

Order Code : 20213559.9

Name : Experimentation with Solar and Wind Energy



## Specifications:

**Experimentation with Solar and Wind Energy** is a versatile training system for students to understand the concept of both Solar and Wind energy based DC Power Generation.

This product explains how solar cells are put together for desired voltage generation and how Solar energy is utilized to drive different loads. The Wind Turbine Section works as a live demonstration unit of a wind turbine (generator). It introduces the concept of converting kinetic energy of wind into mechanical energy and then further into electrical energy. It is provided with a good quality solar panel and Wind Turbine setup.

### Features

- Complete Training System
- On-board Voltmeter and Ammeter
- Battery charging using both Solar and Wind energy
- Weather-proof solar cells
- Online product tutorial

### Technical Specifications

<b>Solar Panel</b>	: Consists of 6 solar cells
<b>Solar Cell</b>	
DC Voltage	: 2V Max.
DC Current	: Up to 150mA
<b>Wind Turbine Setup</b>	: Contains 3 blades
Open Circuit DC Voltage	: 2.5V to 3.5V
Short Circuit DC Current	: Up to 220mA
<b>DC Voltmeter</b>	: 0-10V
<b>DC Ammeter</b>	: 0-500mA
<b>Potentiometer</b>	: 5K $\Omega$
<b>Rechargeable Ni-Cd Battery</b>	: 1.2V
<b>Lamp</b>	: 3V
<b>Fan</b>	: 3V
<b>FM Receiver</b>	: 12V

### Scope of Learning

- Study of the voltage and current of the solar cells in series and parallel combinations
- Study of current-voltage characteristic and the power curve to find the maximum power point (MPP)
- To calculate the efficiency ( $\eta$ ) of the solar cell
- To study the application of solar cells in charging of Ni-Cd battery
- To study of the application of solar cells of providing electrical Energy to the domestic appliances such as lamp, fan and radio
- Installation of Wind Turbine Setup and measurement of wind Energy based DC Voltage and Current
- Measurement of voltage and current of wind Energy based DC Supply with change in angle of blades
- Measurement of voltage and current of wind Energy based DC Supply with change in direction of wind
- Measurement of voltage and current of wind Energy based DC Supply with change in speed of wind imposed on the blades
- Study of the application of wind Energy based DC Supply in charging of Ni-Cd battery
- Study of the application of wind Energy based DC Supply of providing electrical Energy to the domestic appliances such as lamp, fan and FM receiver

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

### **TESCA TECHNOLOGIES PVT. LTD.**

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