190mm • Supplied in pack of 6

Type

Pack of 6

Order code	1+	
06-9991	5.58	
		56350







A range of magnets and magnetic products, a must for every classroom.

- Horseshoe magnets supplied in sets of 3
- Super magnets supplied in sets of 300

Туре	Order code	1+	
Horseshoe magnet set	06-0504	12.21	
300-piece magnet set	06-0508	13.95	
			000040

	Shaw manets
od Magnets	Ceramic Magnets Colour-coded bar magnets in a neat
	Size of each magnet
	14 x 10 x 50mm • Easy to see if all
od magnets, 24 x 8mm, with north end	returned after use • Supplied as a box of 20
n pairs rer's part AXR024PX2	Type Order code 1+
Order code 1+	Ceramic magnets 06-6302 12.21
. 078886	0 Shaw magnets
ar Magnets	Ceramic Square Magnets Multipole magnets with one strongly
5-million	for attaching to metal surfaces.
	<ul> <li>Ideal for fridge magnets, etc.</li> <li>Attach dimpled</li> </ul>
ts Bar Magnets are made from Alnico magnetic co is an alloy of iron, ALuminium, NIckel and	side to object to be held
as a high resistance to loss of magnetism. are supplied in pairs, complete with keepers	<ul> <li>Dimensions: 19 x 19 x 5mm</li> <li>Available in packs of 10 and packs of 20</li> </ul>
rotect their magnetic surfaces. North poles are	Type Order code 1+ Pack of 20 06-5978 3 14
i dimple or a notch. finish	
with keepers imple denotes North pole n pairs	show
inets Types ALN040, ALN060, ALN050	Magnetic Dots
Order code 1+	
06-5981 4.20 06-5975 7.00	
06-5977 9.89 06-5979 13.25	
501638	
orseshoe	Packs of self-adhesive round magnetic dots.
	<ul> <li>Ideal for art and craft, design and technology and science projects</li> </ul>
Shaw Magnets	<ul> <li>Dimensions 12mm diameter</li> <li>Supplied in packs of 300</li> </ul>
vith keeper	Type Order code 1+
mm Order code 1+	Magnetic dots 06-5992 3.49
<b>06-9979</b> 2.83 563501	<b>CISCO</b>
	Electromagnet The Eisco PH0800A
trong U Magnets	electromagnet consists of a U-shaped iron core
strong Alnico	of circular section, with armature and carrying
ers. In choice of sizes	hook. It is wound with insulated copper wire
vith keeper	and provided with colour-
	For use on 4 to 6V DC
	Eisco type PH0800A  Type  Order code  1+
Urder code 1+ 06-9982 5.58	Electromagnet 52-3310 6.48
563502	1

- Create a floating magnetic trick · Children will achieve this by simply
- Suitable for Key Stages 1 & 2 (ages 5

Supplied w

Size (mm) 30 x 20 x 20

	Order code	1+		
magnet	52-3310	6.48		
				565510





#### 'Hercules' Demonstration Electromagnet

This electromagnet offers an amazing demonstration of how powerful magnetism can be. Powered by just one 9V PP3 battery, this small magnet has incredible lifting power of approximately 50kg.

- When switched on, an iron plate locks itself solidly to the bottom of the electromagnet core. Turning the switch off will release the load or hold it in the air, as required
- · Karabiners are situated at the top and bottom of the device to make it easy to clip into position
- · Battery and instructions included Order code





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shaw

Education

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Physics

### **Science Magnetism** Tube

This giant magnet tube has a double wall with iron filings between two layers to show a 3 dimensional view of the magnetic field around the supplied magnet.

- The magnet is removable and the filings are safely encased
- Size: 130 x 90mm



Magnet tube



Type

### Magnetic Field Display

These magnetic field windows contain magnetic powder in a water based solution for showing magnetic field patterns.



- When a magnet is present the
- particles of iron inside become slightly magnetised, so they attract each other and cluster into the lines that show the magnetic field patterns

Order code

06-0598 9.96

- Size 225 x 130 x 15mm
- · Includes 2x plastic cased magnets, 2x ferrite magnets and an information/instruction booklet
- Available with white background (06-0680) or transparent background (06-0282) for use with an overhead projector

Туре	Order code	: 1+	
White Background	06-0680	23.02	
Transparent background	06-0682	23.02	
			072049

### **=**RVFM

#### **Electric Field Apparatus**

This apparatus is ideal for demonstrating electric fields between various electrodes Liquid paraffin is placed in the 90mm diameter petri dish and semolina or fine grass seed is sprinkled on the surface. Various electrode configurations can be



arranged in the liquid and when a high voltage is applied via the 4mm terminals the field pattern is generated. The see-through base allows the pattern to be projected via an overhead projector system

- Supplied without paraffin or semolina
- Dimensions (L x W x H): 150 x 150 x 60mm

A low current 0 to 5kV EHT supply is required (not supplied). Order code

150 x 150 x 60mm 52-2660 69.90

# elsco

#### Gold Leaf Electroscope

This gold-leaf electroscope is great for hands-on experience with electrostatic principles in physics classrooms and labs

When an electrostatic

elsco

electrostatic charge and the angle of the leaf can be used as a measure of the charge.

the electroscope is mounted on a plastic base. Front glass window slides up to allow the insertion of ionizing material into chamber.A transparent scale is attached inside the

- · Supplied with two gold leaf sheets
- Fitted with 4mm socket
- When assembled, the electroscope measures

Note: the gold-leaf does not come pre-attached to the electroscope. Instructions on how to properly attach the gold-leaf to the conducting

rod are included in the Experiment Guide. Replacement gold leaf is available separately

	0				
Туре		Order code	1+		
Electroscope		52-3640	14.76		
Gold leaves pa	ack	52-3641	3.49		

eisco

#### **Magnetic Needle** Stand and Needles

A range of magnetic needles and a suitable low-friction stand for use in the study of magnetic fields and compasses.

 Stand height 110mm · Range of needle sizes

· All parts sold separately

Туре	Order code	1+	
Stand	52-3318	2.97	
50mm needle	52-3319	0.807	
75mm needle	52-3320	0.92	
100mm needle	52-3321	1.32	
			565516

### Order online

Save time, and place your order at: www.rapidonline.com



### **Gasses & Liquids**

## eisco

n

#### Whitley Bay Smoke Cell

The Whitley Bay smoke cell is used for the observation of 'Brownian' or random motion in smoke particles.

It consists of a box with flanges that allow it to be easily attached to a standard microscope. The box contains a smoke

cell, a cylindrical condensing lens and a 12V, 3W festoon bulb. The apparatus is pre-set to focus the light at the correct height.

· Supplied with detailed instructions and a squeeze bottle type smoke generator

Order code 1+

52-3425 12.73

- · 4mm electrical connections
- Box dimensions 90 x 46 x 20mm
- Eisco type PH0203B

Type Smoke cell



### **Hyman Fire Piston**

The Hyman Fire Piston demonstrates the rise in temperature that is produced when a fixed mass of gas is compressed. In this apparatus the contained air is compressed by a hand-operated piston. The heat generated is sufficient to ignite a small quantity of tinder supported inside the transparent cylinder. Suitable tinder is included, but almost any organic material will work if dry enough, i.e. cotton, charcoal, tissue paper, etc.



