Electronic Kits



| Airgineers | 80 |
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Audio Amplifier Project Kit Pack of 5 (PCBs not included)

£10.66 Order code 70-0180



555 Monostable Project - Economy

£2.73 Order code 70-6012

Full range of Electronic Kits available at:

www.rapidonline.com

NEW CHALLENGE COMING SOON!

Airgineers is a STEAM challenge for secondary school aged students who will need to design, build and learn to fly their own radio-controlled quadcopter, also known as a drone.





Design using free CAD software

Autodesk are the biggest name in CAD software and have products that are used in engineering, product design, architecture, film, game design and VR. Airgineers have worked closely with Autodesk to develop resources for the Fusion 360 and TinkerCAD software to help students learn how to design a drone from scratch, and the best part is that for schools and students, this software is completely free.

Fusion 360

Fusion 360 is professional-grade software that combines computer-aided design, manufacture and engineering (CAD, CAM and CAE) into a single software package. Whilst the software is installed and run locally, Fusion 360 allows users to harness the massive power of Autodesk's cloud computing to speed up rendering and processing of more complex designs.

TinkerCAD

TinkerCAD is a free, easy-to-use browser-based app for 3D design, electronics and coding with a shallow learning curve. Because it is browser-based, there is no software to install and students can access it almost anywhere

Visit www.airgineers.co.uk to learn how to access the software.

Design Examples Airgineers Micro Drones can be manufactured using all manner of techniques and materials,

each with different advantages. Here are just



Foamboard and 3D printing

Vacuum forming and 3D printing

Please note these images show a camera module which is not part of the standard Airgineers Micro Drone design.

BUILD

Soldering



3D Printing Vacuum forming



Airgineers was created to provide a cutting-edge design and manufacture project that would allow students to learn CAD skills and apply them to manufacturing techniques such as 30 printing, laser cutting and vacuum forming as well as hand-made prototypes.



Now's the time to fly your drone, either for fun or in team or individual challenges, and increase your skills at pitch, yaw and roll.





82 Electronic Kits

=Rapid



CREATE YOUR OWN MINI-LIGHT



=Rapid Mini-light Project Kits



LED key ring light kits designed as an introduction for **Key Stage 2 & 3** students to design and make in electronics. Project notes are available as a free PDF download, at **www. rapidonline.com** and are designed to be photocopied for class and teacher use.

Notes include suggested lesson plans and mapping to the National Curriculum, an introduction to circuits and symbols, batteries, LEDs and pricing and costing exercises and a series of homework assignments to support work in class.

- Students start by investigating the need for security and the problems of using locks in the dark
- They can then complete the design process of a mini-light, which can be attached to a key ring
- With careful organisation it should be possible to manufacture the design without specialist workshop facilities
- The component kits include batteries and LEDs, plastazote foam core and high impact polystyrene outer layers
- Available in four styles:
- · Standard Mini-light is a keyring torch kit using a red LED
- Super-bright Mini-light is an updated version using a modern white LED
- · Rainbow Mini-light has a random colour-changing LED

Ultraviolet Mini-light has a UV LED and can be used for

revealing security coding on banknotes, etc.
Suitable for Key Stages 1, 2 & 3 (ages 5 to 14)

| _ | Vite and arrow | liad in marks of F | , |
|---|----------------|--------------------|---|
| • | Kits are supp | ned in packs of 5 | |

| Туре | Order code | 1+ |
|-------------|------------|-------|
| Red | 70-0015 | 2.94 |
| White | 70-0012 | 4.53 |
| Rainbow | 70-0013 | 4.97 |
| Ultraviolet | 70-0014 | 5.35 |
| | | 20000 |

=Rapid Mini-light Project Classpacks

This simple but interesting project has been designed by Rapid's technical team for **Key Stages 1**, **2** & **3** students. It will help them to make a fully working mini-light from the parts supplied in this



great kit. All the notes for making this kit are available as a free download from: www.rapidonline.com The classpack is supplied in a handy storage tray with lid, containing sufficient components for 20 mini-lights.

- Batteries and LEDs
- Plastazote foam core
- High impact polystyrene outer layers
- Available in four styles:
- Standard Mini-light is a keyring torch kit using a red LED
 Super-bright Mini-light is an updated version using a modematike LED
- modern white LED • Rainbow Mini-light has a random colour-changing LED
- Ultraviolet Mini-light has a UV LED and can be used for
- revealing security coding on banknotes, etc.
- Suitable for Key Stages 1, 2 & 3 (ages 5 to 14)
 Supplied in classpacks of 20
- Also available in an assorted classpack of 20, containing
- 5 of each type

| Туре | Order code | 1+ | | |
|--------------------|------------|-------|---|-------|
| Standard classpack | 13-0138 | 16.14 | | |
| White classpack | 13-0155 | 20.10 | | |
| Rainbow classpack | 13-0156 | 21.76 | | |
| Assorted classpack | 13-0158 | 20.50 | | |
| | | | - | 70057 |

=Rapid **Flashing LED Christmas Tree Project Kit** A kit of parts for a simple to build festive project. Supplied with comprehensive instructions. Ideal as a one lesson end of term project. Size of finished tree: height 105mm, width (max.) 65mm Available individually and as a money-saving classpack of 30 kits supplied in a Gratnells tray Suitable for **Key Stage 3** (ages 11 to 14) Requires soldering Each kit requires 1x PP3 battery (not included). 70-1000 4.20 Christmas tree kit lasspack of 30 70-1005 60.69





Watch our step-bystep video

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Electronic Kits

CREATE YOUR OWN MOISTURE TESTER

=Rapid

Moisture Tester Project

Kits of components to build a functional Moisture Tester that can be used to tell if pot plants require water.

