

# MULTI TRAINER KIT

It is an integrated educational device designed to support electronics learning and experimentation.

## USER MANUAL



### **WARNING**

Read and fully understand operator's manual before using this machine.

## **NOTE**

- Before using the product, Please read the manual carefully, in order to maximize the performance of the product.
- Do not use this device in a flammable or explosive environment.
- Used batteries and discarded instruments replaced by instruments cannot be disposed of with household waste. Please handle in accordance with relevant national or local laws and regulations.

## **PRODUCT INTRODUCTION**

- Combines essential laboratory equipment such as an oscilloscope, voltmeter, power supply, and more into one portable system.
- Allows students and hobbyists to experiment with circuits, test components, and understand electronic principles practically.
- Supports a wide range of applications including waveform generation, logic circuit design, component testing, and power output control.
- Designed with safety features and easy-to-use interfaces, making it suitable for beginners and advanced users alike.
- Reduces the need for multiple devices, saving space and expenses while offering comprehensive tools in one kit.

## ***Analysis of common Problems***

### **1. Power Supply Not Working?**

A: Check all connections before switching on the power. Inspect wires and connectors for damage. Verify the output voltage settings and ensure they match circuit requirements.

## 2. Digital Voltmeter Shows Unstable Readings?

A: Tighten and secure connections on the breadboard. Check components for damage and replace if necessary. Use shielded wires or move the kit away from sources of interference.

## 3. Component Tester or IC Tester Not Working?

A: Clean the contact area and ensure components are fully inserted. Double-check orientation and pin configuration before testing. Avoid applying higher current or voltage than specified.

## 4. Oscilloscope Displays Distorted or No Waveforms?

A: Ensure that the probe is connected properly with correct polarity. Test with a known signal source to confirm oscilloscope functionality.

## 5. Breadboard Circuit Not Functioning?

A: Double-check the circuit diagram and ensure all connections match. Verify that the power supply outputs are correctly connected and switched on. Test individual components using the component tester or IC tester. Ensure all circuits share a common ground connection for proper operation.

### DSO



### USAGE INSTRUCTIONS:

1. Connect the probe of the DSO to the point in the circuit where you want to measure the signal.
2. Ensure proper grounding to avoid interference or incorrect readings.
3. Select the waveform type or mode according to the experiment.

4. Adjust the time base and amplitude settings to properly scale the waveform for observation.
5. Use the measurement tools to analyze frequency, amplitude, and other parameters as required.

### ***Buttons and its operations***

| Button          | Operate     | Function Description                                                                                                                                                                                 |
|-----------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AUTO</b>     | Short press | Automatic adjustment (frequency below 20Hz cannot be calibrated correctly)                                                                                                                           |
|                 | Long press  | <ul style="list-style-type: none"> <li>Enter the automatic calibration Confirmation interface-press OK button</li> <li>Enter automatic calibration mode (long press AUTO again to cancel)</li> </ul> |
| <b>Select</b>   | Short press | Toggle setting mode                                                                                                                                                                                  |
|                 | Long press  | Save key setting parameter                                                                                                                                                                           |
| <b>Increase</b> | Short press | Move/Change Mode                                                                                                                                                                                     |
|                 | Long press  | continuous Movement                                                                                                                                                                                  |
| <b>Decrease</b> | Short press | Move/Change mode                                                                                                                                                                                     |
|                 | Long press  | Continuous Movement                                                                                                                                                                                  |
| <b>OK</b>       | Short press | Pause/Start Waveform                                                                                                                                                                                 |
|                 | Long press  | <ul style="list-style-type: none"> <li>In the vertical voltage gear position, long press to switch X1/X10</li> <li>In other cases, long press to show/close detailed parameters</li> </ul>           |

**DSO PORT:** Allows you to connect probes and view electrical waveforms from your circuit. By using this port, you can monitor signal shapes, frequency, amplitude, and other important characteristics in real time. Make sure the probe is properly connected and the signal source is active before using the DSO to get accurate readings.