The Hyman Fire Piston can also be used to demonstrate the need for oxygen to support combustion, by attempting to re-ignite a piece of part-burned tinder. Combustion will only occur if the piston is completely removed from the cylinder allowing a supply of fresh air to be introduced.

Additionally, a cloud can be formed in the cylinder by, having compressed moist air inside it, allowing a sudden decompression. The reduction in pressure lowers the temperature and immediately condenses the water vapour inside the cylinder.

### Tel: 01206 751166 Fax: 01206 751188



charge is induced or transferred to the electroscope, the charge causes a thin piece of gold leaf to be repelled away from its mount. The resultant deflection of the leaf shows the presence of an





- · Demonstrates the rise in temperature when a fixed mass of gas is compressed
- · Air is compressed by a hand-operated piston
- Heat generated is sufficient to ignite a small quantity of tinder placed inside the cylinder
- Suitable tinder included, but cotton, charcoal, tissue paper, etc., can also be used
- · Can also be used to demonstrate the need for oxygen to support combustion
- Combustion will only occur if the piston is removed to allow fresh air in
- A cloud can be formed in the cylinder by allowing sudden decompression
- Reduction in pressure lowers the temperature and condenses the water vapour
- Includes 'fire piston', supply of tinder, lubricating oil, spare 'O' rings and full instructions

Туре	Order code	1+
Hyman Fire Piston	06-7791	24.08

### ■RVFM **Boyle's Law Indicator**



This simple low-cost apparatus provides a means of demonstrating Boyle's law.

- Ideal for demonstrations
- · Gives students literally a 'feel' for increase in pressure against volume
- Please note that this product is for demonstration purposes and is not 100% accurate.

Туре	Order code	1+		
Boyle's law indicator	06-6068	11.89		



#### Jolly Bulb with Gauge

This Jolly bulb apparatus consists of a 60mm diameter bulb directly connected to a bourdon pressure gauge.

The apparatus is used for investigation of gas at a constant volume. By inserting the glass bulb into either warm or cold water, the expansion or contraction of the air contained in the bulb can be seen as a pressure change

on the gauge.

- 60mm diameter glass bulb
- · Gauge calibrated in both kg/cm<sup>2</sup> and in psi
- Eisco type PH0138C

Jolly bulb + gauge

52-3700 32 33



#### **=**RVFM **Pascal's Vases** Apparatus Pascal's Vases Apparatus shows that the pressure

of a liquid varies with depth and not with the shape of the vessel. Apparatus includes

- 4 vessels of different shapes and a stand Pressure is measured
- by placing weights in the scale pan Repeating the experiment with each
- 'vase' proves the theory

Pascals vases **06-2159** 39.30

# elsco

#### Equality of Liquids Apparatus/ **Pascal's Law Syringe**

An apparatus consisting of a glass flask with holes in the bulbous part and a glass piston that slides in the straight part.

When filled with liquid, the piston is pushed into the apparatus, causing liquid to exit each hole with equal pressure regardless of the hole's position or direction.

 Also known as Pascal's Law syringe Eisco type PH0194

Type Order code 1. Pascal's Law syringe 52-3330 5.74

### ■RVFM

### Surface Tension Balance, Searles

This Searles Surface Tension Balance can be used to demonstrate the surface tension of a liquid by allowing it to be shown on a graduated scale.

A horizontal frame is mounted on a rod fitted to a base and carries a steel wire stretched across it, the tension of which can be adjusted by

a tightening screw. A lightweight metal pointer with a counterpoise is attached to the centre of the wire by a clamp. A pan is hung from a notch in the pointer and has a hook at its underside from which can be suspended a light weight rectangular frame or a metal clip to hold a microslide edge. The tip of the pointer moves over the graduated scale.

· Supplied complete with rectangular wire frame, slide clip, six microslides, 3m of spare wire and full instructions.



# eisco

#### **Boyle's Law Apparatus**

This high quality Boyle's law apparatus comes complete with accessories, including a 405mm pump with braided hose The apparatus is 685mm tall

with a powder-coated metal base approximately 205 x 125mm.

Experiments can be carried out with water or by simply adding any food colouring to the water.

- High quality pressure gauge
- 200mm braided nylon flexible hose
- Hand operated pump
- 2 bottles of coloured mineral oil
- PPE funnel Instruction manual

Boyles law app.

Type

- Eisco type PH0150A
- **52-3414** 114.92

Education

15

Physics



### **Boyle's Law Simple Form**

Order code

A simple apparatus for the demonstration of Boyle's law, consisting of an airtight graduated plastic syringe with a lubricated piston, mounted between two wooden blocks

Weights can be stacked on the top platform, compressing the gas. The corresponding measurement of volume can be read from the syringe scale.

- Air-tight plastic syringe supported between wooden blocks
- Weight on the upper block
- produces pressure that compresses the gas
- · Volume measurements can be read from the syringe scale Eisco type PH0145A

51			
Туре	Order code	1+	
Boyles law simple	52-3349	8.99	
-			565537

## eisco

### **Planck's Constant Apparatus**

This apparatus is designed to determine the approximate value of Planck's constant, using a range of LEDs of known wavelength, to allow the

electron/photon energy

to be calculated. The

apparatus includes 7

LEDs, covering the light range from deep blue at 470nm to near IR at 940nm, mounted on a box with 4mm sockets for attachment to a voltmeter and ammeter for voltage and current measurements. By monitoring the voltage at which each LED just begins to emit light, a graph of energy input as a function of light emitted frequency can be plotted and an approximate value of Planck's constant can be deduced.

#### Requires a 9V DC power supply

Туре	Order code	1+		
Planck's constant app	52-2639	32.26		
				550572

**=**Rapid ... where price meets quality



### ■RVFM

#### Magdeburg Pressure Disks

A practical vacuum/ pressure demonstration set consisting of two plastic, 10cm diameter hemispheres.

Each hemisphere has a wooden handle firmly attached to it. One of the hemispheres

has a raised edge to hold a rubber seal, while the other hemisphere has a stopcock for attaching to vacuum tubing. When the hemispheres are pushed together and evacuated using a vacuum pump they are hard to pull apart. Get 2 students to pull, then open the stopcock to let air in and the hemispheres will separate easily to the surprise of the students.

- Practical vacuum/pressure demonstration set
- Two 10cm dia. plastic hemispheres
- Evacuated hemispheres are hard to pull apart · Hemispheres separate easily when stopcock opened
- Order code Magdeburg hemispheres 06-2236 22.29

**TRVFM** Vacuum or Pressure Apparatus A rugged hand-operated piston pump with two nozzles - one that creates vacuum and the other that creates pressure. · Creates pressure or vacuum Metal barrel Туре 06-2245 Vacuum/pressure 13.71 eisco **Cast Iron Bursting Bottles** 

Bursting bottle from Eisco designed to demonstrate the anomalous expansion of water on freezing. · Bottle constructed from cast iron Length 90mm Diameter 20mm · Supplied with plug Manufacturer's part PH0119E Туре Order code 1+ Bursting bottles 52-4089 4.99





### ■RVFM

**Copper Sheets** These economical 0.1mm thick copper sheets are perfect for embossing, bending and cutting.

 Basic Design & Technology and Science resource

Туре	Order code	1+	
A4	06-0752	4.86	
A3	06-0754	6.40	

### eisco

#### **12-Piece Science Metal Strips Set**



This 12-piece metal strip set includes a strip of each of aluminium, brass, copper, bronze, nickel, mild steel, galvanized iron, magnetic and non-magnetic stainless steel, zinc, chrome and lead

- · All strips are marked with a letter to identify each metal see Technical Details
- · Ideal for experiments to demonstrate magnetic properties and classifications of metals
- Strip size: 50 x 25mm

Supplied as a set of 12 strips

Technical specification

Code letter	Metal	Code letter	Metal
A	Aluminium	G	Galvanized iron
В	Brass	Н	Stainless steel - non-magnetic
С	Copper	1	Stainless steel - magnetic
D	Bronze	J	Zinc
E	Nickel	K	Chrome
F	Mild steel	L	Lead
Туре		Order code	1+

Metal strip set 06-0595 5.83

### **=**RVFM

#### Slime





### **Complete Rock and Fossil Collection**

**=**Rapid



Dig into some serious fun with this fascinating fossil and rock collection. The collection features handpicked specimens, chosen for their interest, colour, texture and beauty.