The kits contain all the electronic components required, except the PCBs, which are available separately. This provides the option to buy ready-made PCBs or for students to make their own.

The moisture tester project has been designed as an introduction for Key Stage 2 & 3 students to the use of resistors and transistors in circuits.

Teachers notes are available to download from www. rapidonline.com/pdf/70-0030e.pdf.

- · Students start by investigating the care of house plants and the problems associated with incorrect moisture content of soil
- · Downloadable information and activity sheets then guide the students through a series of exercises to build background knowledge in the use of resistors and transistors in circuits
- · For manufacture, the project allows the teacher to select from two alternative methods of circuit construction, either self adhesive copper tape onto card or on a printed circuit board (available separately) see order code 34-0635
- Upon completion of manufacture students are then guided through an evaluation of their work
- They also have the option of producing a 3D model using high density polystyrene foam illustrating how they might develop a final product if the design were manufactured commercially
- · Project notes are available for free download and are designed to be photocopied for class use
- They include both detailed student and teacher notes, which contain suggested lesson plans, mapping to the National Curriculum and a series of structured homework assignments to support the work in class

The component kits are supplied in multiples of 5 and include:

- · All components including LEDs, battery clip, resistors and transistors
- The project can be produced using PCB available or self adhesive copper tape (see PCB products section)
- Suitable for Key Stages 2 & 3 (ages 7 to 14) Each kit requires 1x PP3 battery (not included)



Туре

Watch our step-by-step video youtube.com/rapideducationtv

Lesson plans and teacher notes available online!



=Rapid **Moisture Tester Project Classpack**

A classpack of 20 kits of components to build a functional Moisture Tester that can tell if pot plants require water. The classpack contains all the electronic components required. including ready-made PCBs, in a Gratnell's



Tray with lid. It offers a substantial saving compared to parts bought separately.

Students will love this Moisture Tester Project, which is linked to the National Curriculum, as it is simple to assemble and is ideal as an introduction to electronics.

70-0030

- Dimensions of the box: 43cm x 31cm x 7cm
- · Great school resource
- · Each kit requires 1x PP3 battery (not included)
- Suitable for Key Stages 2 & 3 (ages 7 to 14)
- Supplied as a pack

Classpack contains:

- 4 x Moisture tester kit (pack 5)
- 4 x Moisture tester kit PCBs (pack 5) 1 x Shallow Tray
- 1 x Tray lid

Type

- Order code 13-0102 24.06
- 70-0030 70-0040 14-0430 14-0436 Moisture tester classpack

MAKE YOUR OWN 555 TIMER





Watch our step-by-step video

=Rapid

555 Timer Project Kits

The timer project has been designed as an introduction to the use of the NE555 monostable and resistor-capacitor timing circuits.

- · Students start by investigating the need for an accurate timer and are then led through the complete design process
- · Upon completion of manufacture, students evaluate their work and start to look into commercial product development
- . The information and activity sheets guide the students through a series of exercises, including the use of Crocodile
- Clips software, to build up knowledge in the use of the NE555 monostable within circuits · Project notes are available and are designed to be photocopied for class use
- They include both detailed student and teacher notes, which contain suggested lesson plans, mapping to the National Curriculum and a series of structured homework assignments to support the work in class
- The component kits are supplied in multiples of five and include: NE555 and IC holder, resistors and capacitors, buzzers and LEDs, switches and potentiometer and battery clips
- Pre-drilled PCBs are available separately in packs of 5, (70-0060)
- Suitable for Key Stage 3 (ages 11 to 14)

Each kit requires 1x PP3 battery (not included).

| Order code | 1+ |
|------------|----------------------------------|
| 70-0050 | 10.57 |
| 70-0060 | 3.69 |
| | Order code 70-0050 70-0060 |

Lesson plans and teacher notes available online!

=Rapid **555 Timer Project** Classpack

Your chance to buy a classpack of 20 Timer Project kits offering a substantial saving. Linked to the National Curriculum and supplied in a handy storage tray, complete with lid

· Great school resource

- Suitable for Key Stage 3 (ages 11 to 14)
- Supplied as a pack of 20 kits

Each kit requires 1x PP3 battery (not included). Each student will also require: 4 x M3 6mm pan head slotted screws (available as Rapid part 33-1500), 4 x M3 12mm pan head slotted screws (33-1510), 4 x M3 spacer 4mm (33-3632) and 4 x 18mm threaded spacers (33-3535).

| Classpack contains: | | | |
|------------------------------------|---------|-----------------|---------|
| 4x Timer project kit (pack 5) | 70-0050 | 1x Shallow tray | 14-0430 |
| 4x Timer project kit PCBs (pack 5) | 70-0060 | 1x Tray lid | 14-0436 |
| | | | |

| Туре | Order code | 1+ |
|-----------------|------------|-------|
| Timer Classpack | 13-0104 | 43.92 |
| | | |

www.rapidonline.com/education









HOW TO BUILD A LOGIC ALARM

=Rapid

Logic Alarm Project Kit Set of 5

This project is designed to cover key topics in electronic based exam courses at GCSE level.

