

# 116 TECHNICAL BOOKS

## Circuits and projects

### Electronic Projects For The Garden

BP367

By R. Bebbington

Published by Babani

1995 145 pages 178x111mm



Although library shelves and bookstalls bulge with a bumper crop of gardening books, surprising few pages are devoted to electricity and fewer still to electronics. It's no secret that success in the garden is largely dependant on the elements; keeping a weather eye open is important for protecting those tender shoots. You can't control the elements, but you can use them to control your results-by courtesy of electronics. This book offers some simple circuits that will monitor weather and environmental conditions and provide warnings or take remedial action as necessary. For example, such projects include rain detection, frost warning, under/over temperature monitoring, dusk/dawn switching and automatic plant watering.

Raking through the chapters, you will find such interests as security devices, process timing, warming cables for propagators, ponds and pumps, and the low-down on low-voltage circuits for lighting schemes. To encourage beginners branching out in electronics, some construction methods are introduced using breadboard layouts, or screw terminal blocks to obviate soldering. In the interests of safety, all projects are powered by low-voltage supplies.

Order code 585-712

£4.95nv

### IC 555 Projects

BP44

By E.A. Parr

Published by Babani

1978 167 pages. 178x111mm



Every so often a device appears that is so useful that one wonders how life went on before without it. The 555 timer is such a device. It was first manufactured by Signetics, but is now manufactured by almost every semiconductor manufacturer and is inexpensive and very easily obtainable. Included in this book are basic and general circuits, motor car and model railway circuits, alarms and noise makers as well as a section on the 556, 558 and 559 timers. An invaluable addition to the library of all those interested in electronics

Order code 585-720

£4.99nv

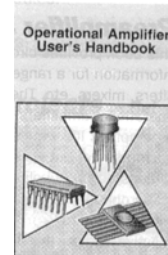
### Operational Amplifier Users Handbook

BP335

By R.A.Penfold

Published by Babani

1994 119 pages. 178x111mm



Although operational amplifiers were specifically designed for use in analogue computers, they soon became dominant in the world of linear electronics, a situation that remains unchanged more than 20 years later. Many of the early operational amplifiers still live on, and are in use today. On the other hand, there are now numerous "improved" devices, many of which offer tremendous advantages over the old "standards in many practical applications.

The first part of this book covers standard operational amplifier based "building blocks" (integrator, precision rectifier, function generator, amplifiers, etc.) and considers the ways in which modern devices can be used to give superior performance in each one. The second part describes a number of practical circuits that exploit modern operational amplifiers, such as high slew rate, ultra low noise, and low input offset devices. The projects include:

Low noise tape preamplifier, Low noise RIAA preamplifier, Audio power amplifiers, DC power controllers, Opto-isolator audio link, Audio millivolt meter, Temperature monitor, Low distortion audio signal generator, Simple video fader and many more.

Order code 585-733

£4.95nv

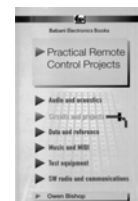
### Practical Remote Control Projects

BP413

By Owen Bishop

Published by Babani

1997 157 pages 178x111mm



Provides a wealth of circuits and circuit modules for use in remote control systems of all kinds: ultrasonic, infra-red, optical fibre, cable and radio. There are instructions for building fourteen novel and practical remote control projects. But this is not all, as each of these projects provides a model for building dozens of other related circuits by simply modifying parts of the design slightly to suit your own requirements. This book tells you how.

Also included are techniques for connecting a PC to a remote control system, the use of a microcontroller in remote control, as exemplified by the BASIC Stamp, and the application of ready-made type-approved 418MHz radio transmitter and receiver modules to remote control systems.

This book may be described as a "book of solutions looking for problems to solve". We hope that if you have any problems connected with remote control projects, this book will help you to solve them.

Order code 585-736

£5.99nv

# TECHNICAL BOOKS 117

## Practical Opto-Electronic Projects

BP349

By R.A. Penfold

Published by Babani

1994 139 pages 178x111mm



In recent years the range of opto devices available to the electronics hobbyist has expanded and changed radically. The "Opto" section of most electronic component catalogues lists dozens of devices, from humble LEDs to exotic sensors. Opto-electric devices represent one of the most interesting areas of modern electronics, and these components have many practical applications.