12-piece rock sets: Include an educational identification chart and activity guide

- Igneous rocks are produced by hot volcanic magma action Metamorphic rocks are transformed by intense heat and pressure
- · Minerals combine with each other to make rocks
- · Sedimentary rocks are formed by layers of deposited matter

#### Fossil set:

- · Contains 9 fossils in a handy divided tray
- Includes guide, 4-colour insert card of photographed fossils, foam sheet and die-cut sheet of circle labels for fossils
- Average fossil length approximately 2.5cm
- · Fossils included are: brachiopod, bryozoa, crinoid stem, gastropod, colony coral, ammonite, shark's tooth, fossil fern/plant matter and petrified wood
- Supplied as a cost-saving set (52-9948) containing 4 rock sets plus a fossil set

Туре	Order code	1+	
Complete collection	52-9948 51	1.49	
			0818

### Conductivity & Energy

eisco **Carbon Rod** 



A 140mm long carbon rod with a brass terminal for electrical connection.

- Length 140mm
- Diameter 15mm
- Eisco type PH0937



### Tel: 01206 751166 Fax: 01206 751188

Education

15

### **E**SCO Thermal Conductivity Rods



These metal rods are ideal for thermal conductivity experiments.

- Metal rods for thermal conductivity experiments
- Approximately 300mm long x 3mm diameter
- Individual metal types supplied in packs of 10
- Assorted metal types supplied in packs of 6

	 	•
Material	Order code	1+
Assorted (6)	52-3352	5.07
Aluminium (10)	52-3656	4.79
Brass (10)	52-3657	8.23
Copper (10)	52-3351	18.50
Iron (10)	52-3659	4.31
Lead (10)	52-3660	5.75

## eisco

#### **Leslie's Cubes**

These Leslie's cubes have sides with different surface finishes. They are ideal for use in experiments to show how objects emit and absorb heat.

In use, the apparatus is filled with water which is maintained at boiling point by a low Bunsen burner flame. Infra-red

sensors, etc., can be used to compare the relative radiant heat output from each of the four faces.

- Top hole for filling and emptying
- Bung for thermometer
- Eisco PH0411 series

Size	Material	Order code 1+	
100mm	Copper	52-3650 10.69	
130mm	Tin	52-3649 6.12	

## eisco

#### **Crookes Radiometer**

This radiometer consists of a partly evacuated glass bulb approximately 70mm in diameter, containing a fine pivot which supports four light weight metal arms. One side of each vane is blackened, the reverse side is bright.

On exposure to sunlight, or a sufficiently bright incandescent light source, the vanes turn. The absorption of radiant energy by the blackened side of the vanes sets up a temperature differential with respect to the bright sides, causing net force to be exerted by the air molecules on the blackened side which makes the vanes rotate with their bright faces leading.

- Approx. 70mm diameter
- · Mounted on round plastic moulded base
- Eisco type PH0418A

Туре	Order code	1+	
Crookes radiometer	52-3332	6.55	

### ■RVFM

#### Ice Melting Kit - Thermal Conductivity Demonstration

This ice melting kit can be used to demonstrate the difference in thermal conductivity and thermal capacity between two different materials.



The kit consists of two identically sized blocks, one made of aluminium, the other made of plastic. When an ice cube is placed on the aluminium block it turns into water in seconds, while an ice cube placed on the plastic block melts slowly. This is due to the aluminium block having a larger heat capacity and a higher thermal conductivity than the plastic block.

#### · Supplied complete with instructions

Туре	Order code	1+	
Ice melting kit	06-2237	13.62	

### Solar Power & Hydrogen Fuel



## Tru Xepto

### Solar Powered Light Module Kit



This simple, yet effective module demonstrates how solar panels can convert the sun's energy into electricity, how it can be stored and how that energy can be released and used when required.

In sunny conditions, the Poly-Silicon solar cell converts the sun's radiant energy into 1.8V of electricity which charges the Nickel Hydride rechargable battery. As the sun's light reduces, so does the output of the solar panel. When the solar panel's output fails below approximately 0.7V, the circuit stops charging the battery and the captured energy remains in the battery. In darkness, the solar cell's output drops to zero which triggers the circuit to switch on the 2 LEDS to provide illumination.

- The module is available both ready-assembled or as a kit of parts that can be assembled by students as part of
- a Design and Technology project.
- Practical demonstration of solar power
- Rechargeable battery: 1000mAh
- More than 20 hours illumination from fully charged battery
- Over-discharging protection
- Automatic light level detection
  Ideal for educational

Ideal for educational
 Available ready assembled or in kit form

echnical specification	
Main PCB dimensions iolar panel dimensions iolar panel output controller IC ED driving current Vorking temperature itorage humidity	81 x 27.8 x 1.6mm 136.5 x 80mm 1.8V, 1W QX5252 15mA (average) 0 to +50°C 5 to 95%
Type	Order code 1+

ype	Order code	1+	
issembled	55-0005	14.25	
Inassembled	55-0006	12.82	
			500400

# **Educational Solar Energy Kit**



A complete kit of parts which provides the student or child with an introduction to solar energy. The kit comprises:

- 8x 500mV, 100mA solar cells in one panel
- Miniature DC motor
- Small fan
  Plus all tools and cables enabling the user to construct
- a working kit
- The solar cells provide an output of 3.2V and may be employed to drive a variety of other small components
- The kit also comes complete with an informative twelve page booklet explaining solar energy

Туре	Order code	1+	10+	40+	
Solar energy kit	37-0420	10.63	10.00	9.61	

eisco

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### Solar Cell and Motor Demo Set



A range of solar units, ideal for demonstrating the conversion of solar energy into mechanical energy.

Range i	ncludes	solar	cells	solar	motors	I FD	and	huzzer
<ul> <li>Runge n</li> </ul>	noiuuco	30101	00113,	30101	11101013,		unu	DULLEI

Туре	Order code	1+	
Solar cell & motor	52-3353	19.49	
Solar motor & fan	52-3355	6.19	
			505540

**Physics** 

### **=**RVFM

#### **Solar Cells**



Fully encapsulated solar cell modules mounted in black polycarbonate cases.

