

# Electronics Measurement Trainer

## MAIN FEATURES:

The measurement trainer offers experiment for fundamental-level topics of a measurement course. It enables the student to acquire a clear experimental view of the basic concepts and, further, they will be familiar with the operative aspects of the work in the measurement laboratory

## MAIN ASPECTS OF THIS TRAINER:

- Suitable for Analog & Digital Electronics Measurement circuit experimentation and Design.
- Ideal tool for learning the basics of Analog & Digital Electronics Measurement.
- Integrated training system, with complete curriculum.
- Comprehensive power supply, signal supply, and testing devices for convenient experimentation.
- Expandability and flexibility of experiments greatly increased by students.
- All supplies equipped with overload protection.
- 18 experiment modules form basis for over 60 fully documented experiments.
- Main units and experiment modules also available separately for economical construction of class sets.

## Features:

1. Power Switch with Inner Light Indicator
  2. Input Power Supply Power Supply 110/220V AC  $\pm 10\%$  50/60Hz & Fuse Protected
  3. Fixed DC Power Supply Voltage range: +5V, -5V, +12V and -12V
  4. Maximum current output: 1.A for +5V rail, 300mA for others
  5. Output overload Protection (Fuses)
  6. Inbuilt 4x16 LCD Interfaced with Micro Controller
  7. Analog /Digital multimeter
  8. Programmer port is available for change in code through external burner
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9. Inbuilt Digital Volt meter, Digital Current meter with Probes
  10. Accessories Power lead
  11. user manual



This trainer is flexible in Design as well Devices Mounted on it are not inter connected. Students have to connect all the devices in the required manner in order to perform experiments. This also allows Teachers to Design new experiments for the students as assignments

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#### **EXPERIMENTS:**

1. Linear Measurement and Error Analysis using
  - a. Vernier caliper
  - b. Digital Caliper
  - c. Micrometer Screw Gauge
2. Construction & Design of Wheatstone Bridge
3. Construction & Design of Calvin Bridge
4. Construction & Design of Galvano Meter DR sanwal movement
5. Construction & Design of Analog Voltmeter
6. Construction & Design of Analog current meter
7. Construction & Design of Analog Resistance meter
8. Construction & Design of Digital Capacitance meter
9. Construction & Design of Digital Voltmeter
10. Construction & Design of Digital current meter
11. Construction & Design of Digital Resistance meter
12. Measurement of Power and Power factor by
  - a. Ammeter method
  - b. Voltmeter method
13. Measurement of electrical energy by electronic wattmeter and energy meter (KWH meter).
14. Design and construction of a 4-bit R 2R ladder DAC (digital to analog converter) circuit.
15. Study of Microcontroller's ADC, DAC circuits and their usage
16. Using Microcontroller, design Frequency generator
17. PC Based instrumentation like
  - a. Oscilloscope
  - b. Function generator
  - c. Digital Logic Analyzer
  - d. Spectrum Analyzer
18. And interfaces like
  - a. USB
  - b. Serial
  - c. GPIB etc.

#### **For Projects**

19. Using Microcontroller, design
  - a. Voltmeter
  - b. Ammeter
  - c. Frequency generator
20. PC Based instrumentation like
  - a. Oscilloscope
  - b. Function generator
  - c. Digital Logic Analyzer

- d. Spectrum Analyzer
21. And interfaces like
- a. USB
  - b. Serial
  - c. GPIB etc.