This book provides a number of practical designs which utilize a range of opto devices, from a filament bulb to modern infra-red sensors and emitters. There are plenty of designs which should appeal to those who like to experiment with electronic circuits, but all the projects are tried and tested, and have practical applications.

The projects are divided into three main areas, projects that use infra-red detectors, photographic projects and projects that are based on modulated light transmission.

All the circuits should be within the capabilities of anyone who has a reasonable amount of experience at electronics construction. The more simple designs are also suitable for beginners.

Order code 585-737

£4.99nv

## Power Supply Projects

BP76

By R.A. Penfold

Published by Babani

1996 91 pages 178x111mm



The purpose of this book is to give a number of power supply designs, including simple unstabilised types, fixed voltage regulated types, and variable voltage stabilised designs, the latter being primarily intended for use as bench supplies for the electronics workshop. The designs provided are all low voltage types for semiconductor circuits. Apart from giving many designs which, it is hoped, will satisfy most requirements, the information in this book should also help the reader to design his own power supplies.

There are other types of power supply apart from mains to low voltage type and a number of these are dealt with in the final chapter, including a cassette power supply, Ni-Cad battery charger, Voltage step-up circuit and a simple inverter.

Order code 585-721

£4.99nv

## 35 Opto Display Terminal Block Projects

BP410

By R. Bebbington

Published by Babani

1997 144 pages 178x111mm



Electrical and Electronic projects that respond to light, or produce it, have always been popular with constructors. However, the development of multi-colour light emitting diodes (LED's) with lower power consumption than bulbs, has opened up a fascinating new opto-display field, particularly suited to beginners in electronics.

To encourage newcomers, and anxious parents, none of the projects require hot soldering irons or high voltages. So even young children can screw the components together on terminal blocks, apply a low-voltage battery and get things working.

After an introductory chapter on opto-devices and components, the projects are graded so that even a newcomer to electronics can score successes with a light telegraph, flashing lapel badge, magnetic detector etc, before tackling more ambitious projects such as a dusk detector, novel games, suspended electronic dice, or twinkling Christmas decorations.

Many of the projects serve to provide invaluable practical experience to complement the theory of the GCSE Electronics course. Finally, the projects have been designed, using discrete components and popular ICs in a variety of circuits that will hopefully widen the constructors experience.

Order code 585-701

£4.99nv

## Music

### Practical Electronic Music Projects

BP363

By R.A. Penfold

Published by Babani

1994 122 pages. 178x111mm



While many facets of electronic project construction have waxed and waned over the years, music related projects of various types have remained as popular as ever. This is perhaps not surprising, since many electronic music projects can be home constructed for much less than the cost of equivalent ready-made products. Also, you can "broaden your horizons" with home constructed music projects that have no true commercial equivalents.

This book provides practical circuits for a number of electronic music projects. All can be built at relatively low cost, and use standard, readily available components. The projects covered can be broadly divided into three categories: Guitar projects, Miscellaneous Music projects and Midi Projects. The projects cover a range of complexities, but most are well within the capabilities of the average electronics hobbyist. None of the projects require the use of test equipment in order to get them set up correctly, and several of the projects are suitable for near beginners.

Order code 585-708

£4.95nv

ELECTRON ELECTRONICS TELEPHONE 01737 841568

FAX 01737 841608

MOBILE 07860 632 869

EMAIL [sales@electronelec.co.uk](mailto:sales@electronelec.co.uk)

WEB [www.electronelec.co.uk](http://www.electronelec.co.uk)

# 118 TECHNICAL BOOKS

## Audio

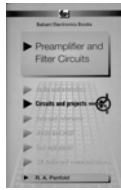
### Preamplifier and Filter Circuits

BP309

By R.A. Penfold

Published by Babani

1999 92 pages. 178x111mm



This book provides circuits and background information for a range of preamplifiers, plus tone controls, filters, mixers, etc. The use of modern low noise operational amplifiers and a specialist high performance audio preamplifier IC results in circuits that have excellent performance, but which are still quite simple. All of the circuits featured can be built at quite low cost (just a few pounds in most cases).

The preamplifier circuits featured include microphone preamplifiers (low impedance, high impedance and crystal). Magnetic cartridge pick-up preamplifiers with R.I.A.A. equalisation. Crystal/ceramic pick-up preamplifier. Guitar pick-up preamplifier. Tape head preamplifier (for use with compact cassette systems).

