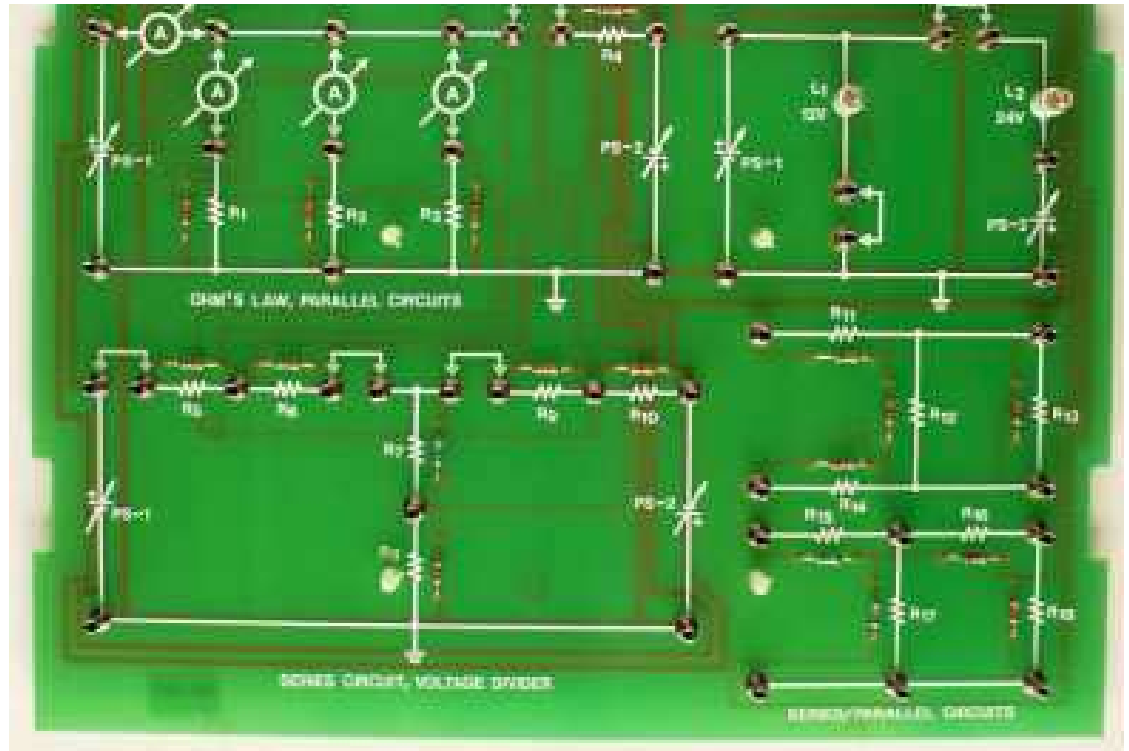


EB-101



The EB-101 DC Circuits I board is a comprehensive instructional module designed to teach the fundamental concepts of DC circuits to students in high schools, technical schools and colleges.

The module contains various practical circuits with which the student can perform a number of meaningful experiments, which help reinforce the student's comprehension of the related concepts. The individual circuits and the required test equipment can be quickly wired by connecting the 2-mm jacks associated with the necessary points. Students perform a minimal amount of wiring, thereby increasing the time available for training. Randomly inserted faults modify the circuits under test to provide valuable true-to-life troubleshooting exercises, which develop diagnostic skills.

A comprehensive student experiment manual clearly details the experiment procedure. An optional theory manual provides the necessary theory to help students achieve the experiment objectives. Optional Windows-based, graphics courseware enhances the learning procedure by providing the essential background theory, testing the student's level of competence, providing detailed experiment procedures, evaluating all measurements and answers to questions and testing the student's level of achievement at the end of the experiment. The student may learn in the standalone mode or under CML (Computer Managed Laboratory), which allows the instructor to monitor student and class progress and records pertinent records in a database for future retrieval.

SPECIFICATIONS

DESCRIPTION

The EB-101 printed circuit board is designed to minimize circuit wiring time when setting up experiments. The board dimensions are 234.5 x 200 mm and may be powered by either PU-2000 or PUZ-2000 base units. All components are mounted on the printed circuit board and the schematic diagrams of all circuits are silk-screened to help the student identify components and system operation. The board is provided with plastic standoff protectors to protect the bottom side of the board, which is solder-masked. All major signals can be accessed from the 2-mm jacks to simplify connections within the circuit and to test equipment. All integrated circuits and transistors are mounted on sockets. The printed circuit board can be stored in the supplied plastic binder for convenient storage.

EXPERIMENTS COVERED

1. Digital multi-meter (DMM or VOM)
 - Measure voltage
 - Measure current
 - Measure resistance
 - Read polarity
2. Resistance color code
 - Determine resistance from the color code
 - Measure resistance with a DMM
 - Determine if measured resistance lies within tolerance

3. Ohm's law

- Verify Ohm's law by experiment
- Calculate resistance from voltage and current measurements.
- Determine current from measured voltage and resistance color code
- Determine voltage from measured current and resistance color code

4. Power in a resistance

- Determine power in a circuit from the measured voltage and current
- Compare the amount of light produced by two light bulbs from the applied voltage and current

5. Resistors in series

- Use a DMM to measure resistors in series
- Measure voltage drops of resistors in series
- Locate faults such as open and short circuits

6. Kirchoff's Voltage Law

- Use a DMM to measure voltage drops in series circuits
- Verify KVL for series circuits

7. Voltage dividers

- Calculate voltages using voltage division principle
- Verify the voltage division principle by measurement
- Troubleshoot voltage dividers

8. Resistors in parallel

- Connect resistors to form parallel circuits
- Measure the resistance of parallel circuits using

9. Kirchoff's Current law

- Measure currents in parallel circuits
- Verify KCL by measuring currents

10. Current dividers

- Calculate conductance in parallel circuits
- Use current divider principle to calculate current
- Verify current divider principle by measuring currents in parallel circuits

11. Series-Parallel Circuits

- Calculate equivalent resistance of a series-parallel circuit
- Measure equivalent resistance with a DMM

12. Troubleshooting DC Circuits

ACCESSORIES

Required Accessories

- EB-2000 workstation
- Digital multi meter
- DL-20 patch cord kit

COMPUTER MINIMUM CONFIGURATION

Pentium II 350MHz with:
64 MB RAM
40 X CD

COM1 or COM2 port
SVGA card with 8 Mbytes
Operating System: Windows
95/98/NT/2000/XP

Microsoft Internet Explorer 5 or 6

INSTRUCTIONAL MATERIALS

Pedagogical experts who train technicians in electronics technology wrote the courseware and experiments.



Innovative Technologies in Education, Inc.