#### • Output of 0.45V

· Fitted with threaded stud terminals and a copper busbar

		E	)imen	sions (	mm)		
Module type	Output current	length	wic	ith	height	Order cod	e
G200	200mA	53	36		7.5	37-0432	
G400	400mA	75	45		7.5	37-0434	
Voltage	Current	Order c	ode	1+	25+	100+	
0.45V	200mA	37-043	2	2.10	1.68	1.58	
0.45V	400mA	37-043	4	3.16	2.91	2.51	
							06479

#### **=**RVFM **Solar Power Project Pack**



Contains project ideas and investigations based around a high-quality, low-cost solar module. Also in the pack are all the components required to build a solar powered buggy similar to the one shown here, plus an astonishing 10F super capacitor, which can be charged up from the solar panel and used to power lamps, motors, etc.

- Includes a photocopiable information booklet full of ideas and suggestions for using the solar module
- Buggy will run outdoors in sunlight or indoors with a bright lamp

Туре	Order code 1+	
Solar power project pack	70-1526 12.90	

### 📚 INVICTA

#### **Renewable Energy Kit**



Enable Teachers to demonstrate the generation of electricity using Wind, Solar and Water power.

- This portable unit comes in an easy to assemble kit format and includes four interchangeable dials to demonstrate the power being generated - meter, moving cogs, flashing lights and a siren
- The unit can be used indoors and outdoors

### No minimum order value UK mainland only

- Applicable to both Science and Geography studies This teaching resource is relevant to the National
- Curriculum and helps pupils understand the process of renewable and sustainable energy, and the environmental issues surrounding these forms of energy generation Suitable for Key Stages 2, 3 & 4 (ages 7 to 16)
- Supplied as a kit

Order code 1+ Renewable energy kit 52-0376 73.34

### ■RVFM Wind Turbine

This Wind Turbine model can be used to carry out a wide range of experiments with wind power. The blades of the turbine can be easily adjusted, attached and removed. This allows students to investigate the effects of changing

the number, pitch, size and shape of the blades. Some of the effects

can be guite counter-intuitive and will provoke students into thinking and discussing the concepts of energy and power.

The turbine blades are made of corriflute plastic. Some pre-cut blades are included, but it is also possible to cut new blades of different shapes and sizes. The blades can be attached and removed simply by pushing them on and off the posts on the turbine hub.

- Corriflute plastic blades
- DC output
- Supplied assembled

Туре	Order code	1+	
Wind Turbine	06-1573	18.94	

Sound

### eisco **Tuning Forks Set 8**

#### An eight-piece set of nickel-plated tuning forks with plain shanks. The forks are marked with their individual frequencies: C (256Hz), D (288Hz), E (320Hz), F (341Hz), G (384Hz), A (426Hz), B (480Hz)

 8-piece set Supplied in wooden

- Туре

Tuning fork set 52-3342 13.03

### **Resonance Tuning Forks with Hammer**

This apparatus can be used for demonstrating the production of beat frequencies

It is comprised of two nickelplated tuning forks mounted on individual sound boxes. The two forks both produce an 'A' note (440Hz) when struck with the mallet.



One fork is provided with an adjustable mass, by means of which the frequency of that fork may be shifted from the nominal 440Hz. When both forks are sounded at the same time, a clearly audible 'beat' is produced, its rate depending upon the difference

- in frequency between the two forks. Used to hear dissonance
- One fork adjustable
- Supplied complete with 2x tuning forks, 1x adjustable mass, 2x bases and mallet

#### Eisco type PH0742A





#### **Tuning Forks**

A range of superior quality aluminium tuning forks with plain shanks and round stems.



**=**Rapid

· Ideal for school, college and laboratory use Eisco PH0737 series

Note	Frequency	Order code	1+	
С	256Hz	52-3453	3.89	
D	288Hz	52-3454	3.89	
E	320Hz	52-3309	3.31	
F	341Hz	52-3455	3.89	
G	384Hz	52-3456	3.89	
Α	426Hz	52-3457	3.89	
В	480Hz	52-3458	3.89	
C	512Hz	52-3459	3.89	

## eisco

#### **Resonance Apparatus** with Telescopic Brass Tube

This resonance apparatus is comprised of two brass tubes that can telescope into each other, allowing the column of air within the tube to be varied between 300 and 530mm

Outer tube fits into base • Eisco type PH0718B



### ■RVFM

### Transistor Oscillator Buzzers

A 1.5V miniature transistor oscillator buzzer with flying leads.

- Frequency 400Hz Sound output 75dB at 30cm
- Height 15.5mm
- Length 33.5mm • Width 16.5mm
- Lead length 150mm
- Voltage 1.5V
- Technical specification Operating Current co Sound out

voltage	1.3 to 2V
nsumption	25mA

put	75dB at 30cm	
		_

Type 25 +100 1.5V buzzer (leads) 35-0086 1 20 0 964 0.913

### **=**RVFM

**Piezo Buzzer Miniature** A miniature piezo buzzer available with flying leads.

 Offers a high output with low power consumption



### 



Order code

### eisco



Physics 263



		ני י	,510	
•	• Specifications 60 to 18,000rpm, 1 to 300	Hz		

- External triggering signal Power supply 240V AC, 50 Hz
- Dimensions (L x H x W): 215 x 140 x 150mm
- · Supplied with mains lead

Order code 215 x 140 x 150mm **52-2677** 199.75

### eisco

**Spectrum Tubes, Holder & Power Supplies** 



A range of spectrum tubes, associated holders and power supplies, for use in spectral analysis experiments.

· Wide range of materials

eisco

**Primary and Secondary** 

**Coloured Filters** 

Sets of six coloured

plastic sheets. Three sheets feature primary

colours, three feature

Coloured plastic

sheets with or without

Supplied as sets of 6

secondary colours.

50x50mm, mounted

100x100mm, unmounted

mounts

Type

Power supplies and tubes are sold separately

Note: The spectrum tubes are intended for intermittent use only and are not suitable to be used as a lamp source. They should be used for periods of 30 seconds on / 30 seconds off. Their expected life will vary depending on the gas they contain. Their useful life will be reduced if they are not used as recommended or allowed to overheat. Use tubes only with the Eisco power supply, 52-3613.

Type	Order code	1+	
Tube holder	52.3612	22.42	
	52.3613	133.08	
Factor tubes	32-3013	133.30	
Spectrum tubes			
Argon	52-3615	11.94	
Carbon dioxide	52-3616	8.09	
Helium	52-3617	11.94	
Hydrogen	52-3618	11.94	
lodine vapour	52-3619	11.94	
Krypton	52-3620	11.94	
Neon	52-3621	11.94	
Nitrogen	52-3622	11.94	
Oxygen	52-3623	11.94	
Sulphur	52-3624	11.94	
Xenon	52-3625	11.94	

Order code

5.12

4 28

52-3686

52-3694

# **=**RVFM **Complete Optical Bench Set** An economical, yet effective Optical Bench Set that provides

Order code 1+

52-3679 55.12

accurate demonstrations of basic optical principles.

#### • The complete system includes:

3x biconvex lenses: +10, +20 & +50

1x translucent screen 100 x 100mm

1x transparent screen 100 x 100mm

1x object screen white 100 x 100mm

1x biconcave lens -20

1x plain mirror 100 x 100mm

· Set of diaphragms

• Eisco type PH0649 Power source for lamp not included.

