

Electronic Circuit Applications with Fault Finding

The understanding of the operation of Electronics Circuits is an important issue in the training of technicians and engineers.

A complex electronic system is generally a number of individual circuits connected together to perform a specific function. However for students to understand the overall circuit complexity it is necessary to break the overall circuit down into smaller, more easily understood circuits. This is particularly important when testing and fault finding.

Electronic Circuit Applications with Fault Finding and Electronic Servicing

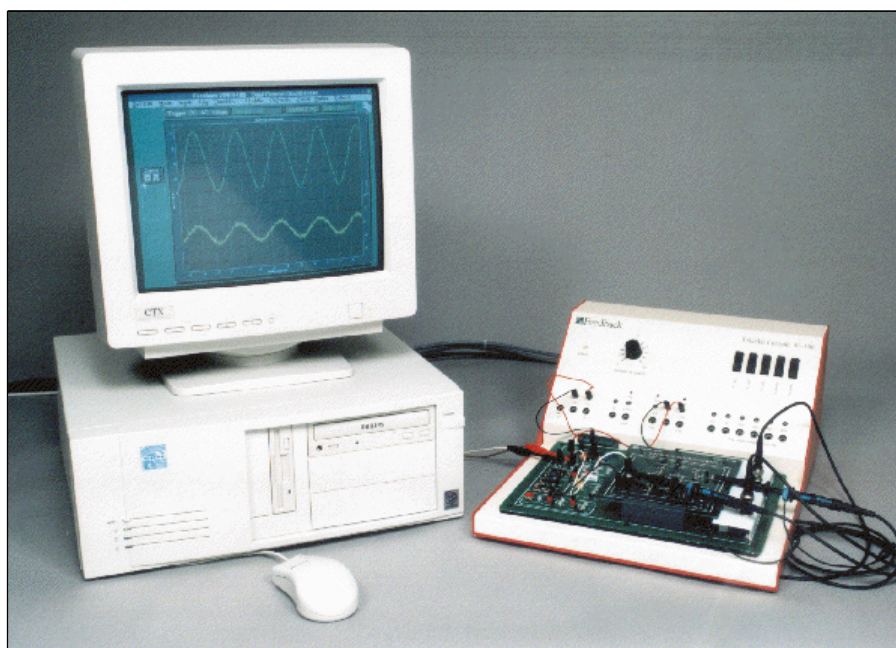
The Electronics Circuits Applications Trainer provides a range of electronic circuits that can be studied to gain an understanding of their functionality. Each circuit is studied separately and the methodology of fault finding explained. All are supported by a description of the specific design requirements, circuit operation and test procedure.

A dedicated motherboard accepts the circuits to be tested. The motherboard locates within the Teknikit console which provides the power supplies for the circuits and also the connection via an internal interface to a PC. A PC driven instrumentation unit is provided on the motherboard, and is fitted with two standard test instrumentation sockets.

Discovery software provides a complete course of interactive instruction covering background, theory, experimental assignment procedure and questions. Management information, software editing and modification of the questions is possible with the addition of **Discovery** Manager, Editor and Question editor.

The software provided with the instrumentation unit enables the following instrumentation to be displayed on the PC:

- **Dual trace oscilloscope**
- **Frequency meter**
- **Digital voltmeter**
- **Spectrum analyser**



Curriculum Coverage

The structured courseware is provided on CD ROM. A text book on fault diagnosis is provided.

Fault Finding 13-001

Fault Combinations

- short circuit
- open circuit
- reverse connection
- incorrect value component
- incorrect component

8 Circuits provided

- Diode circuits
- Regulated Power Supply Circuits
- Single Stage Amplifier
- Two stage Amplifier with overall feedback
- Light emitting diode flasher
- Digital to Analogue converter
- Logic interface
- Waveform generator

Electronic Servicing 13-202

18 Circuits provided

- Bridge Rectifier with smoothing
- Bridge Rectifier with series regulator
- Single Stage Audio Amplifier
- FET Single Stage Audio Amplifier
- Op-amp Integrator
- Differential Amplifier
- 555 Timer
- Schmitt Trigger
- Unijunction Transistor Oscillator
- Astable Multivibrator
- Monostable Multivibrator
- Crystal Oscillator
- RC Phase Shift Oscillator
- Colpitts Oscillator
- Combination Logic Circuit - 1
- Combination Logic Circuit - 2
- Asynchronous Counter
- Shift Register

Electromagnetism Trainer 12-100

Curriculum Coverage

- Electromagnetic Induction
- Inductance
- Inductive Reactance
- Resonance
- Mutual Inductance
- Introduction to Magnetism
- Investigation of a Solenoid
- Transformer Theory
- Single Phase Transformers
- Reed Relays
- Relays
- Simple Motor control Circuits using Relays
- dc Motors
- dc Generators



The Electromagnetism Trainer is designed as an introduction to the application of electromagnetic fields through the use of devices. It is a practical hands-on trainer where the elements in the system are presented on an open board in a clear and logical manner.

Individual circuit elements are studied and can then be interconnected to develop more complex circuits.

Inductance is studied using a test rig comprising two coils wound side by side on a former. Different core materials can be used with the former allowing their performance in magnetic circuits to be evaluated. Using soft iron core parts it is possible to form different arrangements of magnetic circuit to investigate magnetic coupling between primary and secondary windings. Magnetic material performance is investigated at different supply frequencies.

A small conventional transformer is fitted to the board to allow basic performance and ratio experiments to be carried out.

dc motors and generators are studied using two small dc machines connected on a common shaft. One machine can be driven as a motor and mechanically loaded by using the other machine as a generator. A relay demonstrates an application of electromagnetism and also allows simple motor stop/start circuits to be tested.

All experiments are carried out using low voltage and low current power supplies. Interconnections between the various circuit elements are via 2mm patch leads. The unit comes complete with fully documented curriculum material both in an instruction manual format and also as part of the **Discovery II** software system

The system is fully compatible with the **Teknikit** Basic Electrical and Electronics teaching system and forms an ideal introduction to Electrical Power and Machines.

Power is provided from the **Teknikit** console.

For further information on these and other equipment in the Feedback range please contact

Feedback Instruments Limited, BESA
Park Rd, Crowborough, E.Sussex, TN6 2QR, England.
Tel: +44 (0) 1892 653322, Fax: +44 (0) 1892 663719,
E-mail: feedback@fdbk.demon.co.uk, Website: www.fbk.com



Feedback Incorporated,
437 Dimmocks Mill Road, PO Box 400, Hillsborough, NC 27278
Tel: 800-526-8783, 919-644-6466, Fax: 919-644-6470,
E-mail: info@fbk.com, Website: www.fbk.com