Electronic Kits

- Each unit of work will offer students an opportunity to build a fundamental circuit and incorporate this with their own design
- The student notes are also supported with a set of teaching notes outlining the areas of the syllabus covered, suggested lesson plans and mapping to the National Curriculum
- Care has been taken to ensure that this project provides schools with a cost-effective, flexible method of offering a practical class based assignment
- The Logic Alarm project is an ideal way to introduce students to logic circuit theory and design
- The notes guide students through the fundamentals of logic, the use of truth tables, common logic gates and the design of combination circuits
- The notes also look at the difference between TTL and CMOS based ICs and their use in project work
- Detailed worksheets can be used in conjunction with Crocodile Clips and PCB Wizard software with a range of homework based assignments
- All circuit design is developed from a systems approach
- Project notes are designed to be photocopied for class and teacher use
- The notes contain exercises that cover, in detail, core elements found in examination syllabuses



Lesson plans and

teacher notes

available online!

- The component kits are supplied in multiples of five and include:
- ICs and switches

Watch our step-by-step video

youtube.com/rapideducationtv

- Resistors and capacitors
- · Piezo sounders and battery clips
- Pre-drilled PCBs are available separately in packs of 5, order code 70-0085
- Suitable for Key Stages 3 & 4 (ages 11 to 16)
- Requires 1x PP3 battery per kit (not included).

| Class set of 5 kits 70-0075 7.58 | Туре | Order code | 1+ |
|----------------------------------|---------------------|------------|------|
| PCB packs of 5 70-0085 3.75 | Class set of 5 kits | 70-0075 | 7.58 |
| | PCB packs of 5 | 70-0085 | 3.75 |

HOW TO BUILD AN AUDIO AMPLIFIER

=Rapid Audio Amplifier Project Kits



Aimed at **Key Stage 3**, the audio amplifier project provides teachers with a stimulating and inexpensive project through which to study the subject of amplification.

This schools projects package contains a comprehensive selection of components for schools working on audio related projects linked to the National Curriculum. The classpacks of 20 projects include PCBs and offers a worthwhile saving over parts bought separately which is ideal for schools working to tight budgets.

Teaching resources are available for free download at www.rapidonline.com

 Students have the opportunity to build a small amplifier, which can be incorporated into a variety of product designs, e.g., as an amplifier for a personal CD/MP3 player so that they can share their music with their friends

- The students have a number of design situations to select a starting point from, and they are provided with research topics and background material to help build understanding for their chosen design brief
- The student notes provide material for students to explore how a range of simple amplifier circuits work
- They also include guidance on the design and construction of speakers
- To support students during the construction of the circuit, detailed instructions have been included on how to assemble the amplifier, and how to integrate the circuit into student designs
- In addition, care has been taken, through extensive evaluation of the teaching material and PCB designs in schools, to ensure that the circuits are easy and robust enough for student manufacture
- The project notes have been designed for photocopying for class use

Each kit contains the following:

- TBA820M audio amplifier and IC socket
- Resistors, capacitors, and LED
- · Switch and connecting jack socket
- Connecting cable
- Speaker and speaker cable
- Battery clip
- Available in packs of 5 kits, 70-0180, (no PCBs) or classpacks of 20 packs (including PCBs)
- Classpack of 20, **13-0106**, is supplied in a 43 x 31 x 7cm Gratnells tray
- Classpack of 20, 13-0105, has an enclosed battery box and is supplied without the Gratnells tray

Each kit requires 1x PP3 battery (not included).

Pre-drilled PCBs are available separately in packs of 5, order code **70-0190** (Included in Classpacks of 20, **13-0105** & **13-0106**).

| Туре | Order code | 1+ |
|-------------------------|------------|-------|
| 5 kits no PCBs | 70-0180 | 10.66 |
| 20 kits + PCBs in tray | 13-0106 | 43.63 |
| 20 kits + PCBs no tray | 13-0105 | 58.37 |
| Circuit boards (Pack 5) | 70-0190 | 5.89 |
| | | |





Watch our step-by-step video youtube.com/rapideducationtv

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Lesson plans and teacher notes available online!



sales@rapidonline.com

Education

PROJECT IDEAS

VISIT WWW.RAPIDONLINE.COM/STEAM-LAB/ **PROJECTS** TO VIEW A HUGE RANGE OF PROJECTS, HERE IS A GLIMPSE OF WHAT THERE IS ON OFFER



555 Timer







SPORTS ROBOT

HOW TO BUILD A Logic Alarm

HOW TO BUILD

An Audio Amplifier

REACTION GAME micro:bit Project

CREATE

YOUR OWN Mini-Light





STEP COUNTER micro:bit Project













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Makey Makey





POLLEN LOVE WITH BEES! Ozobot Project



WWW.RAPIDONLINE.COM/STEAM-LAB

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10W + 10W Stereo Amplifier Kit

Our most powerful audio amplifier kit has 10W per channel, meaning it can drive much larger speakers to give a loud, clear sound. The kit is available with speakers or without if you would prefer to add your own.

· Kit includes PCB and all

- components to make one stereo amplifier
- 10W power per channel
- Connecting cable supplied
- Available with or without speakers
- · Requires 4x AA batteries (not included)
- · Empty printed circuit board also available separately
- Note: Colour of individual components may vary from those shown

| Туре | Order code | : 1+ | |
|---------------------|------------|-------|--------|
| 10W - No Speakers | 70-0188 | 8.74 | |
| 10W - With Speakers | 70-0189 | 13.35 | |
| PCB Only | 70-0195 | 2.29 | |
| | | | 51029/ |

=Rapid 2.5W + 2.5W Stereo Audio Amplifier Kit

This stereo audio amplifier kit gives you more power and more volume than our standard kits. Each channel can deliver up to 2.5W per channel for a louder, crisper sound. The kit is available with speakers or without if you



would prefer to add your own.

