Solar PV Training and Research System (PVTR)

PVTR is a mini Solar PV standalone power plant prototype which enable users to understand in-depth concepts about standalone PV systems.

Design

Modular Design

Usability

Can be used indoors as well as outdoors

Specifications

Standalone PV system with Artificial Irradiation,40 Wp Solar Panels*2, Charge Controller, 12 V Battery*2, Inverter, AC &DC loads, Measurement Panel and Data logging

Features

- An active measurement panel to measure different Voltages, Currents and temperature.
- User can vary Irradiation to simulate sunlight conditions during the day which further affects the temperature of Solar Panel to study I-V and P-V characteristics under varying irradiation and temperature.
- Series and Parallel Combination of Solar Panels possible.
- Arrangement to tilt solar panels to study the effect of Tilt angle on PV module Power.
- Shading blades are provided to study the effect of shading on Solar PV.
- No connections are made internally to encourage user to learn connecting different components together in order to install a standalone Solar PV standalone power plant.
- Workout power flow calculations of Standalone PV power plant using charge controller, inverter, AC /DC load and Battery.
- Option to provide external gate signals to charge controller via Function generator to study effect of change in Duty Cycle of charge controller on PV Power.
- User can externally feed MPPT signal to study effect of MPPT algorithm on PV Power.
- User can use his/her own MPPT algorithm to study the effect of MPPT algorithm on PV Power
- User can plot Real time PV, IV, V vs time, P vs Time, I vs Time curves using proprietary PC Software.
- Data can be saved in csv format
- Graphs can be saved in image format