**LEVEL SHIFTER:**

**VPP:**

**SELECTOR:**

**USER MANUAL**

## FUNCTION GENERATOR

### Features:

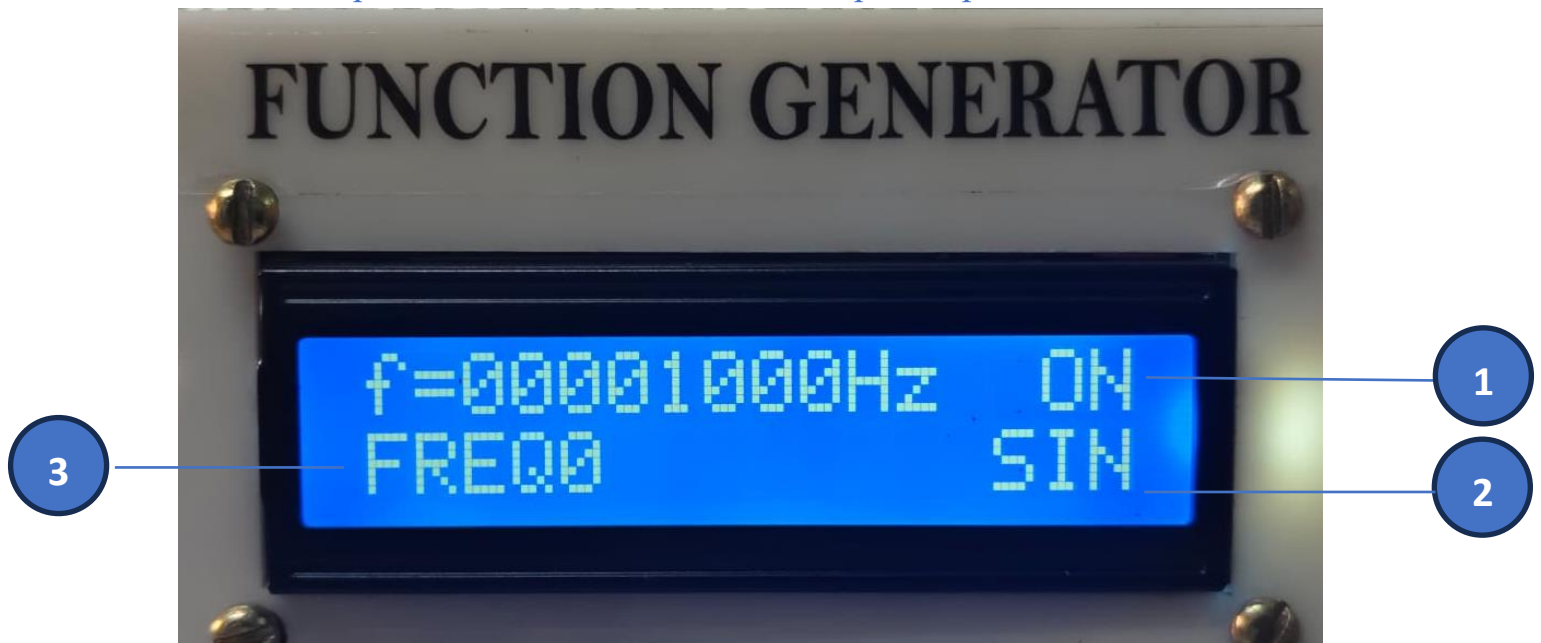
Waveform Types – It generates sine, square, and triangular waveforms, allowing users to test circuits under different conditions.

Adjustable Frequency – You can change the frequency to match the requirements of your experiment, helping in analyzing circuit behavior at various speeds.

Amplitude Control – The signal strength can be adjusted to safely test components and circuits without causing damage.

### Usage Instructions:

1. Connect the output of the function generator to the desired circuit using the appropriate wires or probes.
2. Select the desired waveform type (sine, square, or triangular).
3. Adjust the frequency and amplitude according to your experiment's requirements.
4. Use the DSO port to monitor the waveform shape and parameters in real time.



1. ON/OFF switch
2. Signal Function
3. Frequency



Rotate the SELECTOR in  
Clockwise – increase  
Anticlockwise - Decrease

For select and guide  
parameters click the  
SELECTOR button



**Function Generator Port:** provides output waveforms (sine, square, triangular) for testing and analyzing circuits. It allows easy connection of signals to the breadboard or external devices for experimentation.