- Kit includes PCB and all components to make one stereo amplifier
- 2.5W power per channel
- Connecting cable supplied
- · Available with or without speakers
- Requires 4x AA batteries (not included)
- · Empty printed circuit board also available separately

| Туре | Order code | 1+ | 20+ | |
|----------------------|------------|-------|------|--------|
| 2.5W - No Speakers | 70-0186 | 7.77 | 6.01 | |
| 2.5W - With Speakers | 70-0187 | 12.28 | | |
| PCB Only | 70-0194 | 1.12 | | |
| | | | | 519383 |

RK Education

Stereo Audio Amplifier Kit

This project kit is a stereo version of our popular Audio Amplifier Project, 70-0180. Once assembled, the amplifier can be connected to MP3 players, laptops or any other device with a 3.5mm headphone jack socket.



The kit contains all components, speakers, printed circuit board and connecting cable. It is available in packs of 5 kits or as a class pack of 20 kits.

- Stereo version of the popular Audio Amplifier Project, 70-0180
- · Can be connected to MP3 players, laptops or any other device with a 3.5mm headphone jack socket
- · Kit contains all components, speakers, printed circuit board and connecting cable

Available in packs of 5 kits or as a class pack of 20 kits

Fach kit requires a 9V PP3 hattery (not included)

| Туре | Order code | 1+ | | |
|------------------|------------|-------|--|--------|
| Pack of 5 | 70-0198 | 23.97 | | |
| Class pack of 20 | 70-0199 | 94.75 | | |
| Empty PCB only | 70-0197 | 1.10 | | |
| | | | | 500004 |

Conductive Paint

Bare Conductive® Ó. **Electric Paint**

Bare Conductive Electric Paint is conductive which means that electricity from the battery can pass through it just like a wire. When you draw a circuit with a Bare Flectric Paint Pen. the components and battery are joined



Bare Electric Paint is non-toxic, solvent-free and dries at room temperature.

- Draw a circuit on almost any surface: Paper, plastic, cardboard, fabric, wood, and more!
- · Connect batteries, LEDs and other components
- Try it with microcontrollers like Arduino
- Can be used with conductive thread and e-textiles
- · Great for attaching components and for PCB repair
- Can be used as a Cold Solder and Wire Paint
- Non-toxic and solvent free
- Dries at room temperature
- Available in 10ml pens, 50ml jars and 11 tins
- · Click here for further information, image gallery, data sheets and downloads.

For technical specialication visit www.rapidonline.com

| Туре | Order code | e 1+ | |
|----------|------------|--------|--|
| 10ml Pen | 70-0873 | 7.01 | |
| 50ml Jar | 70-0874 | 20.99 | |
| 1l Tin | 70-0885 | 270.11 | |

Bare Conductive®

Touch Board

The Bare Conductive Touch Board is a printed circuit board module that can make your projects interactive, responsive, smart or just fun. Change the world around you by using the



Touch Board to turn almost anything into a sensor.

Connect anything conductive to one of the 12 electrodes and trigger a sound via the onboard MP3 player, play a MIDI note or do anything else that you might do with an Arduino or Arduino-compatible device.

The Touch Board has been designed to be an easy-to-use platform for a huge range of projects, whether it is painting a lightswitch on your wall, making a paper piano or creating a customised interactive surface.

- Touch sensing
- Distance sensing
- No programming required for basic operation
- Arduino compatible and works with popular shields · Ideal for use with Bare Conductive paint or any other
- conductive material
- MP3 Player / MIDI device
- MicroSD card socket
- Standard 3.5mm audio jack for headphones and speakers
- · Lithium Polymer (LiPo) battery recharges via USB · HID capable - turn the Touch Board into a keyboard or
- mouse
- Board size: 84 x 62 x 10mm

See www.rapidonline.com/Bare-Conductive/TouchBoard for further information, image gallery, data sheets and downloads

See www.rapidonline.com/Bare-Conductive/projects to see our Bare Conductive Ideas Page.

| or technical specialication visit www.rapidonine.com | | | | | |
|--|------------|-------|--|--|--|
| Туре | Order code | 1+ | | | |
| Touch board | 70-0105 | 46.12 | | | |

Electronic Project Kits

=Rapid



PICAXE-08 Alarm Project



This low-cost project uses an 8-pin microcontroller to allow a customisable alarm to be created.

- . The alarm responds to a number of user selectable inputs such as tilt switches or light sensors, and activates a bicolour LED and piezo siren
- Supplied as a set of 5 projects containing 5 PCBs and 5 kits of components
- Suitable tilt switches are available separately see Sensors section

| Туре | Order code | 1+ | |
|-------------------------|------------|-------|-------|
| PICAXE-08 Alarm project | 70-1214 | 27.25 | |
| | | | 61447 |

PICAXE III

PICAXE-08 Electronic Dice Project - Set of 25



This low-cost project uses an 8-pin microcontroller to create a random output electronic dice display with LED spots. The kit includes extensive project notes that go from an introduction to the components all the way to programming the microcontroller.