Other circuits include audio limiter to prevent overloading of power amplifiers. Passive tone controls. Active tone controls. PA filters (highpass and lowpass). Scratch and rumble filters. Loudness filter. Audio mixers. Volume and balance controls.

No construction details are provided for the circuits featured in this book, and it is not really intended for complete beginners. On the other hand, the circuits are all pretty simple, and you do not really need much previous experience of electronic project construction in order to tackle them. Where appropriate, any setting up procedures and notes on tricky aspects of construction are provided.

Order code 585-735

£4.99nv

### 30 Simple IC Terminal Block Projects

BP379

By R Bebbington

Published by Babani

178x111mm



Contains 30 easy to build IC projects that can be constructed by an absolute beginner, on terminal blocks using only a screwdriver and other simple hand tools. Minimal soldering is needed. Most of the projects can be simply screwed together by following the layout diagrams, in a matter of minutes and readily unscrewed if desired to make new circuits. A theoretical circuit diagram is also included with each of the projects to help broaden the constructors experience and knowledge. A wonderfully easy way for all newcomers to get started on the fascinating hobby of electronics.

Order code 585-702

£4.99nv

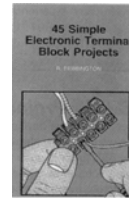
### 45 Simple Electronic Terminal Block Projects

BP378

By R Bebbington

Published by Babani

1995 163 pages 178x111mm



Contains 45 easy-to-build electronic projects that can be constructed by an absolute beginner, on terminal blocks using only a screwdriver and other simple hand tools. No soldering is needed. Most of the projects can be simply screwed together, by following the layout diagrams, in a matter of minutes and readily unscrewed if desired to make new circuits. A theoretical circuit diagram is also included with each project to help broaden the constructor's experience and knowledge.

The projects in this book cover a wide range of interests under the same chapter headings: Connections and components, Sound and music, Entertainment, Security devices, Communication, Test and measuring. A wonderfully easy way for all newcomers to get started in the fascinating hobby of electronics.

Order code 585-703

£4.95nv

### Electronic Project Building for Beginners

BP392

By R A Penfold

Published by Babani

1996 144 pages 178x111mm



This book is for complete beginners to electronic project building. It provides a complete introduction to the practical side of this fascinating hobby, including the following topics: Component identification, and buying the right parts. Resistor colour codes, capacitor value markings etc. Advice on buying the right tools for the job. Soldering, with advice on how to produce good joints and avoid "dry" joints". Making easy work of the hard wiring. Construction methods, including stripboard, custom printed circuit boards, plain matrix board, surface mount boards and wire wrapping. Finishing off, and adding panel labels. Getting "problem" projects to work, including simple methods of fault-finding.

In fact everything you need to know in order to get started in this absorbing and creative hobby.

Order code 585-705

£4.95nv

# TECHNICAL BOOKS 119

## Fault-Finding Electronic Projects

BP391

## Test Equipment

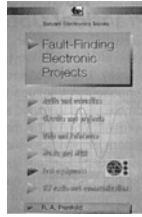
### Getting the most from your Multimeter

BP239

By R A Penfold

Published by Babani

1997 144 pages 178x111mm



We have all built circuits from magazines and books only to find that they did not work correctly, or at all, when first switched on. The aim of this book is to help the reader overcome just these problems, by showing how and where to start.

Chapter 1 deals with mechanical faults such as tracing "dry" joints, short-circuits, broken PCB tracks etc. The construction and use of a tristate continuity tester is also covered.

Chapter 2 deals with linear circuits, and includes a detailed look at using a multimeter to make voltage checks. Signal tracing techniques are also covered, and a practical signal tracer design is included.

Chapter 3 covers the construction of a logic probe, and fault-finding methods for projects that are based on CMOS or TTL logic devices.

Chapter 4 covers ways of testing a wide range of electronic components such as resistors, capacitors, operational amplifiers, diodes, transistors, SCRs and triacs, with the aid of only a limited amount of test equipment. A useful logic integrated circuit tester project is also featured.