## Features:

Supports Various IC Types – Allows testing of ICs such as logic gates. Quick Diagnostics – Provides immediate feedback on the condition of the IC, helping in identifying faulty or damaged components. find good or bad in all gates in one . User-Friendly Operation – Simple connection points make it easy for beginners to insert and test ICs without requiring prior experience.

## Usage Instructions:

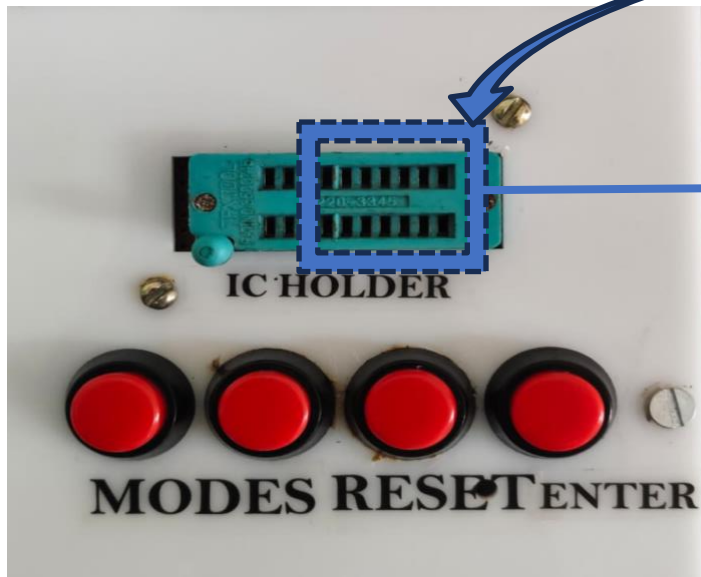
1. Align the IC pins correctly with the tester socket or header according to the provided pin diagram.
2. Power on the kit and observe the test results on the display or indicator LEDs.
3. If the IC passes the test, it is ready to be used in circuits. If it fails, consider replacing or further diagnosing the component.



| MODE1 – SWITCH2 | MODE2 – SWITCH 2 | GATES              |
|-----------------|------------------|--------------------|
| ON              | OFF              | AND, NAND, OR, XOR |
| OFF             | ON               | NOR                |
| ON              | ON               | NOT                |



## Buttons and its operations



Place IC in this part only

IC 74XX

Place IC on IC Holder like this (above fig)

**NOTE: 'notch' LEFT SIDED**

| Buttons | Function Description            |
|---------|---------------------------------|
| MODES   | To select the IC                |
| RESET   | Reset the before Initialization |
| ENTER   | For test IC                     |

## Digital voltmeter / variable power supply



1

2

1

Voltage

2

Current



## *Digital voltmeter*

### **Usage Instructions:**

1. Insert the positive (red) and negative (black) probes into the circuit points where voltage measurement is required.
2. Turn on the circuit and observe the voltage reading on the display.
3. Compare the reading with expected values to ensure proper circuit operation.



