



Photovoltaic System Overview

The photovoltaic (PV) system comprises solar panels, an inverter, and additional electrical and mechanical components that harness solar energy to generate electricity. PV systems vary in scale, from compact rooftop or portable units to expansive utility-scale power plants.

Mobile Photovoltaic Solar Array

- **Frame:** Wheeled stainless steel construction for easy mobility.
- **Solar Panels:**
 - Two modules, each with a peak power output of 120W or higher.
 - **Type:** Polycrystalline.

Tabletop Control Panel

- **Structure:** Durable steel design.
- **Front Side:** Features a comprehensive, colored system diagram for easy reference.
- **Back Side:** Equipped with an AC loading system, including five switchable lamps, each equivalent to 30W.

Charge Controller

- **Rated Voltage:** 12 Vdc.
- **Maximum Current:** 20 A.

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



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info@tesca.in
www.tescaglobal.com

Inverter

- **Continuous Output Power:** 600 W.
- **Peak Power:** 1200 W.
- **Input Voltage:** 12 Vdc.
- **Output Voltage:** 230 Vac, 50 Hz.
- **Output Waveform:** Sine wave.
- **Protection Features:** Includes stop function for low battery charge, overload protection, short circuit protection, and over-temperature protection.

Instrumentation

- **DC Parameters:** Digital voltmeter and ammeter.
- **AC Parameters:** Multifunction instrument with microprocessor-based monitoring.
- **Connections:**
 - Socket for spotlight connection.
 - 4 mm safety holes for portable rheostat and DC 12V lamp connections.

Buffer Battery

- **Rated Voltage:** 12 Vdc.
- **Capacity:** 100 Ah.

PC Data Acquisition

- **Interface:** Data acquisition board with USB connection to PC.
- **Converters:** Voltage and current converters.
- **Software:** Specific software for monitoring, recording, plotting, and saving system parameters.

Solar Radiation Sensor

- **Purpose:** Measures and transmits global solar radiation incident on the PV panel to the control panel.
- **Transducer Type:** Pyrometer.
- **Range:** 0 - 2000 W/m².

Solar Tracker

- **Framework:** Steel construction.
- **Gearing System:** Allows panel orientation on two degrees of freedom (up-down, east-west) for optimal sun exposure.

Portable Rheostat

- **Function:** Used to draw the PV panel characteristic curve.

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Indoor Lighting Device

- **Purpose:** Enables the operation of the photovoltaic panel indoors.

Connection Lead Set

- **Specifications:** All leads are rated to match the photovoltaic system's capacity, ensuring proper and safe connections throughout the system.

Manuals

- **Teacher and Student Manual:** Detailed instructions for system operation and education.
- **Troubleshooting Manual:** Step-by-step guide for identifying and resolving issues.

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