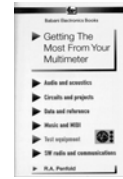
Order code 585-709

£4.99nv

By R.A. Penfold

Published by Babani

1998 100 pages. 178x111mm



The first piece of test equipment that most electronic hobbyists buy is a multimeter. This is probably because it is one of the least expensive items and, also, if you know how to use it properly, one of the most useful. This book is primarily aimed at beginners and those of limited experience of electronics. Chapter 1 covers the basics of analogue and digital multimeters, discussing the relative merits and the limitations of the two types. In chapter 2 various methods of component checking are described, including tests for transistors, thyristors, resistors, capacitors and diodes. Circuit testing is covered in chapter 3, with subjects such as voltage, current and continuity checks being discussed.

In the main little or no previous knowledge or experience is assumed. Using these simple component and circuit testing techniques the reader should be able to confidently tackle servicing of most electronic projects.

Order code 585-729

£4.95nv

## How to Use Oscilloscopes and Other

BP267

## Test Equipment

By R.A. Penfold

Published by Babani

1998 104 pages. 178x111mm



Advances in electronics over recent years have brought some quite advanced pieces of test equipment within the scope of many electronics hobbyists. Whether building your own or buying ready-made equipment, you no longer need to be a millionaire in order to afford signal generators, digital measuring equipment, or an oscilloscope having a fair specification! But how do you set about using such equipment? Some items of test gear are very simple in use, such as an auto-ranging digital capacitance meter. You just connect the capacitor and its value is displayed. Not all test equipment is this simple though, and oscilloscopes in particular tend to have vast numbers of knobs and switches.

These can be a bit daunting for the uninitiated, but mastering a workshop oscilloscope is not really too difficult. This book explains the basic function of an oscilloscope, gives a detailed explanation of all the standard controls, and provides advice on buying an oscilloscope. A separate chapter deals with using an oscilloscope for fault finding on linear and logic circuits. Plenty of example waveforms help to illustrate the control functions and the effects of various fault conditions. The function and use of various other pieces of test equipment are also covered, including signal generators, logic probes, logic pulsers, and crystal calibrators.

Order code 585-726

£4.95nv

# 120 TECHNICAL BOOKS

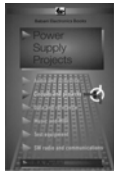
## Semiconductors

### A Beginners Guide to CMOS Digital ICs BP333

By R. A. Penfold

Published by Babani

1993 119 pages. 178x111mm



Getting started with logic circuits can be difficult, since many of the fundamental concepts of digital design tend to seem rather abstract, and remote from obviously useful applications. This book covers the basic theory of digital electronics and the use of CMOS integrated circuits, but does not lose sight of the fact that digital electronics has numerous "real world" applications.

The topics covered in this book include the basic concepts of logic gates, the functions of gates, inverters and other logic "building blocks". CMOS logic i.c. characteristics, and their advantage in practical circuit design. Oscillators and monostables (timers). Flip/flops, binary dividers and binary counters. Decade counters and display drivers. The emphasis is on a practical treatment of the subject, and all the circuits are based on "real" CMOS devices. A number of the circuits demonstrate the use of CMOS logic i.c.s in practical applications.

Order code 585-716

£4.95nv

### A beginners Guide to TTL Digital ICs BP332

By R.A. Penfold

Published by Babani

1993 143 pages. 178x111mm



Logic circuits are now part of everyday life, and practically every house is now equipped with numerous gadgets that contain digital circuits in one form or another. TTL logic integrated circuits are widely regarded as the "standard" range of digital devices, and as such are utilized in a wide variety of applications. Getting started with logic circuits can be difficult, since many of the fundamental concepts of digital design to seem rather abstract, and remote from practical applications. This book covers the basic theory of digital electronics and the use of TTL integrated circuits, but does not lose sight of the fact that digital electronics has numerous "real world" applications.

The topics covered in this book include the basic concepts of logic circuits, the functions of gates, inverters and other logic "building blocks". TTL logic i.c. characteristics, and their use in practical circuit design. Oscillators and monostables (timers). Flip/flops, binary dividers and binary counters. Decoders, data latches, and tristate buffers. The emphasis is on a practical treatment of the subject, and all the circuits are based on "real" TTL i.c.s. A number of the circuits demonstrate the use of TTL logic i.c.s in practical applications. An easy introduction to the world of TTL digital circuit design.