## *Variable Power Supply*

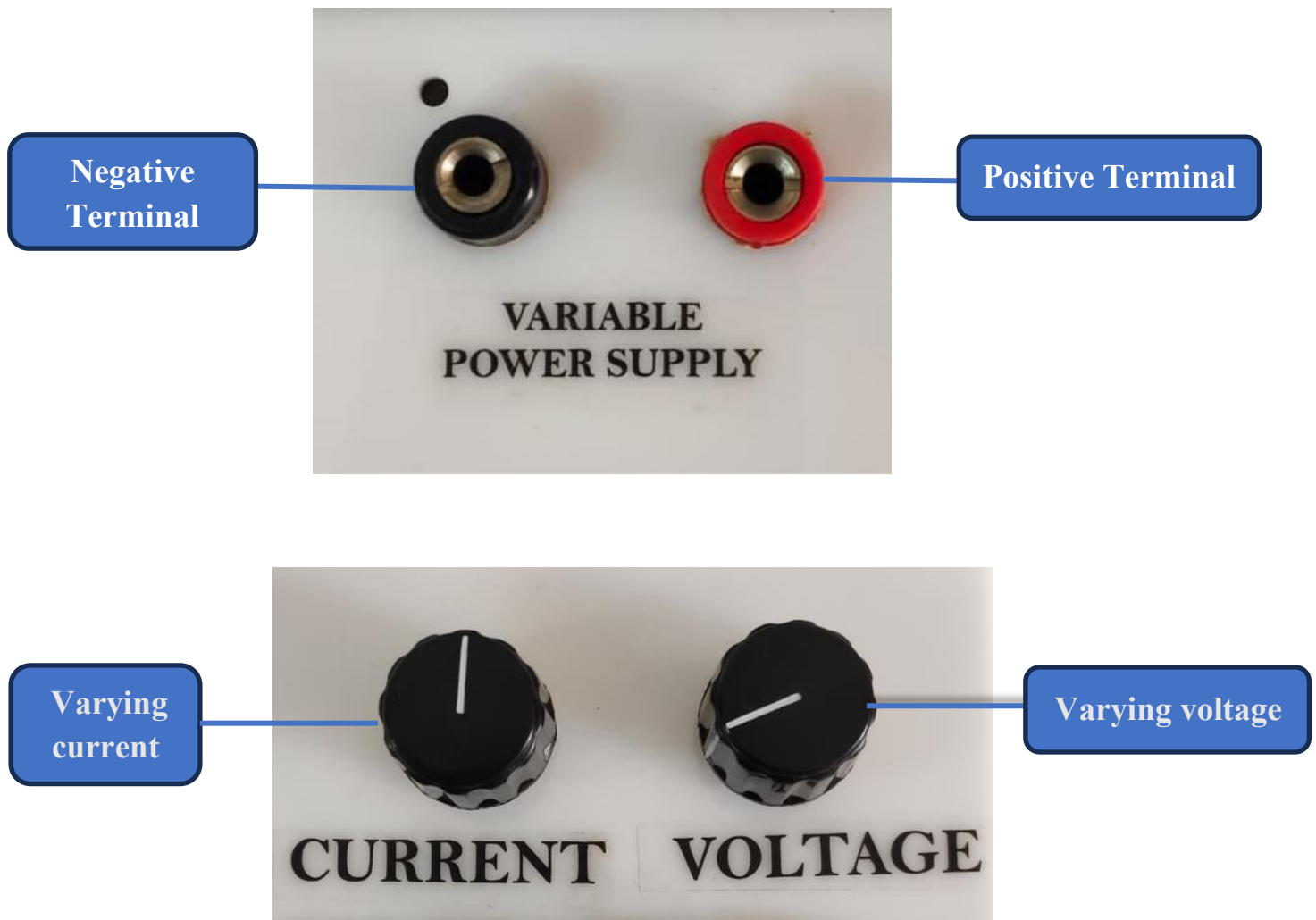
### **Features:**

**Adjustable Output** – You can easily set the output voltage to the desired level depending on the requirements of the experiment or circuit. **Stable Voltage Supply** – Designed to provide a constant voltage output, ensuring reliable operation of connected circuits. **Multiple Output Options** – Offers different voltage levels such as +12V, -12V, and +5V for powering analog and digital circuits. **Protection Features** – Includes safeguards against overcurrent and overheating to prevent damage to circuits and components.

### **Usage Instructions:**

1. Select the required output voltage using the control knob or switch.

2. Connect the positive and negative terminals of the power supply to the circuit's power input points.
3. Turn on the supply and verify the output voltage using the Digital Voltmeter.
4. Adjust the voltage as needed for your experiment or circuit requirements.