- · Kits contain a PCB and kit of components
- · Includes battery box
- · Available in sets of 25 kits

| Туре | Order code 1+ | |
|-----------|---------------|--------|
| Set of 25 | 70-1209 83.4 |) |
| | | 61.440 |

=Rapid **Nightlight Kit Project**

The nightlight project is a safe, battery powered, bedside light that automatically switches on when the room lights are switched off. After a time delay of about 5 minutes the light automatically switches off to conserve battery power.



- · Light source is a high efficiency, high brightness white LED Suitable for illuminating different coloured translucent
- acrylic, coloured inkjet film or 'fun and fancy' acrylic paints
- An excellent platform for creative product design
- Featured in Electronics Education published by the IEE · Can be used to explore timing circuits using different
- component values
- · Very popular and engaging project
- Suitable for Key Stages 2, 3 & 4 (ages 7 to 16) · Component kits are supplied in packs of 5 kits including
- printed circuit boards

Each kit requires 4x AAA alkaline batteries (not included).

| Туре | Order code | 1+ | | |
|--------------------|------------|-------|--|--|
| Nightlight project | 70-2600 | 13.04 | | |

=Rapid **10 Flashing LED Module**

A flashing LED module, with built-in timer.

producing a multicoloured running light effect similar to that seen in disco light shows. By arranging the LEDs around the PCB, a large display can be created with minimal effort. The module is activated



by a push button switch mounted on the PCB, and runs for approximately 10 to 15 seconds before automatically switching off.

- Ideal for eye-catching displays, notices, etc.
- · Each module consists of an assortment of ten red, green and yellow 5mm LEDs which flash in pairs in sequence
- The module is powered by two, replaceable L1131 button cells. For replacement cells, see www.rapidonline.com PCB dimensions: 47 x 29mm
- LED lead length: approx. 280mm

| Туре | Order code | 1+ | 5+ | 10+ | 25+ |
|---------------------|------------|------|------|------|------|
| 10 LED Flash module | 13-0652 | 5.85 | 5.40 | 4.88 | 4.69 |
| | | | | | 3407 |

=Rapid

Uncased 16GB USB Memory Stick Module

Fully-functional uncased memory sticks, ideal for allowing students to design and make their own case.

The finished product is a practical item that students can keep for transporting homework and other data. The rear section of the

PCB from the front of the rectangular hole does not have any components on it so can be used for fixing part of the case. Case designs should not protrude any further than the front of the circuit board so that the USB connector



is not obscured. The maximum thickness of the PCB and components is 5mm.

The memory stick is an ideal basis for a 3D Printing Project to design and make a suitable case. The cases are relatively small, use only a small amount of filament and are reasonably quick to print. Some 3D printers allow several cases to be printed at once.

- 16GB memory capacity
- USB connection
- On-board LED indicator
- Overall dimensions 14 x 5 x 60mm Ideal 3D printer project

Order code Uncased 16GB stick **19-9996** 4.84

=Rapid

555 Astable/Monostable Project Kit

The 555 Astable/Monostable PCB projecthas been designed specifically to support and integrate with teaching schemes for Key Stages 3 & 4. Instruction details are available for free download at www.rapidonline.com and are designed to be photocopied for class use.

- The kit is a timing circuit,
- which can be used to switch devices or circuits on and off
- Knowledge, skills and understanding can be developed in: component recognition and purpose; PCB circuit assembly and soldering; system and circuit principles; signal tracing and fault finding; product design
- . The kit can be used for both class teaching or for individual project work
- · All components, including the PCBs, are provided
- The kit includes: resistors and capacitors, NE555 timer, switches and preset resistors, LEDs, wire PCB and PP3 battery clip
- · Empty PCBs are also available in packs of 5
- Kit contains components for 5 circuits Suitable for Key Stages 3 & 4 (ages 11 to 16)

Each kit requires 1x PP3 battery (not included).

| Туре | Order code | 1+ | |
|-----------------|------------|-------|-------|
| 555 project kit | 70-0225 | 10.56 | |
| Empty PCBs (5) | 70-0230 | 6.26 | |
| | | | 70966 |

=Rapid

Clap Switch Project

Build a switch circuit that responds to sharp sounds like clapping your hands, etc.

- · Kit contains all components including circuit board
- · 3A changeover relay output · Circuit counts two claps
- before operating to avoid false triggers Operates from 6 to 20V
- Component count 36
- Circuit board dimensions: 55 x 50mm
- · Also available as a money-saving classpack of 20 kits packed in a Gratnells tray
- Suitable for Key Stages 2.3 & 4 (ages 7 to 16)

| | Price ea | ach |
|---------------------|---------------|-------|
| Туре | Order code 1+ | |
| Clap switch project | 70-2570 5.25 | |
| Classpack of 20 | 70-2602 83.88 | 3 |
| | Price each - | MOQ 2 |
| Туре | Order code 2+ | |
| PCB only | 70-2571 0.613 | 3 |
| | | 7321 |

We bring STEAM to life

=Rapid LDR PCB Project Kit

The LDR PCB project has been designed specifically to support and integrate with teaching schemes for Key Stages 3 & 4. Instruction details are available for free download from www.rapidonline.com and can be photocopied for class use.



