



55918 Solar Power Generation and Training System has been designed considering the Solar technology applications in harnessing electricity from Sun. It is a eco friendly way to generate the energy from the Sun. This system will enable students to learn the basic as well as advanced concepts of Solar Photovoltaic energy generation. Being aligned with National Solar Mission of India, we have designed this product to provide opportunity for skill upgradation in solar PV Technology.

It also includes a training system to study the fundamentals of solar tracking in both single and dual axis modes which involves tracking of motion of the Sun, thus ensuring that the maximum amount of Sunlight strikes the panels throughout the day.

Features

1. A unique Solar system for electricity generation.
2. Provided with meters for analysis of parameters
3. Provided with all safety protections
4. Connector Sheathed Shock proof type
5. DC Voltmeter & DC Ammeter
6. Multi Function Meter

Fundamentals of Solar Tracking which includes-

1. Microcontroller based Tracking System
2. Single-axis and Dual-axis Tracking
3. Manual, Time and Auto Modes of operation in Single axis Solar Tracking
4. Manual mode of operation in Dual-axis Solar Tracking
5. Master Reset Switch for recovery of System
6. Emergency Motor Stop Switches
7. Tilt Sensors for sensing angle of panel with respect to horizontal plane
8. Facility for charging battery using Solar energy as well as DC supply

Object

The Geography behind Solar PV installation

01. Site assessment and planning before Solar PV installation
02. Understanding the Sun position and installation of PV panel
03. Analysis of voltage, current and power generation
04. Effect of shadow on Solar PV system

Measurement and Analysis of Different parameters of Solar PV Module

05. Open circuit voltage (Voc) of Solar PV module
06. Short circuit current (Isc) of Solar PV module
07. Parameters measurement with parallel Solar PV modules
08. Parameters measurement with series Solar PV modules
09. I-V characteristics of PV Module

Note: Specifications are subject to change.

Estimating Solar PV system

10. Load Estimation and calculation

Charge controller

11. Basics of MPPT

Inverter & Batteries

12. Testing of Inverter

Analysis of the effect of dust on Solar PV module

Safety and Precaution for installation of Solar PV System

Learning details with Solar Tracking System

13. Study of V-I characteristics of fixed Solar Panel i.e. without tracking the Sun

14. Study of V-I characteristics of Solar Panel using Single-axis Solar Tracking in Manual Mode

15. Study of V-I characteristics of Solar Panel according to incident angle of light keeping Light source at fixed position and moving solar panel in Manual Mode

16. Study and observation of Single-axis Solar Tracking in Time Mode

17. Study and observation of Single-axis Solar Tracking in Auto Mode

18. Study the operation of Dual-axis Solar Tracking System in Manual mode

Technical Specifications

Solar panel

Power Rating : 1KW
Cell type : Polycrystalline

Solar panel structure

Material : GI
Assembly : Detachable and easy to install

Solar inverter

Capacity : 1000VA
Input voltage : 190 - 260V AC
Output voltage on mains mode : same as input
Output voltage on UPS mode : 210 - 245V
Output frequency on UPS mode : 50Hz ±0.1Hz
Output waveform on mains mode : same as input
Output waveform on UPS mode : Modified Sine wave
Efficiency at full load : >80%
UPS overload/UPS Short circuit : Yes
Technology : Microcontroller based
LED Indication : Mains ON, UPS ON, Low Battery, Charging & Over load
Terminals : BS10 type for safety purpose
MCB : C type -4nos
Solar Battery (4nos) : 12V/100Ah (C10 type)

Charge controller

Solar PV module : 35-70V
Current : 40A
Battery voltage : 24V
Technology : PWM based MPPT

Meters

DC voltmeter : 0-300V (2nos)
DC ammeter : 0-40A (3nos)
Multi function meter : Voltage-10-230V, Current-100mA-5A Watt-10-1200W
Energy meter display resolution- 0.001kWh
Frequency-50Hz

Optional accessories

AC/DC load (46502), Rheostat:50Ω 15A x 1 no.

Solar Panel

Supply Voltage : 12V DC
Maximum Output : 18W
DC Motor : 12V
Rechargeable Battery : 12V, 7Ah
Display : 20 x 4 LCD
Light Sensor : Phototransistor
Acceleration/Vibration/Tilt Sensor : 3 Axis
DC Adaptor : 12V @ 1Amp

Note: Specifications are subject to change.