### ***Component Tester***

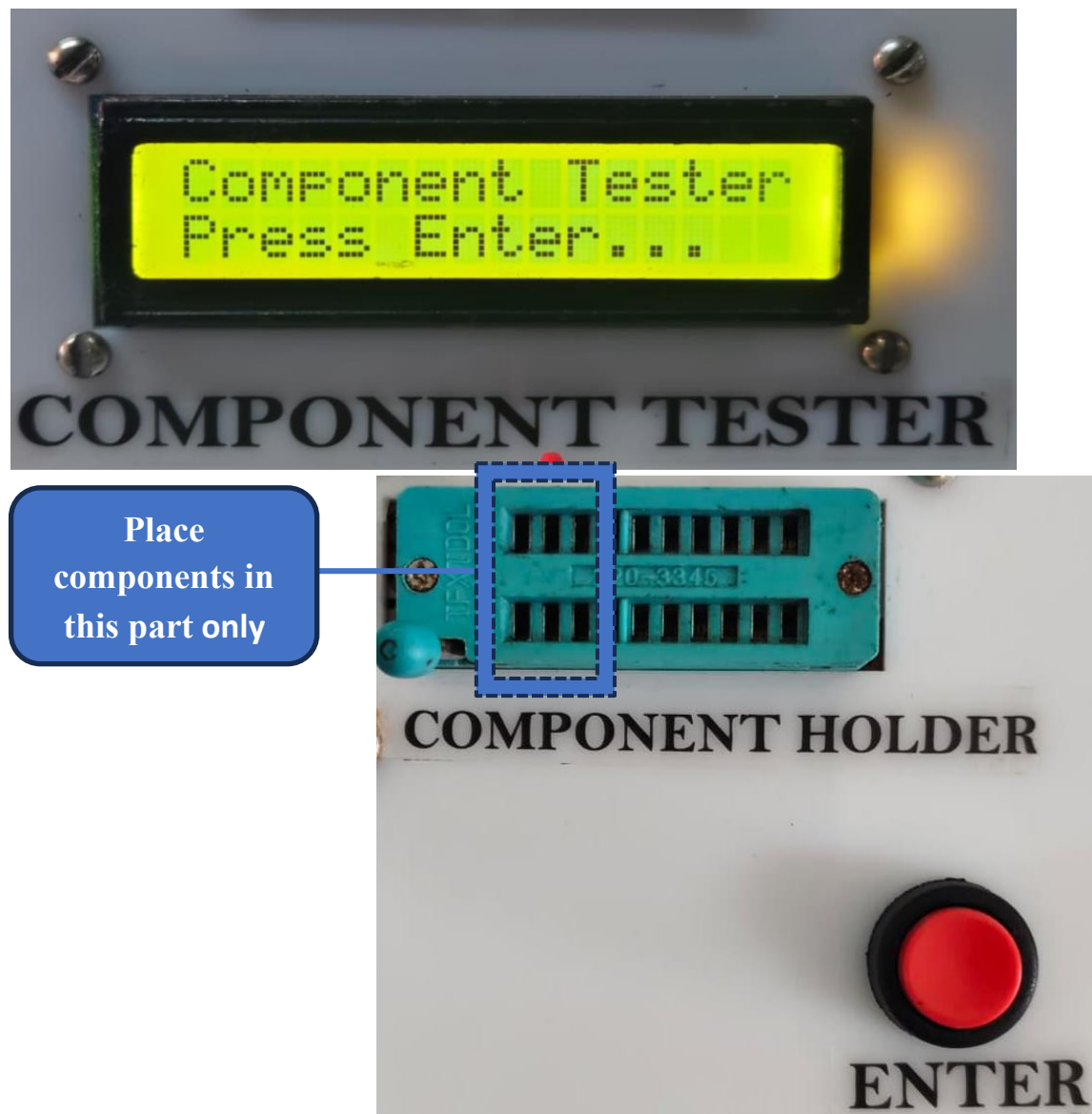
#### **Features:**

Supports Multiple Components – Can test resistors, capacitors, BJT, MOSFET, BJT Transistor, LED, Triac, Diac, IGBT, Zener diode and all other small components.  
Displays Measured Values – Shows readings such as resistance ( $\Omega$ ), capacitance ( $\mu\text{F}$ ), inductance (mH) etc..helping users verify component specifications. Easy-to-Use Interface – Simple wiring points allow beginners to insert components without

confusion. Identifies Faulty Components – Helps detect damaged or out-of-tolerance parts before circuit assembly.

