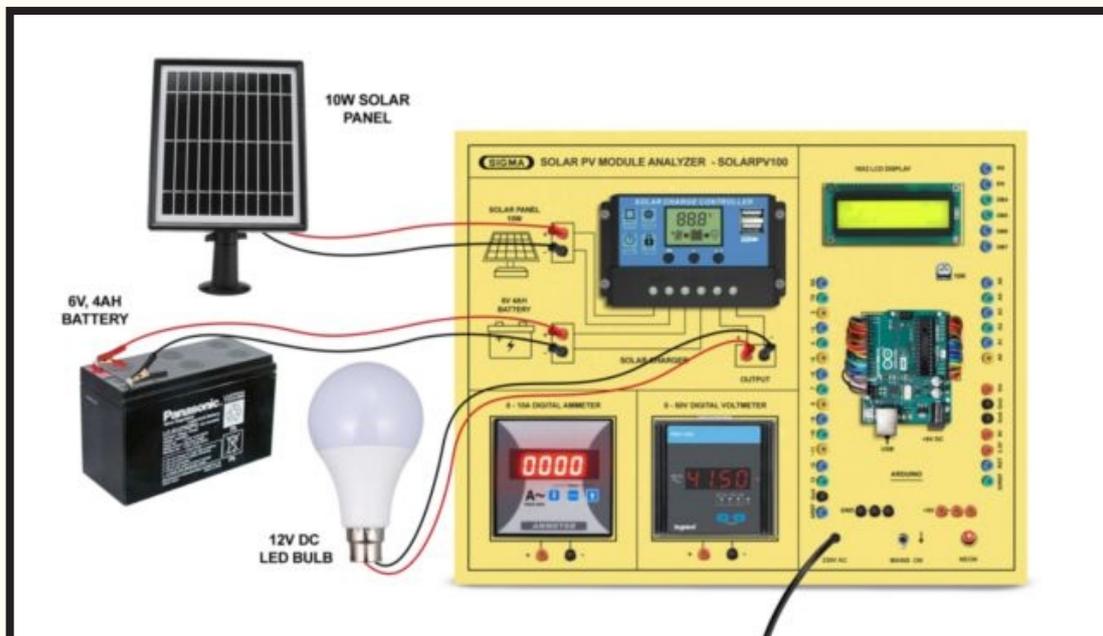
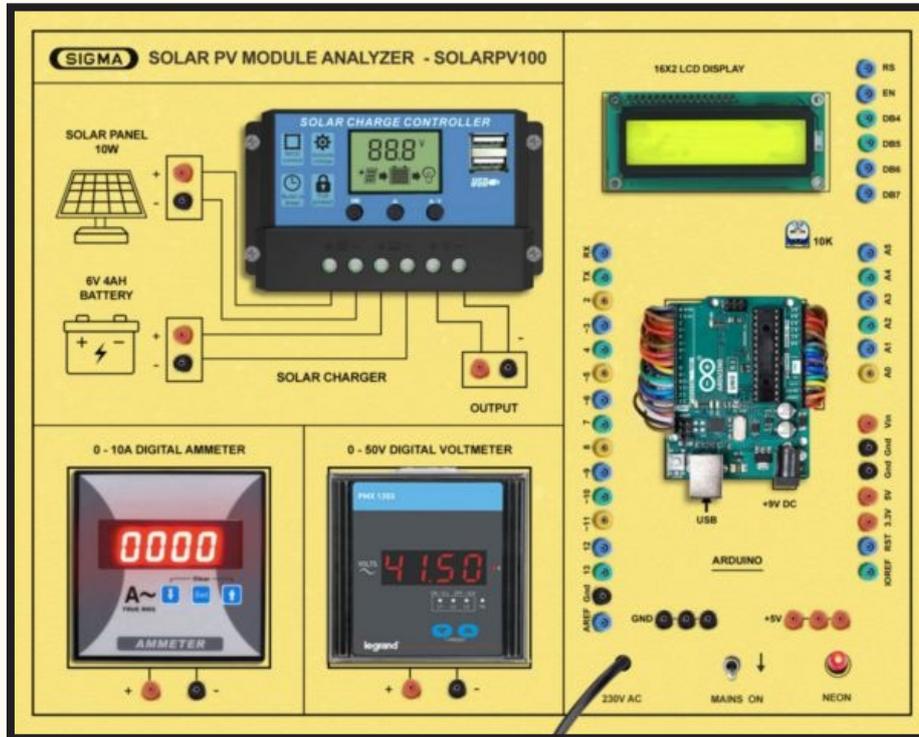