Order code 585-715

£4.95nv

## Production

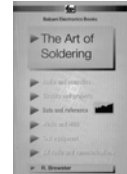
### The Art of Soldering

BP324

By R. Brewster

Published by Babani

1997 79 pages. 178x111mm



Soldering is a subject that worries a great many people, mainly because they do not understand it or have little or no experience. Many have heard that it is very difficult to achieve good results and indeed that it is very easy to make serious mistakes. As soldering is now part of many hobbies, especially electronics and modelling, it is essential that this myth be destroyed.

In this book, the author has tried to dissolve the mysteries that surround the subject so that it can be enjoyed and become a part of the individual hobby and not be regarded as a problem. The author has covered most hobbies that involve soldering, including electronics, model railways and stained glass. Included are sections on choosing the correct soldering iron, solder, materials and tools so as to be able to get the best results from your efforts.

Many illustrations are included to help demonstrate the correct procedures and also some practical exercises are detailed so as to help you learn to solder correctly.

Order code 585-707

£4.99nv

### How to Design and make You Own PCBs BP121

By R.A. Penfold

Published by Babani

1997 66 pages. 178x111mm



The purpose of this book is to familiarise the reader with both simple and more sophisticated methods of producing printed circuit boards (PCBs). The subject is not covered in a vague and purely theoretical manner as the emphasis of the book is very much on the practical aspects of printed circuit board design and construction.

Chapter 1 deals with simple methods of copying PCB designs from magazines and books and covers all aspects of simple PCB construction as comprehensively as possible. Chapter 2 covers photographic methods of producing PCBs. Chapter 3 deals with most aspects of designing your own PCB layouts. A book highly recommended to all new-comers to electronics as well as to the more experienced hobbyist.

Order code 585-730

£4.99nv

ELECTRON ELECTRONICS TELEPHONE 01737 841568

FAX 01737 841608

MOBILE 07860 632 869

EMAIL [sales@electronelec.co.uk](mailto:sales@electronelec.co.uk)

WEB [www.electronelec.co.uk](http://www.electronelec.co.uk)

# TECHNICAL BOOKS 121

## Introducing Robotics With Lego Mindstorms

By R.A. Penfold

Published by Babani

2000 270 pages.

Shows the reader how to build a variety of increasingly sophisticated computer controlled robots using the brilliant Lego Mindstorms Robotic invention system (RIS).

Initially covers the fundamental building techniques and mechanics needed to construct strong and efficient robots using the various "click-together" components supplied in the basic RIS kit.

Explains to the reader with little or no programming experience, how robot control programs may be simply constructed on their PC screens using what may be regarded as "software" building bricks that are supplied with the RIS kit. These programs can then be "zapped" over an infra red link to the robots "brain". This brain called the RCX brick, contains a programmable microcontroller that is also capable of acting on information from the robots various sensors.

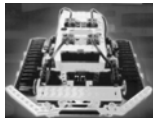
The more adventurous reader is also shown how to write robot control programs using a conventional Windows programming language such as VisualBASIC in conjunction with the ActiveX control (Called Spirit.OCX) that is also supplied with the RIS kit.

Detailed building instructions are provided for all the robots featured in this book including numerous step-by-step photographs and also sample programs are shown and explained.

It is hoped that this book, together with the Lego Mindstorms RIS kit will give the reader many hours of entertainment and pleasure as well as helping in the understanding of basic mechanical engineering skills, robotic principles and the practical applications of a PC loaded with suitable software. All trademarks are acknowledged.

Order code 585-738

£12.99nv



BP901

## More Advanced Robotics With Lego Mindstorms

By R.A. Penfold

Published by Babani

2000 300 pages.

Shows the reader how to extend the capabilities of the brilliant Lego Mindstorms Robotic Invention System (RIS) by using Lego's own accessories and some simple home constructed units.

You will be able to build robots that can provide you with "waiter service" when you clap your hands, perform tricks, "see" and avoid objects by using "bats radar", or accurately follow a line marked on the floor.

The innovative lego vision command system is also covered and this can enable your robot to literally "see" the world around them and respond accordingly.

Learn to use additional types of sensors including rotation, light, temperature, sound and ultrasonic and also explore the possibilities provided by using an additional (third) motor.