### Usage Instructions:

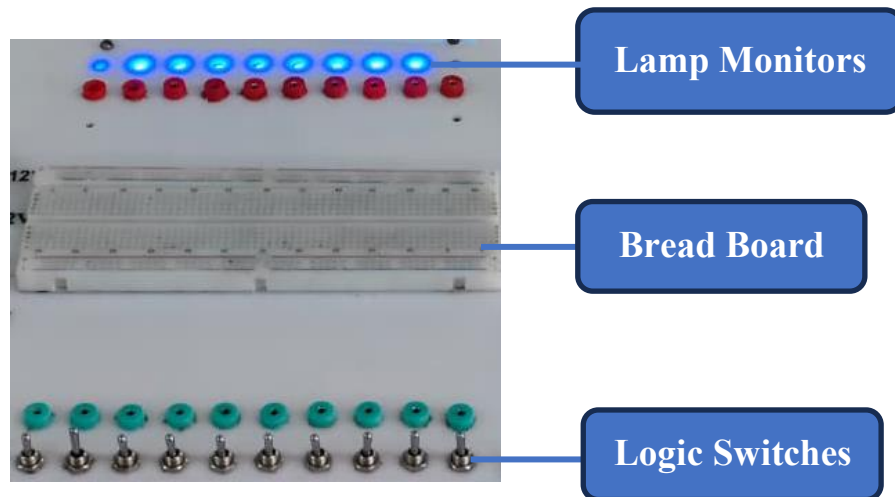
1. Insert the component in the component holder leads into the appropriate slots or terminals on the tester.
2. Turn on the power supply and read the value displayed on the screen or meter.
3. Compare the measured value with the component's rated specification to determine if it is in good condition.



**Component holder:** Provides stable support for components during testing and experimentation.

**Enter:** Press enter for start the component testing.

## *Logic Circuit Design Interface*



### **1. Breadboard:**

Provides a platform to build circuits without soldering. Allows easy insertion and rearrangement of components like ICs, resistors, and capacitors. Supports temporary circuit connections for learning and experimentation.

### **2. Logic Switches:**

Used as input devices to simulate digital signals (0 or 1). Helps users test how circuits respond to different input combinations. Typically labeled and connected to input pins of ICs or circuits.

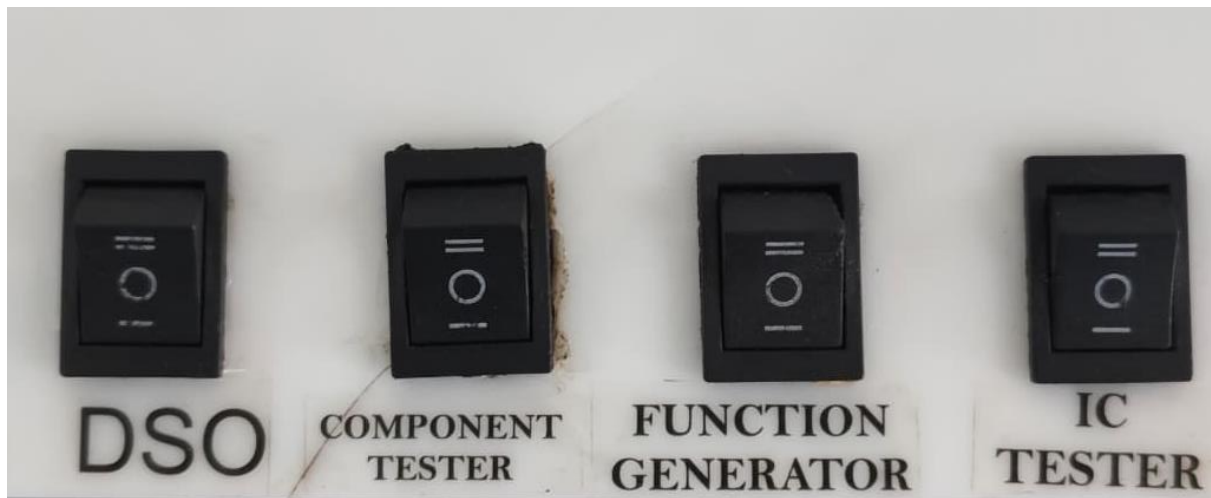
### **3. Lamp Monitors (LED Indicators):**

Show the output status of the circuit in real time. When the output is HIGH the LED turns to GREEN and when LOW the LED becomes BLUE. Helps in verifying the logic behavior without additional measurement tools.