Туре Optical bench set

- 1x Optical bench-double-sided metre stick
- 1x Object and marker
- 1x Screen support
- 1x Candle holder
- 1x Pair of metal supports
- 2x Lens supports: 4cm and 7.5cm
- 5x White board screens, each 10 x 12.5cm with
- a millimeter scale along one side

#### 12x paraffin candles

			 	_
уре	Order code	1+		
ptical bench set	06-2242	14.26		

## eisco

1

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### Pin Hole Camera

The concept of the pinhole camera is centuriesold. This model consists of a telescopic wooden box with a pinhole in one end. Light rays passing through the pinhole are projected as an image on a translucent plate. Students view this image through a hole in the



other end and can change the image size by changing the

•	Demonstrates the behaviour of light
•	Eisco type PH0592



# **Standard Version**

This digital xenon



### **=**RVFM

## Digital Xenon Stroboscope,

stroboscope is a lightweight, sturdy and compact instrument which features a digital, variable flashing rate adjustment and external triggering facility. The bright xenon tube makes it ideal for educational experiments.











length of the box.

uses for such as wave, motion and vibration

### **Light & Optics**

### eisco **Enhanced Optical Bench Set**



This optical bench kit includes an enhanced set of accessories allowing the user to perform more experiments than other more basic kits.

The bench is 1m long and is graduated on one side.

#### Set includes:

**=**Rapid

Technical specification Operating voltage

Current consumption at 12V

**=**RVFM

**Electronic Buzzers** 

or PCB mounting pins 3V, 6V or 12V operating versions Resonant frequency is 400Hz

Black ABS case material

Technical specification

Operating voltage

Max rated current

Min sound pressure level

Resonant frequency Operating temperature

Weight

Туре

3V Buzzer + lead

6V Buzzer + lead

12V Buzzer + lead

3V PCB Mount buzzer

6V PCB Mount buzzer

12V PCB Mount buzzer

Dimensions

Rated voltage

Suitable for education and hobbyist use only.

Sound output

Piezo buzzer

Frequency

Туре

3-30V DC

10mA

2 7kHz

A range of compact, low-cost electronic buzzers. · Available with either flying leads (10cm long)

2V to 5V type

4V to 8V type 9V to 15V

2V to 5V type

4V to 8V type 9V to 15V

2V to 5V type

4V to 8V type 9V to 15V

PCB type

with lead

PCB type

with lead

90dB at 50cm

Order code

35-0115

25+ 100

2V to 5V DC or 4V to 8V DC or 9V to 15V

3V DC

6V DC 12V DC

25mA @ 3V DC

30mA @ 6V DC 30mA @ 12V DC

400Hz ± 100Hz

10g

fixing hole

1.12

1.12

1.19

1.07 0.914

8g

Order code 1+ 25+

35-3592

35-3594

35-3596

35-3598

35-3610

35-3612

-20°C to +60°C

70dB @ 3V DC/20cm

75dB @ 6V DC/20cm

80dB @ 12 DC/20cm

23 x 17 x 15mm with PCB pins on 7.6mm centres 33.5 x 17 x 15mm with 100mm leads

100+

fixing centres 27.5mm, 2mm dia

1.12 0.935 0.834

1.12 0.935 0.834

0.935 0.834

0.935 0.834

1.00 0.937

1.55 1.19 1.06

• 1x 1m optical bench with end supports and graduation scale

#### 8x riders with tightening screw

• 1x lamp housing with 12V, 24W halogen bulb

#### 6x lens holder for 50mm dia, lenses









264

### eisco

### **Diffraction Gratings**

A range of transmission type diffraction gratings mounted in 50 x 50mm

frames Eisco PH0624 series





Lines/mm	Order code	1+	
100	52-3670	10.99	
300	52-3461	9.99	
1000	52-3672	17.32	
			ECECCE

### esco **Assorted Metal Cubes**



#### Set of 7 assorted metal cubes from Eisco.

- · Cubes include aluminium, brass, copper, iron, lead and zinc
- Size 10 x 10 x 10mm
- Supplied in plastic box
- Instruction manual included
- Manufacturer's part PH0106A

Type Order code 1+ Assorted metal cubes 52-4190 9.33

### Flight







### OWERCLOW

#### **Hand Glider**

Model glider from Powerglow made of lightweight Flexipor, easily launched by hand.

- · Suitable for age 6
- and over
- · Extremely robust and flexible
- Gliding flight and looping can be set by reconnecting the elevator
- · Ready to fly in a few seconds
- · No adhesive necessary
- · Many different colour combinations
- Made in Germany



Manufacturer part no

Туре

Hand Glide

F8060 Order code 1+ 51-2310 14.56

### Astronomy

### (B) BRESSER<sup>®</sup>

#### **Optik Visomar 60/700 Junior Lens** Telescope

If you've always wanted to know more about the night sky but can't tell the difference between the Plough and the Pleiades, then the Bresser Optik Visomar 60/700 Junior Lens Telescope could be just what you need. This telescopic lens means you can study the stars wherever you go. Conveniently packaged in a box, it is ideally suited for use on the go. Also included is a handy tripod, perfect for mounting your telescope.



#### Cochranes of Oxford **Helios Orrery and Star Dome**

700mm 35 to 262x

Order code 1+

51-2647 61.68



This Helios Orrery and Star Dome model from Cochrane's can be set up as either a basic orrery or an orrery with a star dome. Look through the dome to see the stars visible from earth for your latitude and the time of year. See how the stars and constellations have fixed locations in space and how the planets orbit the Sun. The dome shows all the major stars and constellations around the ecliptic and over the Northern hemisphere

- The following subjects can be studied with the Orrery and Star Dome model:
- The Planets in their orbits (length of a year, inferior and superior planets and more)
- · The Moon and its phases
- Eclipse basics
- Time solar, sidereal and G.M.T. The ecliptic and the **Zodiacal constellations**
- . How the planets appear to move against the night sky · Use of the Helios outside at night - where should the stars
- appear in the sky?

Takes 4x D size batteries, not included.

Туре Order code Orrery and Star Dome 52-7145 338.08



#### **Physics** 265

- · Refracting telescope with 60mm lens diameter and 700mm focal length

Impressive 262 x magnification

Includes three evenieces



### (B) BRESSER

#### **Optik Junior Astro Planetarium** with Motor

This Bresser Optik Junior Astro Planetarium with Motor does an ideal job in displaying the beauty of the night sky on your wall or ceiling.

The two projection discs show more than 8000 constellations and celestials bodies, while

the super-bright LED can project from a distance of up to 3m. By setting the date and the time, you can simulate the sky at night exactly as it was from a past date or special occasion. Equipped with two motors to rotate the projected image onto the ceiling, sending shooting stars flying through the room

- · More than 8000 celestial objects
- With 2 motors for a moving image
- Shooting star function 3x 1.5V DC (AA battery)
- Clock adjustable to day and time
- More than 8000 celestial objects stored on two
- projection screens · Moving projection image with two built-in motors
- · Shooting star function in 40 second cycles
- Very bright LED projector
- Projection angle and distance adjustable (up to 3m)
- Automatic power off after 30, 60 or 120 minutes
- · Includes batteries and user manual
- Manufacturer's part 8847100

Туре	Order code	1+
Planetarium	49-0173	50.39

Learning Resources<sup>•</sup>

Туре

#### **Giant Magnetic Solar System**



Most children love learning about the planets and this Giant Magnetic Solar System from Learning Resources will really capture their attention. These full-colour magnets can help you model all the concepts of the solar system, simply by using a whiteboard. The magnets include the 8 main planets, plus Pluto, the sun, the moon and the asteroid belt.