Electronic Kits

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04

Electronic Kits

- . The kit is a light sensing circuit, which can be used to switch output devices or circuits on and off
- Knowledge, skills and understanding can be developed in: component recognition and purpose, PCB circuit assembly and soldering, system and circuit principles, signal tracing, fault finding and product design
- . The kit can be used for both class teaching or for individual project work
- All components, including the PCBs, are provided • The kit includes: resistors and diodes, transistors and preset resistors, LEDs and relays, LDR PCB and PP3
- battery clip
- PCB size 66 x 48 x 1.7mm
- Empty PCBs are also available in packs of 5 • Kit contains components for 5 circuits
- Suitable for Key Stages 3 & 4 (ages 11 to 16)
- Each kit requires 1x PP3 battery (not included).

| | Price each | |
|---------------------|----------------|--|
| Туре | Order code 1+ | |
| LDR PCB project kit | 70-0245 27.80 | |
| | M0Q 25 | |
| Туре | Order code 25+ | |
| Empty PCBs (5) | 70-0250 4.16 | |

=Rapid

Light Sensor Kit Pack of 10

A pack of components to build 10 light sensors, ideal for class projects with students working in small groups.

The general-purpose lightsensing circuit uses a miniature



to detect changes in the level of light and switches the LED on

or off accordingly. The sensitivity of the circuit can be set by adjusting a potentiometer.



- 10x PCB 10x BC548 transistor
- 10x mini-LDR
- 10x 1k0 resistor
- 10x 1000 resistor
- 10x 4700 resistor
- 10x standard LED
- 10x 47k0 potentiometer
- 10x battery connector
- · Designed for use with a 3 to 9V supply
- Supplied as a pack of 10 kits
- Order code Туре Light sensor kit (10) **06-1581** 10.86





=Rapid



Build this PIC based kit which uses the persistence of vision (POV) of the human eye to create the illusion of a message being written in mid-air. Instruction details are available for free download at www.rapidonline.com and are designed to be photocopied for class use.

- · Programmable create your own messages up to 6 characters long
- 57 pre-defined characters
- Complete set of components including printed circuit board
- · Ideal demonstration of PIC controlled electronics and construction
- Component count 25
- · Also available as a money-saving classpack of 20 kits packed in a Gratnells tray
- · Empty PCBs are also available separately • Suitable for Key Stages 2, 3 & 4 (ages 7 to 16)
- Requires 2x AAA batteries (not included).

| | Price each | |
|------------------|-------------------|-------|
| Туре | Order code 1+ | |
| POV wand project | 70-2555 8.93 | |
| Classpack of 20 | 70-2557 134.97 | |
| | Price each -MOQ 2 | |
| Туре | Order code 2+ | |
| PCB only | 70-2556 0.701 | |
| | | 73215 |

=Rapid

Badge Module with Flashing LEDs



Add eye-catching flashing LEDs to your badge designs with this ready-built, battery-powered electronic module.

- · Two 3mm red LEDs flash alternately
- On/Off button on circuit board
- · Size only 7mm thick x 25mm diameter
- Takes 2x L736 alkaline button cell (supplied)
- · Holes can be easily made in most badges for the LEDs · Complete with badge pin, double-sided adhesive foam
- pad for fixing to badge and plastic back cover
- Supplied in packs of 30

Туре

For neat LED holders please see order code 55-0160.

=Rapid

We bring

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 in considerable detail

| Туре | Order code | 1+ | 10+ | 40+ | |
|------------------|------------|-------|-------|-------|-------|
| Solar energy kit | 37-0420 | 13.74 | 12.46 | 11.54 | |
| | | | | | 21204 |

=Rapid

Coin Operated Sound and Music Modules

These modules enable students to enhance a simple container based assignment with a music or sound element

- · The modules are easy to incorporate into a container and can be triggered by a wide variety of coins
- Modules employ a 27mm diameter piezo speaker and 2 replaceable L736 button cells (supplied). For replacement cells, see www.rapidonline.com
- Module dimensions: behind flange 39 x 15 x 31mm, flange dimensions 45 x 21 x 2.2mm, coin slot 30 x 3mm

Note: Please use coins smaller than the new £1 coin.

| Туре | Order code | 1+ | |
|--------------------|------------|------|-------|
| Bird call sound | 13-0626 | 3.27 | |
| lt's a small world | 13-0627 | 2.63 | |
| | | | 34061 |

Kemo B239 Wheel of Fortune Kit

A kit of parts to build a 'Wheel of fortune' style, random selector, ideal for electronic games, quizzes, etc.

After releasing the



pushbutton, all of the LEDs light except for one, creating a gap that 'runs' quickly round the circle of 10 LEDs.

The pattern then slows and stops randomly with one LED lit. Having all of the LEDs lit during operation greatly enhances the decorative effect of the kit.

- Number of LEDs: 10
- PCB dimensions, 56 x 56mm
- Operating voltage: 9 to 12V DC
- Kemo type B239



Ouick Ouote Service Available Online

Either click on a product and ask for a quick quote or visit www.rapidonline.com/quotation for more details

65261 FM Radio Kit 'Soldering'



The Franzis self-assembly FM Radio kit uses the latest digital technology to provide the best sound from FM broadcasts. Its fully assembled and tested main board with a BK1068 digital signal processing chip makes it possible. The kit is simple to build having been designed for the soldering novice. The tuning is done via a simple touch with your finger on the touch-sensitive sensor areas which also control the reset and standby (mute) functions.

The key to this radio kit is the DSP (Digital Signal Processor) chip. Analogue signals from the antenna are converted to digital signals, digitally processed and then transformed back using into an audio signal an analogue-to-digital converter. This sounds complicated, but it makes life easier for you. There are no radio frequency coils, no adjustable components and fewer components overall, all this while providing better reception!