For the less experienced, RCX code programs accompany most of the featured robots. However, the more adventurous reader is also shown how to write programs using Microsoft's VisualBASIC running with the ActiveX control (Spirit.OCX) that is provided with the RIS kit. This more sophisticated approach can also permit data read from the robots to be displayed on the PC as an analogue or digital readout. It is even possible to take numerous readings over a period of time and display the results as an on-screen chart or graph.

Detailed building instructions are provided for the featured robots including numerous step-by-step photographs. The designs include rover vehicles, a virtual pet, a robot arm, an "intelligent" sweet dispenser and a colour conscious robot that will try to grab objects of a specific colour. Control software for all the robots is provided together with detailed explanations of how these programs operate. All trade marks are acknowledged.

Order code 585-739

£12.99nv

# 122 TECHNICAL BOOKS

## Computer Programming

### Using Visual BASIC

BP498

By P. R. M. Oliver and N. Kantaris

Published by Babani

2000 192 pages. 198x130mm



This fully updated book, replaces "Programming in Visual BASIC for Windows", and now covers all the latest versions of Visual BASIC.

Using Visual BASIC shows you how to produce professional-looking programs that run under Microsoft Windows. No prior programming knowledge is assumed, but a working knowledge of the Microsoft Windows environment is required. The book contains:

Details of the installation and set-up of Visual BASIC for Windows, A description of the graphic-based environment it uses. A primer on the BASIC language used by the package, with extensive uses of examples. Appendices giving a complete reference to the Event procedures, statements, Methods and functions used in the language. These alone will be essential reference whenever you use Visual BASIC for Windows.

Order code 585-742

£6.99nv

### Programming in QuickBASIC

BP284

By N. Kantaris

Published by Babani

1990 168 pages. 200x130mm



QuickBASIC statements are introduced and explained with the help of simple programs. This enables the user to build up a considerable library of their own programs and procedures which become the building blocks of advanced programming techniques. This book explains how to:

Use the QuickBASIC environment and editor. How to format PRINT statements and use INPUT, READ and DATA statements. Control program flow with the FOR...NEXT, DO, WHILE... WEND loops, and the use of the block IF set of statements. Use string variables, string arrays and subscripted variables in alphabetical sorting using the bubble sort technique. Use the standard BASIC functions. Write modular programs exploiting user defined functions, procedures and subroutines. Use sequential and random access files. Write a general program that can create and retrieve any random file which becomes the basis of database design.

Order code 585-743

£5.99nv

## Learning To Program In C

BP258

By N. Kantaris

Published by Babani

1993 125 pages. 200x130mm



This book is a guide to C programming, C statements are introduced and explained with the help of simple, but completely working programs. Graded problems are set at the end of each chapter, some with financial or scientific bent, so that users can choose their own level of problem difficulty on which to practice with some additional choice in the preference of the field of application. Full working solutions appear at the back of the book.

Chapters 1-3 deal with the basic C statements which control program flow and allow the user to manage with most aspects of the language. Chapters 4-5 introduce the concepts of string arrays, numeric arrays and function subprograms which expand the programming capabilities of the user beyond the beginner's level. Chapter 6 deals entirely with data handling on disk, while chapter 7 deals with unique C structures, both of which should be of interest to all those who need to process large quantities of data.

Order code 585-744

£6.99nv

## Programming In C++

BP435

By M. Walmsley

Published by Babani

1997 192 pages. 198x130mm



C++ is a powerful object orientated programming language which inherits many of its features from the ever popular C. This book introduces the fundamental principles of the object orientated model and demonstrates how to apply them to C++ programs. If you need to rapidly acquire a working knowledge of C++ and start producing effective code then this book is for you! The topics covered include:

Basic Language features: data structures, operators and expressions, programming statements and algorithms, function calls, indirection using pointers and references. Object Orientated Design: separating implementation from interface, encapsulation and polymorphism. Classes and Objects: object constructors and destructors, protection keywords, class functions and friend functions. Software Reuseability: templates, inheritance, class libraries and software components. Advanced Language Features: dynamic objects and memory management, overloading functions and operators, virtual functions, structured error handling using exceptions.

Order code 585-745

£6.99nv

ELECTRON ELECTRONICS TELEPHONE 01737 841568

FAX 01737 841608

MOBILE 07860 632 869

EMAIL [sales@electronelec.co.uk](mailto:sales@electronelec.co.uk)

WEB [www.electronelec.co.uk](http://www.electronelec.co.uk)