- Set of 12 magnets
- · Largest magnet 25cm diameter
- Suitable for ages 5+
- Manufacturer's part LER 6040

Туре Order code 06-8960 11.99 Solar system



### CIC Solar Powered Solar System

This Solar-Powered Solar System Kit is ideal for young astronomers and model-makers as they build, paint, then watch their own Solar System come to life, powered by solar engery. Planets

orbit around the solar-powered 'Sun' that drives a motor moving the planets in realistic orbits. This excellent educational solar kit provides hands-on learning about how solar power drives a motor. The kit comes complete with 6 colours of opaque acrylic paint, plus a paintbrush.

- Solar-Powered Solar System Kit
- · Build and paint your own working Solar System model
- · Powered by solar engery
- · Planets orbit around the solar-powered 'Sun'
- 6 colours of acrylic paint, plus a paintbrush
- Great exercise in science and creativity

Solar	battery	and	colour	table	Incl	uded	
mo			0	Irdor oo	10	1+	



This attractive hands-on Tellurium model from Cochranes of Oxford shows the Sun, Earth and Moon, correctly geared to show each month as the Earth orbits the Sun.

The flexible design instantly engages pupils and illustrates complex relationships more easily. The Orbit Tellurium 2 is an ideal model to aid lessons on: day and night, seasons of the year, the Sun's movement across the sky, changing length of daylight, shadows, the phases of the Moon, the crescent Moon from different latitudes, Eclipses of the Moon and Sun, the use of sundials and shadow sticks. Junar months and festivals linked to the Moon.

- · Rotate the model and watch as the Earth orbits the Sun, the Moon orbits the Earth and the Earth spins on its axis
- Shine the light from the Sun onto the Earth to model night and day, the seasons and eclipses and create shadows
- · Use the small-scale Earth and Moon on an inclined orbit to give an accurate demonstration of the phases of the Moon and show why eclipses do not happen every month
- · Contains: Tellurium model with accessory tidy, two sizes of Earth and Moon, stick-on model person, sundial, date, eclipse and phase of the moon indicator cards plus teacher guide with suggested activities
- Power transformer included (No batteries required)
- Size: 65cm long, 25cm high

Order cod Orbit Tellurium 2 52-7141 159.68

Black Equipment Wire

7/0.2 (100m Reel)

£6.90

Page 114

Order code 01-0400

Only



### **Cross-Section Foam Earth Model**







#### **Inflatable Solar System Set**



A set of models of the Sun, planets and the earth's Moon that will encourage students to learn about the position, order, size and shape of the contents of the solar system. When the lesson is finished simply hang everything from the ceiling.

- Made from durable washable plastic
- Hanging hooks provided
- Can be deflated for easy storage
- Supplied complete with foot-pump repair kit and activity guide

#### Suitable for Key Stages 1 & 2 (ages 5 to 11)

Technical spec	ification		
Planet	Diameter	Planet	Diameter
Sun	580mm	Jupiter	360mm
Mercury	150mm	Saturn	280mm
Venus	190mm	Uranus	230mm
Earth	190mm	Neptune	230mm
Moon	130mm	Pluto	130mm
Mars	150mm		

24.06

Solar system set 06-5936



### Tel: 01206 751166 Fax: 01206 751188

Education 15

Physics

### Electricity

### eisco

Order code 52-4207: This basic student kit from Eisco has been designed as a resource for the introductory teaching of electricity. · Suitable for groups of

- up to 6 students
- Set includes 6 bulbs Includes detailed instruction manual

Order code 52-4092: This comprehensive kit from Eisco provides a low-cost and flexible alternative to the "circuit board" approach for investigations into simple electricity circuits.

Each component - such as a switch, rheostat or bulb holder - can be mounted on its own individual plastic panel with 4mm sockets. The panels are then formed into circuits by using 4mm stackable leads.

Each kit is supplied in two polystyrene trays that keep the units organised. Designed as a resource for the teaching of introductory electricity, these kits include a well-structured instructional material and robust components mounted on tough, yellow plastic bases, each with two 4mm sockets.

Set includes: 6 x cell holders (without cells); 6 x bulbs in holders; 3 x press switches; 3 x two-way switches; 18 x connecting leads; Primary Electricity Kit booklet.

Туре	Order code 1+
Primary basic electricity kit A	52-4207 22.04
Comprehensive basic electricity kit	52-4092 125.99

### eisco **Electricity Kit**



This electricity kit from Eisco provides the perfect starter platform to conduct a range of physics experiments, particularly those involving electricity and magnetism.

- Set includes 37 pieces
- Batteries not included

Type

Electricity kit

Manufacturer's part ELEM2

Set includes the following: 2 x stackable single cell holders; 3 x 300mm red and black crocodile leads; 2 x 300mm red and black banana plug leads; 1 x resistance 5 $\Omega$  1/4W; 1 x resistance 10 $\Omega$ 1/4W; 2 x rheostats on base; 2 x bulb holders on base; 2 x push switches on base; 1 x voltmeter; 1 x ammeter; 1 x electroscope; 1 x silk cloth; 2 x PVC rod; 1 x acrylic strip; 1 x electrolysis apparatus; 1 x 10g cupric sulphate; 1 x L base; 1 x support rod for L base; 1 x rectangular wire coil; 1 x bar magnet; 1 x U-form electromagnet with keeper; 1 x U magnet; 1 x electro bar magnet; 1 x 10g iron filings; 1 x magnetic needle stand; 1 x 62mm magnetic needle; 5 x 5ins microfine wire

Order code 1+

52-4128 39.86

# **=**Rapid



A cost-saving classpack containing a selection of commonly used electrical accessories.

- Cost saving over buying parts separately
- · Popular parts can be topped up
- · Packed in a Gratnells storage tray with lid
- · Please see individual product descriptions for full details

<ul> <li>Supplie</li> </ul>	d as <b>a pa</b>	CK
Technical spe	cification	
Order code	Quantity	Description
41-0125	10	3.5V bulbs
18-0125	5	2x AA battery holders
41-0070	5	Bulb holders
37-0140	5	Motors
18-0105	5	Battery snaps
17-0350	1	Crocodile leads (Pack of 10)
01-0102	5	Wire
75-0180	5	Toggle switch
76-0100	5	Slide switch
78-0115	5	Push on/off switch
78-0112	5	Push to make switch
35-3610	5	Buzzer
14-0430	1	Gratnells tray
14-0436	1	Lid for tray
Type		Order code 1+

Electricity classpack 70-1012 41.41

## eisco

#### **Demonstration Dynamo** with Hand Pullev

This working model dynamo is mounted on a 200 x 125mm base plate, which also supports a 125mm diameter hand-driven pulley. The pulley is coupled, via a rubber belt, to a smaller pulley on the dynamo shaft. providing a step-



up ratio of rotational speed.

Electrical output is via a pair of 4mm sockets and a light emitting diode is provided as a simple output indicator. The model can also be used as a motor when connected to a 6 to 8V DC supply (not included).