- Frequency range: 87.5 to 108 MHz
- Antenna sensitivity: 2.5µV
- You will also need 2 x 1.5V AA batteries
 - Operating time with one set of batteries: Up to 100 hours
- Operating voltage range: 2.2V to 3.6V
- Maximum output power: 0.1 W

| Туре | Order code | 1+ | |
|-----------|------------|-------|-----|
| Radio kit | 70-0434 | 23.24 | |
| | | | 564 |

RK Education

555 Monostable Projects



This project has been designed to introduce the important concept of timing circuits to students using the 555 monostable circuit. The circuit is very important as it features heavily in KS4 curriculums.

It has been designed to have more than one possible outcome and therefore more than one application. It allows for good differentiation and includes a transistor drive circuit.

- Time can be varied with the variable resistor
- Can be used with various trigger inputs
- · Battery-powered
- · PCB has space for a transistor drive circuit to allow higher powered outputs to be added
- Clear silkscreen text has been used to make construction simpler
- · Professional double-sided PCB pre-drilled with silkscreen and solder-resist
- Empty PCBs are available separately, order code 70-9034 • Suitable for Key Stages 2, 3 & 4 (ages 7 to 16)

| | - | - | | | |
|--------------------|---|---|------------|------|--------|
| Туре | | | Order code | 1+ | |
| Economy | | | 70-6012 | 2.73 | |
| Deluxe with buzzer | | | 70-6013 | 3.15 | |
| PCB only | | | 70-9034 | 1.03 | |
| | | | | | 00.100 |

Education 04

RK Education

555 Timer Astable Projects



This range of projects has been designed to introduce the important concept of astable timers and pulse-width modulation using a 555 timer astable circuit.

Three versions are available - Economy, 70-6017; With drive circuit, 70-6018 and Deluxe, 70-6019. The three kits all use the same PCB, but have a different set of components. Please see Technical Details for more information.

This circuit is very important as it features heavily in KS4 curriculums. The range of projects has been designed to have more than one possible outcome and therefore more than one application.

- · Frequency can be varied by adjusting the two
- variable resistors
- Battery-powered
- Clear silkscreen text has been used to make construction simpler
- Professional double-sided PCB pre-drilled with silkscreen and solder-resist
- Empty PCBs are available separately, order code **70-9036** • Suitable for **Key Stages 2, 3 & 4** (ages 11 to 16)
- Project notes are available to download from

www.rapidonline.com/rk-education.

| For | technical | specialication | visit www.ra | pidonli | ne.com | |
|-----|-----------|----------------|---------------------|---------|--------|--|
| | | | | | | |

| Туре | Order code | 1+ | |
|--------------------|------------|------|-------|
| Economy | 70-6017 | 3.09 | |
| With drive circuit | 70-6018 | 3.61 | |
| Deluxe | 70-6019 | 4.34 | |
| PCB only | 70-9036 | 1.75 | |
| | | | 82444 |

RK Education

SCR/Thyristor Projects

This project introduces latching circuits and also other important concepts including different ways of triggering and resetting circuits. There are a number of possible outcomes for the circuit including electronic alarms, an electronic money box, a target game and a stardy bar



game and a steady-hand game.

- Different trigger inputs can be used
- Different resets can be used
- Space for up to 3 outputs
- Battery-powered
- Clear silkscreen text has been used to make construction simpler
- Professional double-sided PCB pre-drilled with silkscreen and solder-resist
- Available in 2 versions: economy and complete
- Both versions are supplied with empty PCB, 1x PP3 battery clip, 1x 2N5060G SCR or equivalent, 1x 5mm red LED, 1x 270 ohm resistor, 1x 1k resistor, 1x 10k resistor (all 0.25W), 1x SPDT slide switch
- Complete version has additional push-to-make switch and 6V PCB mounting buzzer
- Empty PCBs are available separately, order code 70-9048
 Suitable for Key Stages 2, 3 & 4 (ages 7 to 16)

Project notes are available to download from www.rapidonline.com/rk-education.

| | Price each |
|----------|---------------------|
| Туре | Order code 1+ |
| Economy | 70-6031 2.44 |
| Complete | 70-6032 4.56 |
| | MOQ 2 |
| Туре | Order code 2+ |
| PCB only | 70-9048 0.975 |
| | 82458 |

RK Education

Transistor Switch Projects

This project introduces the transistor switch and is an excellent first electronics/systems and control project for

students. The project is also excellent for GCSE students as it has been designed with KS4 curriculums in mind. It is a very versatile project and can be used as a



moisture sensor, temperature sensor and light sensor. The project has been designed to allow differentiation and has space for up to 5 outputs and a range of inputs including variable resistors.

- A number of different solutions are possible
- Can be used with an LDR, thermistor or moisture sensor
- Battery-powered
- PCB has space for up to five outputs
 Clear silkscreen text has been used to make construction
- simpler

 Professional double-sided PCB pre-drilled with silkscreen
- and solder-resist
 A training system, **70-6046**, is available to help aid
- teaching and learning with this project and to help students to arrive at their final solution
- 2 versions available for maximum flexibility
- Available with or without temperature sensor
- Empty PCBs are available separately, order code **70-9040**
- Suitable for Key Stages 2, 3 & 4 (ages 7 to 16)

Project notes are available to download from www.rapidonline.com/rk-education.