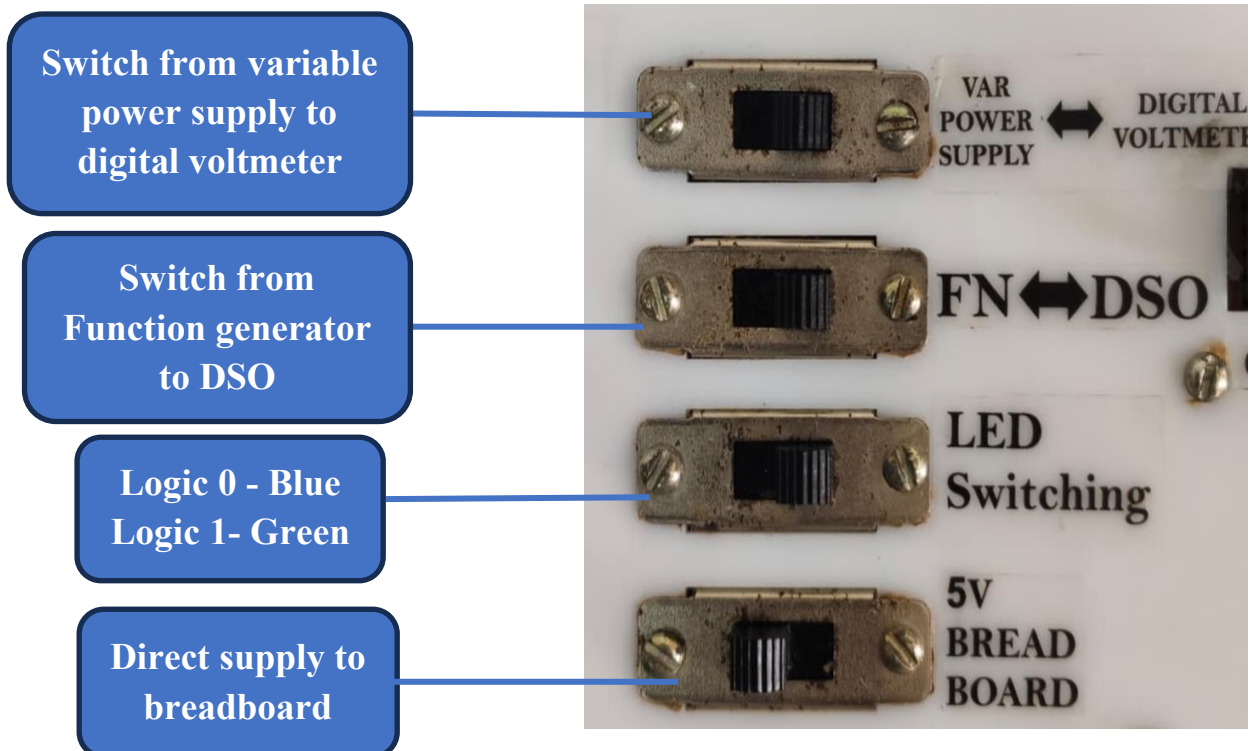


**Supply Voltage:** Its provides +5V, +12V, -12V and common ground.

## Switches



It's Provides separate ON/OFF switches for each function.





Turn ON/OFF the equipment.

### *Parameter Index*

| Parameters                    | Output                                  |
|-------------------------------|-----------------------------------------|
| Function voltage              | 3.3v                                    |
| Function frequency range      | 1Hz to 10MHz                            |
| Function types                | Square wave, triangular Wave, Sine wave |
| Output voltage range          | 5V (10A), +12V (10A), -12V (1A)         |
| Variable power supply voltage | 0V-12V (10A)                            |

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