- · Electrical output via 4mm terminals
- LED output indicator
- · Can be used as a demonstration motor (requires 6 to 8V DC power supply)
- · Includes instruction manual
- Eisco type PH1246



# No minimum order value UK mainland only



Useful for a variety of laboratory demonstrations, these rheostats provide a variable resistance in electrical circuits.

Oxidized constantan wire is wound on a vitreous enamelled tube. A sliding contact carriage, mounted on the slide bar, carries a phosphor bronze contact for long life. The rheostats have three binding posts with 4mm sockets for electrical connections: one at each end of the winding and another at the end of the slide bar.

· Available in a range of resistance values

Resistance in Ohms	Order code	1+	
20	52-3337	20.66	
37	52-3336	20.66	
55	52-3334	18.43	
125	52-3335	20.66	

eisco

#### Van De Graaff Generator Motor or Hand Driven



These Van De Graaff generators have been specially designed for electrostatic experiments, and where a source of high voltage is required.

The generators are mounted on a stable base along with a choice of a hand-cranked pulley or a smooth-running AC motor

- · Develop voltage up to 200kV, depending on ambient conditions
- Spark length up to 60mm
- Sphere: aluminium
- · Charge collecting belt: silicon rubber with excellent insulation resistance
- · Belt-tracking easily adjusted
- · Acrylic shaft allows for full visibility
- Charge collecting combs: aluminium mesh, clearly visible
- · Connections: 4mm sockets in dome and base • Discharger: spherical 100mm dia., with insulated handle
- and 4mm sockets 52-3416 can be operated by hand, or from a 110 or 220V AC mains supply
- 52-3636 is operated by hand only

Drive method	Order code 1+	
Motor or hand	52-3416 124.18	
Hand only	52-3636 101.12	
		505535

www.rapidonline.com sales@rapidonline.com

**Electricity Class Pack** 



**DESIGN & TECHNOLOGY and SCIENCE POSTERS** 

Email education@rapidonline.com for your pack



### Tel: 01206 751166 Fax: 01206 751188

268

# 15 <sup>2</sup>hysics

AC or DC ammeters or panels

Exchangeable scales with built-in shunts are available separately that allow the meter to measure higher voltage and current.

Exchangeable scales with built-in shunts are available separately that

Туре	Order code	1+
Demonstration meter	52-3338 3	9.49
Scale - 1V	<b>52-2999</b> 6	5.21
Scale - 0 to 1A	<b>52-3339</b> (	i.21



Quote RCODE when ordering

### **Circuit Components**

### **=**Rapid

**Essential Tool Pack** 



- Your chance to buy a selection of essential hand tools, whilst also making a substantial saving.
- · Supplied in a handy Gratnell's storage tray with clip-on lid

	- 10		
Quantity:		Order code	
3x Economy side cutter		85-0205	
3x Economy snipe nose plier		85-0225	
3x Light duty wire stripper		86-0350	
3x Flat blade screwdriver 100 x 3	lmm	86-0405	
3x Slotted screwdriver 100 x 5.5r	mm	86-6416	
3x Pozidriv screwdriver 75mm x P	z1	86-6424	
1x Shallow tray		14-0430	
1x Tray lid		14-0436	
Туре	Order code	1+	

Tool pack 13-0130 32.16



#### **Magileads Magnetic Leads**



Magileads are electrically conductive wires, with tiny magnets fitted at either end, which are used to provide an instant and effective electrical connection. For children presented with a battery, bulb and a couple of Magileads, making a circuit could not be easier.

- · No stripping, cutting or use of any sort of mechanical joint is required
- Great primary school product
- Supplied in packs of 10

Туре	Order code	1+	
MagLeads 150mm	17-1500	6.19	
MagLeads 300mm	17-1502	6.60	
-			066068

<b>ERVFM</b> Crocodile Lead Pack
A place of 400 min hong crocodile clip leads. Available in either a pack of 10 leads in 5 colours, or a pack of 20 leads in red and black.
<ul> <li>Terminated at each end with a vinyl covered crocodile clip</li> <li>Ideal for use as test clips</li> </ul>

Туре	Order code	1+	10+	
Assorted pack 10	17-0350	2.66	2.16	
Red/black pack 20	17-0345	5.00	4.33	

Tru@nnect
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4mm Stackab These 4mm plugs have a 4mm socket in the rear providing an in-line stacking facility.	le Plugs				
<ul> <li>The lead wire is clamped in position by a screw</li> <li>Nickel plated brass insert with state</li> <li>30A rating</li> <li>Spare screws are av</li> </ul>	inless steel pailable	plug sp	oring		
			MOQ 2		
Туре	Order code	2+	100+	500+	
Black stackable plug	17-0400	0.745	0.559	0.491	
Blue stackable plug	17-0405	0.745	0.559	0.491	
Green stackable plug	17-0410	0.745	0.559	0.491	

Green stackable plug	17-0410	0.745	0.559	0.491	
Red stackable plug	17-0420	0.745	0.559	0.491	
White stackable plug	17-0425	0.745	0.559	0.491	
Yellow stackable plug	17-0430	0.745	0.559	0.491	
	Price each				
Туре	Order code	1+	5+	10+	
Spare screws (Pack of 25)	17.0398	1 10	0.071	0.885	

## Tru@hm

### **Preset Potentiometer Kit**

A pack containing a total of 110 miniature horizontal preset potentiometers

- · Each value individually packed
- · A total of 13 different values

See www.rapidonline.com for suitable storage cabinets.

Kit contains:						
5 x 100R	10 x 1K	15 x 10K	15 x 1	00K	10 x 1M	
5 x 200R	10 x 2K	5 x 20K	5 x 20	00K		
5 x 500R	10 x 5K	10 x 50K	5 x 50	00K		
Туре		Order code	1+	5+		
Preset noter	ntiometer kit	13-0225	12 30	10 27		

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·	r		



#### **Standard Toggle Switches**

Low-cost standard size toggle switches.

- Complete with On/Off plate
- Rated at 250V 1.5A
- · Panel cut-out 12mm • These switches are not
- recommended for industrial

applic	auons					
		MOQ 5 - In Multiples of 5				
Туре	Body dim.	Order code	5+	10+	100+	
SPST	25 x 14 x 14	75-0180	0.783	0.726	0.653	
				Price eac	:h	
Туре	Body dim	Order code	1+	10+	100+	
DPDT	28 x 18 x 14	75-0185	0.863	0.799	0.756	
						030255

Miniature Slide A miniature slide switch solder tag connections before make DPDT com	e Switcl with and break tacts.	nes			6
<ul> <li>Suited to a wide range miniature electronic electronic electronica</li> <li>Contacts rated at 0.3</li> <li>Fixing centres 19mm</li> <li>2x M2 fixing holes</li> </ul>	ge of equipment 3A, 125V AC		Ļ	00	
MOQ 10 - In Multiples of 5					
Туре	Order code	10+	100+	500+	1000+
DPDT slide switch	76-0100	0 263	0 184	0 145	0 117

=RVFI	И	
Standard	Slide	Switches
tondard alida	cwitchoc	with

■RVFM

ches with solder tag connections and break before make DPDT contacts.

