

IPC EDUCATIONAL TRAINERS

BASIC ELECTRICITY TRAINER

MODEL: - IPC-222-BET



The model Basic Electricity Lab Trainer is a versatile training kit, for a laboratory. It is designed such that all the basic electrical circuits can be tested with the help of this trainer kit.

The experiments given with training system develop mental starting from an introduction to the circuit, basic fundamental and complete circuits like series and parallel circuits, electromagnetic induction, coil behavior with AC and DC circuits diode and transistor characteristics etc. This simple training kit provides a strong foundation for future studies in electrical or electronics. This takes students from the basics of Ohm's Law, through simple series and parallel circuit analysis and into same elementary aspects of electronics where they will build circuits using capacitors, transistors and diodes. Student can study how the resistance of a light bulb filaments changes as it heat up.

Wit this system a set of coils and cores are provided. These high quality coils and laminated iron cores provides an effective introduction to electromagnetic theory. Each coil is labeled with numbers of turns. These can be used in study of

1. **Electromagnetism:** It shows how the magnetic field can be increased by increasing the current, by adding an iron core or by using coil with more turns.
2. **Induction:** We can pass a magnetic through a coil and detect the resulting electromotive force with galvanometer. So it shows how the E.M.F depends on number of turns in the coil and on the relative velocity of the magnet and coil.
3. **Transformers:** We can mount coil on the U or E-shaped iron cores to demonstrate mutual induction. Then connect a load to investigate power transfer and basic transformers theory with an AC power supply. These are not ideal transformer. As true for any transformer using separate coil, the flux linkage between coils is very less. The voltage transformation ratio are therefore

proportionately below the ideal values based on the number of turns per coil with in this limitation, effective quantitative investigation can be connected using these coils and cores set.

TECHNICAL SPECIFICATION

DC Power Supply	:	5V, 200mA
AC Power Supply	:	6V, 1A
Relay	:	5V
Galvanometer	:	30-0-30
Galvanometer Resistance	:	80-125Ω
Light Bulbs	:	6V
Potentiometer	:	25Ω, 1W 10KΩ, 1W
Switch	:	1 Pole, 2 Way Toggle
Type		
Core Types	:	E, I, U

Coil :

No. of Turns	Wire Dimension (mm)	Maximum Current (Amp.)	Inductance (approx)
200	0.818	1.46	590μH
400	0.573	0.728	2.3μH
800	0.404	0.363	9.2μH
1600	0.251	0.144	34.2μH
3200	0.170	0.072	134μH

Fuse	:	1Amp.
Main Voltage	:	220V AC ±10%, 50Hz

LIST OF EXPERIMENTS

Experiment 1

To study the Resistances individually, as well as in series and in parallel connections.

Experiment 2

To study the ohm's law mathematical relation ship between three variables voltage (V), current (I) and resistance (R).

Experiment 3

To study the voltage and current flowing into the circuit.

Experiment 4

To study the behavior of current when light bulbs are Connected in series/parallel circuit.

Experiment 5

To study the Kirchoff's Law for electrical circuits.

Experiment 6

To study the R-C circuit and find out the behavior of capacitor in a R-C network and study the phase shift due to capacitor.

Experiment 7

To study the L-C circuit and its oscillations.

Experiment 8

To study the characteristics of a semiconductor diode.

Experiment 9

To study the characteristics of a transistor.

Experiment 10

To understand the Faraday's Law of electromagnetic induction.

Experiment 11

To study the behavior of current when inductance is introduce In the circuit.

Experiment 12

To study the Lenz's Law and effect of eddy current.

Experiment 13

To study the relay and construct a switching circuit by using relay.

Experiment 14

To study the Oersted experiment.

Experiment 15

To study the phenomenon of mutual induction.

Experiment 16

To construct and study the step down transformer with the help of given coils and cores.

Experiment 17

To construct and study of step up transformer.

Experiment 18

To study the effect of moving I core on a step up transformer.

Experiment 19

To convert a galvanometer into voltmeter.

Experiment 20

To convert a galvanometer into ammeter.

List of Accessories.

1. Patch cord 2mm to 2mm (8'')
2. Patch cord 2mm to 2mm (10'')
3. Coil 200, 800, 1600, 3200 turn
4. 400 turn coil
5. Bar magnet
6. Magnetic compass
7. Plastic U shaped object for I core experiment
8. U, E, I core
9. I core with long screw

Component Box**Resistances:**

100 Ω
200 Ω
220 Ω
332 Ω
1K Ω
100K Ω
220K Ω
5K Ω

Potentiometer 10K

10. Electrolytic capacitor 100 μ f
11. Metalized poly. Capacitor 0.1 μ f
12. Diode (1N4007)
13. Transistor (BC547)
14. Multimeter
15. Connecting Leads
16. User Manual