For technical specialication visit www.rapidonline.com

| or recimical specialization visit www.napidoimine.com | | | | | |
|---|------------|------|--|-------|--|
| Туре | Order code | 1+ | | | |
| Economy | 70-6024 | 2.45 | | | |
| With temperature sensor | 70-6025 | 2.24 | | | |
| PCB only | 70-9040 | 0.57 | | | |
| | | | | 82451 | |



SC-3DI 3D Illumination – Build Over 150 Projects

Snap Circuits®3D Illumination uses building blocks with snaps to build the different electrical and electronic circuits in the projects. Each block has a function: there are switch blocks, light blocks, battery blocks, different length wire blocks, are. The blocks are

blocks, different length wire blocks, etc. The blocks are different colours and have different numbers on them so that you can easily identify them.

- Build over 150 projects or combine with other sets to build even more unique structures.
- · Exciting light effects
- 3-colour light tunnel, mirrors & reflecting circuits
- Magnet & magnetic switch
- Projector with 6 images
- Includes vertical stabilizer, base grid stabilizer & base grid support

• Requires 3x AA batteries (not included)

| Туре | Order code | 1+ | | |
|-----------------|------------|-------|--|--|
| 3D illumination | 42-0028 | 46.26 | | |

www.rapidonline.com/education



SC-100r Junior Education Training Programme – 100 Experiments

Snap Circuits® uses building pieces with snaps to assemble different electronic circuits on a simple 'rows-and-columns' base grid that functions like the printed circuit board found in most electronic products.



Electronic Kits

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Education

04

Electronic Kits

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Each component is

easily identifiable by a different colour and functional purpose. The Model SC-100R is an exploration of the electronic components included with the SC-100 Snap Circuits®. Ideal for use in home-schooling, middle schools, and high schools where students will grasp the basic principles of electronics.

- Custom storage case
- For ages 8 and up
 Requires 2x AA batteries (not included)

Topics covered:

- Basic components & circuits
- Series and Parallel circuits
- Short circuits
- Motors & electricity
- LEDs
- Resistance
- Capacitors
- Integrated Circuits of Snap Circuits
- Type Order code





Snap Circuits SCP-12 FM Radio

The Snap Circuits FM radio kit allows you to build a radio that really works!



- included)Suitable for age 8 and up
- Туре С

FM radio

42-0034

MitchElectronics®

Discrete Op-Amp Kit

A kit of parts to make an Operational Amplifier (op-amp) using individual (discrete) components.

Operational Amplifiers are key components used in electronics and are found in many (if not

most) circuits today! Op-amps can be used for amplifying voltages, comparing voltages, producing waveforms and even for converting analogue signals into digital numbers.

But how does an op-amp work? What components make up an op-amp? With this kit you will build your own simple opamp and learn about its inner workings, as well as its many possible basic configurations including unity buffer, amplifier and comparator!

Component count: 23

Type

Discrete op-amp kit

Includes high quality printed circuit board (PCB)
Downloadable instructions include information specific to

this kitRequires 1x PP3, 9V battery, not included

Supplied as a kit of parts for assembly. Soldering is required.

Order code 1+

70-0103 3.69





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Electronic Kits

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Money Saving Packs Education Components Spares Kit Only £76.04 Order code 13-0108 **Electricity Class Pack** Only £44.50 Order code 70-1012 **Education Components** Spares Kit Only £76.04 Order code 13-0108 LED Pack Onlv · Extra green and yellow LEDs provided · Can be hung on and fed through wires Dimensions 80 x 88 x 102mm Power supply 9-12Vdc or 9V battery/8mA (not supplied)



Education

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Velleman Kits

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Oscilloscope Tutor Board

The Velleman EDU06

Oscilloscope Tutor Board will show you how to get the most out of your digital oscilloscope. The board generates a number ofsignals, which you can use to become familiar with AC, DC



and frequency measurements, sine and square waves, power supply ripple, full and half wave rectifiers and oscillators. The kit will also help you learn the meaning of terms such as V/div, Time/div, trigger level and auto-setup. Most of the experiments involved can be done using any digital storage scope. Some experiments can be performed with an analogue scope.

- Assembled and tested
- No soldering required
- Dimensions: 116 x 74 x 24mm
- Power supply 9-12V AC/100mA min

| Туре | Order code | 1+ | | | | |
|-------------|------------|-------|--|--|--|--|
| Tutor board | 70 /210 | 10.56 | | | | |

🖗 velemeni

EDU09 Educational PC Oscilloscope Kit

Oscilloscopes needn't be expensive and complicated!

Build your own oscilloscope and use your PC to display your measurements. This small and easy to build kit has all the features of a full blown oscilloscope and comes complete with

detailed instructions and test leads.

Self-assembly kit

• Dimensions 94 x 94mm

For technical specialication visit www.rapidonline.com

PC based scope 57-4590 31.45

🖗 vellemen

Light Sensitive Switch Kit

Automatically switches on at dusk and turns off at dawn.

- Use to switch lights or draw curtains, switch on alarms, etc
- Adjustable sensitivity with wide range
- Delay circuit avoids cycling
- Relay output: NO/NC 24V/5A max.
- · Power supply: 12V DC

Туре

Light switch kit

- · Power adaptor connector
- Dimensions: 65 x 50mm
- · Kit contains all components required including printed circuit board and construction instructions

Order code 1+

70-4150 5.46

Please note: This is a self-assembly kit and requires soldering



Туре

3D Christmas Tree

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www.ranidonline.com/education

Order code 1+

70-4386 7.30









tree with a choice of red, green and yellow

Low power consumption





30



Potentiometers







Connectors



Knobs & Fixings



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