- Also available in centre off · Suited to a wide range of
- miniature electronic equipment Contacts rated at 0.3A, 125V AC
- Fixing centres 28mm

	MOQ S	5 - In Mul	ltiples of	5	
Туре	Order code	5+	100+	500+	1000+
DPDT Std. slide	76-0105	0.304	0.254	0.211	
DPDT Centre off slide	76-0110	0.284	0.222	0.184	0.174

Education

### **=**RVFM **Miniature Push-button Switches**



A range of low-cost, miniature push to make and push to break switches that are available in various button colours.

- Ideal for school projects and prototyping
- Non-locking
- Rated 125V AC 250mA
- · Panel cut-out 7mm • Dimensions 28mm long, ø10.5mm
- Note: These switches are not recommended for industrial applications.

	MOQ 10 - In Multiples of 10				
Colour	Order code	10+	100+	500+	
Push to make					
Black	78-0118	0.21	0.185	0.17	
Red	78-0100	0.21	0.185	0.17	
Blue	78-0119	0.21	0.185	0.17	
Green	78-0120	0.21	0.185	0.17	
White	78-0121	0.21	0.185	0.17	
Yellow	78-0122	0.21	0.185	0.17	
Push to break					
Black	78-0105	0.21	0.185	0.17	
Red	78-0123	0.21	0.185	0.17	



www.rapidonline.com sales@rapidonline.com

### NTC Disc Thermistors

A range of miniature disc thermistors for general purpose applications such as temperature measurement and thermal compensation circuitry.

 The thermistors are clearly coded and have a wide working temperature range of -30°C to +125°C and a tolerance of 10%

#### Technical specification

Resistance	Approx. resistance	Max. current	B-Constant	Inermal time	Urder
at 25°C	@ 100°C	@ 25°C		constant	code
100Ω	11Ω	-	3200°K	20s	61-0398
300Ω	24Ω	115mA	3500°K	22s	61-0400
1kΩ	90Ω	70mA	3800°K	22s	61-0405
5kΩ	300Ω	30mA	3950°K	21s	61-0410
20kΩ	1kΩ	20mA	4250°K	23s	61-0415
100kΩ	5kΩ	10mA	4400°K	24s	61-0420

		MOQ 5			
Туре	Order code	5+	25+	100+	500+
100Ω	61-0398	0.40	0.299	0.239	0.201
300Ω	61-0400	0.264	0.204	0.151	0.14
1kΩ	61-0405	0.299	0.239	0.173	0.149
5kΩ	61-0410	0.299	0.239	0.173	0.149
20kΩ	61-0415	0.299	0.239	0.173	0.149
100kΩ	61-0420	0.264	0.204	0.151	0.14
					031916

### eisco

#### Laboratory Resistance Units

easy-to-use plastic enclosures with 4mm terminals. These resistance units are useful for physics classroom demonstrations or experiments in electricity and electronics laboratories.



- · Connect to other resistance units or circuit elements with
- standard 4mm leads (not included) · Can be used with 4mm stackable plug leads, spade
- terminals or bared wires Overall dimensions: 50 x 50 x 40mm

#### Eisco PH1143 series

Resistance	Order code	1+	
1 Ohm	52-3481	1.19	
2 Ohms	52-3483	1.10	
5 Ohms	52-3486	2.65	
10 Ohms	52-3482	2.65	
50 Ohms	52-3487	2.54	
200 Ohms	52-3485	1.19	
			56560





### **Dataloggers**

### LogIT

#### Explorer



The LogIT Explorer is the complete data logging solution for primary and lower secondary education. Utilising the latest technology and design it provides the ideal link between real hands-on science and IT to enhance and develop science for young students.

The explorer has been designed to meet the requirements of the current teaching curriculum as well as allowing for future education needs. Available in single versions as well as in two five-pack versions containing extra sensors (please see technical specifications for details).

- An all-in-one solution for data logging which can be used for many different experiments
- Designed to be used by young people, with simple to use controls (e.g. green button for GO, red button for STOP), as well as familiar stereo headphone type plugs for sensors, and a lanyard eyelet for security
- 3 built-in sensors for light, temperature and sound, plus 3 ports for a range of Explorer external sensors, up to 3 sensors can be used simultaneously
- · Light sensor can also be used to time and calculate the speed of moving objects as well as a motion detector
- · Results can be viewed on the Explorers LCD display or stored for subsequent downloading to computer (via supplied software)
- · Software for Explorer and computer fully upgradeable via a simple internet link.
- Additional sensors available

5

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- Suitable for Key Stages 2 & 3 (ages 7 to 14)
- Powered by 4x AA batteries or by connection to a computer via USB connection.

echnical specification	
emperature range	-10°C to +50°C
ight level range	0 to 20,000 Lux
• •	
c requirements:	Mac - OS 9.2/OSX/10.4+ Linex
ingle pack includes:	Explorer datalogger with built-in sound, temperature and light sensors Single user datalogging software CD
	Computer connection cable
	Full instructions and teacher resource book
	Foam insert
SB Five pack includes:	5x USB port Explorer dataloggers 5x USB cables 5x Evplorer backs with 14 Explorer investigations
	5x Fibreoptic light sensors
	1x Explorer site licence with CD and manual Foam insert
ISB Five plus pack includes:	5x USB port Explorer dataloggers
	5x USB cables 5x Explorer books with 14 Explorer investigations
	5x Fibreoptic light sensors
	1x LogIT Lab for Explorer site licence with CD and manual
	1x Explorer temperature sensor
	1x Explorer controller set with lamp, buzzer, motor and fan
	1x Explorer interactive site licence CD
	Foam insert
Гуре	Order code 1+
JSB Port windows	85-2661 184.49
Windows USB 5 pack	<b>85-2659</b> 1004.28
Nindowe LICD 5+ pack	85-2658 053 06

### **=**Rapid **Mini USB Dataloggers**



**=**Rapid

This range of mini USB dataloggers are an indispensable tool for investigations and experiments where there is a requirement to record temperature, light level, voltage or acceleration.

The dataloggers are in the form of a USB stick, so no cables are required to retrieve data or configure the device. The sensor, memory and battery are all encapsulated on a single circuit so no additional hardware is required.

Simply plug the datalogger into your PC or laptop and configure it. Unplug it and position it where you want it to log. At the end of the logging period, plug it back into your PC or laptop to retreive your data.

- 4 versions available: light, temperature, voltage and acceleration
- Replaceable battery no cables required
- Battery life approx. 2 to 3 years
- Recommended temperature range -20 to +60°C
- Can be used outside or in a liquid, if protected in a selfseal bag or container
- · Simple to program using the free downloadable software

Туре	Order code	1+
Temperature	52-3300	17.90
Light level	52-3301	17.90
Voltage	52-3302	24.90
Acceleration	52-3303	24.90

## eisco

### Laboratory Timer and Timing Gate

A precision digital timer designed to measure the time interval between any two events with high accuracy.

The timer has four operating modes: manual, free-fall mode, timing gates mode and any other triggering start and stop.



The timer has a built-in power source for timing gates and the coil for 'g' by free fall apparatus.

- Display: LED 14mm
- · Suitable for use with 'g' by free-fall equipment
- · Supplied with timing gates & instruction manual
- Eisco type LBTM

T

/pe	Order code	1+	
imer & timing gates	52-3434	99.89	
			565584



### Tel: 01206 751166 Fax: 01206 751188

15

<sup>2</sup>hysics

Single resistors encased in