# SOLAR PV MODULE ANALYZER MODEL-SOLARPV100

This trainer has been designed with a view to provide practical and experimental knowledge of Transformation of Solar Energy into Electrical energy by Solar PV Module analyzer



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## **SPECIFICATIONS**

### **1. Hardware**

**Following Parts and Modules are assembled on Single PCB of size - 18 Inch x 15 Inch**

#### **1. Arduino Microcontroller Board**

1. Arduino Uno Microcontroller board based on the ATMEGA328P
2. 14 Digital Input / Output pins (of which 6 provide PWM output)
3. 16 MHz Ceramic Resonator
4. USB Port
5. Power Jack – 9V DC, 1A
6. PC Interface.

#### **2. Solar PV Modules Hardware:**

1. Solar Panel PV Modules : 40W
2. Open Circuit Voltage Voc : 10V
- Short Circuit Current Isc : 60mA
- Maximum Power Voltage (Vmp) : 8.80V
- Maximum Power Current (Imp) : 0.57A
3. Battery : 6 V / 4 AH
4. Solar Charger : 12 V

#### **3. Modules and Hardware:**

1. Digital LCD Voltmeter - 0-50V DC
2. Digital Ammeter - 0-10A DC
3. 12V DC LED Lamp as a Load
4. 2 mm interconnections

### **2. Accessories**

1. USB Cable : 2 No
2. Ethernet Cable : 1 No
3. Power Supply Adaptor : +9V DC, 1A
4. Jumper wires : 50 Nos.
5. Pen Drive with Software, Library, Driver,  
Codes, Soft Copy of Manual and Mobile App : 16 GB
6. Printed Practical Manual : 1 No.
7. E-Books for Solar Lab : 10 Nos. in PDF Format
8. Mp4 Video Class for Solar Lab : 40 Nos

### **3. Cabinet and PCB**

The complete circuit diagram is screen printed on component side of the PCB with circuit and Parts at the same place. The PCB with components on front side is fitted in elegant wooden box having lock and key arrangement. The acrylic cover is fitted on PCB to safeguard parts. It works on 230 V AC Supply.

## **EXPERIMENTS**

### **A. Theory Experiments for Arduino Board**

1. To understand theory and working of Arduino Operating software.
2. To understand Pin and Connection Diagram of Arduino.
3. To understand USB Interface for Arduino.
4. To understand 20 x 4 LCD Display.

### **B. Theory Experiments for Solar**

5. To understand theory and working of Solar Energy
6. To understand theory and working of Solar PV Modules
7. To understand theory and working of Transformation of Solar Energy into Electrical energy.
8. To understand theory of Charging of SMF type Battery
9. To understand theory and working of Solar Charger Controller

### **C. Practical Experiments**

10. To light a LED Bulb with Solar Energy
11. To charge the Battery using PWM type Solar Charge Controller and Solar Panel
12. To control overcharging of a Battery using Solar Charger and display on 20 x 4 Display
13. To measure Open Circuit Voltage, Short Circuit Current, Maximum Voltage and Current at Maximum Power of a Solar Panel
14. To analyze Solar parameters on a PC using PC Interface and Software
15. To send Solar Parameter data using Wifi Wireless Node to Main Base IOT Receiver using Arduino Microcontroller