



Product Overview

The Universal Breadboard Trainer Kit is a plug-and-play educational platform designed for performing electrical and electronics experiments from basic to advanced levels. Components are connected directly on the breadboard using 4 mm pins, while the integrated console board provides a complete AC/DC variable power supply and a built-in signal generator with a frequency range up to 1 MHz.

The front panels feature photo-realistic graphics, connection details, and warning messages that guide users through experiments and improve understanding and retention. The system can be mounted in an A4 frame or placed directly on a tabletop, making it suitable for laboratories, classrooms, and training centers.

Key Features

1. Plug-and-play design for quick and easy experiment setup.
2. Integrated AC/DC variable power supplies with overload protection.
3. Built-in function generator with sine, triangle, and square waveforms.
4. LCD display for convenient frequency and output monitoring.
5. Comprehensive amplifier, filter, sensor, and control-system experiments.
6. Modular panels for displacement, angle, RPM, level, and pressure measurements.
7. Photo-realistic front panels with graphics and safety indications for guided learning.
8. Compact design suitable for table mounting or A4 frame installation.

Technical Specifications

Parameter	Details
AC Transformer Output	2 × 15 V AC / 500 mA, 50 Hz

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



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Parameter	Details
Fuse Protection	Poly Switch fused
Three-Phase Supply	18 V, 50 Hz
Adjustable DC Supply	0–30 V / 1.0 A, potential-free, with voltage and current display
Fixed DC Outputs	±15 V, 1.0 A
Protection	Short-circuit and regenerative proof up to 40 V DC
Overload Indication	Colored LED indicators
Variable Regulated Supply	30 V DC integrated with console

On-Board Function Generator

Parameter	Details
Display	LCD
Frequency Range	0.1 Hz – 1 MHz
Amplitude Range	0 – 10 V
Setting Accuracy	10 mV
Maximum Load Current	0.5 A (peak current)
Source Resistance	15 Ω
Waveforms	Sine, Triangle, Square

Educational Experiments & Features

1. Instrumentation Amplifier, Differential Amplifier, X100 Amplifier, Power Amplifier,

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- Current Amplifier, AC Amplifier, and Alarm Amplifier studies.
2. Signal generator experiments from 1 Hz to 100 kHz with sine and square outputs, plus a 40 kHz oscillator.
 3. 40 kHz filter, full-wave rectifier, low-pass filter, buffer, inverter, and comparator experiments.
 4. Potentiometer and linear potentiometer circuits for input-voltage variation studies.
 5. Strain gauge and load cell experiments for measuring strain and weight up to 3 kg.
 6. Pressure measurement using a pressure sensor up to 6 PSI.

Additional Modules & Sensors

1. Modular panel for ± 5 mm displacement measurement using an LVDT sensor.
2. Distance measurement using an ultrasonic sensor.
3. Dual-servo potentiometer panel for angular displacement and error detection.
4. Photo sensor studies including photoconductive cell, photovoltaic cell, phototransistor, and PIN photodiode.
5. Temperature sensor studies with LM35, AD590, PT100, thermocouple, bimetallic, and thermistor devices.
6. Level measurement up to 5 cm using a capacitance level sensor.
7. RPM measurement using Hall-effect, photo pickup, and proximity sensors.
8. Experiments with solenoids, relays, buzzers, speakers, and microphones.
9. Wheatstone bridge and P, I, D controller amplifier studies.
10. Amplifier configurations including differentiator, integrator, F/V, V/F, V/I, and I/V circuits.

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