

# Basic Electricity and Electronics

## Locktronics



Simplifying electricity

Locktronics remains the system of choice for teaching the basics of electricity in over half of UK school science departments - but it has huge potential for Design and Technology too. Locktronic solutions now provide teaching applications for schools, universities and industry and the technology covers everything from simple circuits through analogue and digital electronics to microprocessor control. Customers include blue-chip names such as Rolls Royce, Porche and General Motors, to name just a few. Locktronics is based around a simple, robust base board with a grid of connecting pillars. Electronic components are mounted on a sturdy carrier with the appropriate circuit symbol bonded into the upper surface. These then snap into the grid to effectively reproduce the circuit diagram but with real components. As students build and test the circuit, they will be maintaining a strong, tangible link between theory and practice. If they turn the carrier over, the component itself is visible making it a short step to soldering their own project circuits. All Locktronic kits are supplied with comprehensive teaching materials in digital format. Worksheets can be freely copied or made available to students. Locktronic kits neatly pack away into robust cases which makes classroom management very easy. The system is proven to be mechanically and electronically robust so will cope with years of enthusiastic use by students of all ages.



### Fundamentals of Electricity



Covers everything students need to know about conductors and insulators, simple switches and connecting output devices such as lamps and motors. Series and parallel circuits are explored and students learn how to read and draw conventional circuit diagrams. Although aimed at KS2 science requirements, the Fundamentals solution is perfect to help D&T students at KS3 understand, design, model and test the simple circuits that they need for projects including using E-Textiles elements.

Prices £\*

\*See Pricing Information on page 2

EL-LK6444

Locktronics - Fundamentals of Electricity

### Electricity Magnetism and Materials



An introduction to electronics that provides students at KS3 with the knowledge they need and a sound foundation for future work with digital and analogue systems. Practical exercises lead students through the concepts of voltage, current, resistance and electrical power and their relationship using Ohms Law is introduced. Further exploration of conductors and circuits leads to the idea of a semiconductor. LEDs, LDRs and Thermistors are explored as useful input devices for simple electronic control systems.

Prices £\*

\*See Pricing Information on page 2

EL-LK9071-2

Locktronics - Electricity, Magnetism and Materials

### uCmicro Systems



Programmable components are an essential for KS3 D&T and provide a rich resource for clever and relevant D&T project work at KS4. The PICmicro Solution uses a pre-programmed PIC controller that snaps into the Locktronics base board. Input and output devices from previous work are then snapped into place. The PIC controller is then switched to replicate the common logic gates that are fundamental to all digital devices. Using a variety of inputs, outputs and logic functions, students construct and test some fascinating solutions to familiar problems.

Prices £\*

\*See Pricing Information on page 2

EL-LK8922-2

Locktronics - PICmicro Microcontroller Systems

### Energy and Environment



Some lively and relevant exercises explore our need for energy and how we can measure energy use to make judgements. Green sources of energy are tested and measured but can these be relied on for a continuous supply? Practical ways of storing energy are investigated which develops into understanding the need for energy management. In conclusion, students will build and program input devices and energy sources through an on-board PICmicro-controller to provide energy that meets demand but is sustainable. There are no easy answers!

Prices £\*

\*See Pricing Information on page 2

EL-LK7345-2

Locktronics - Energy and the Environment