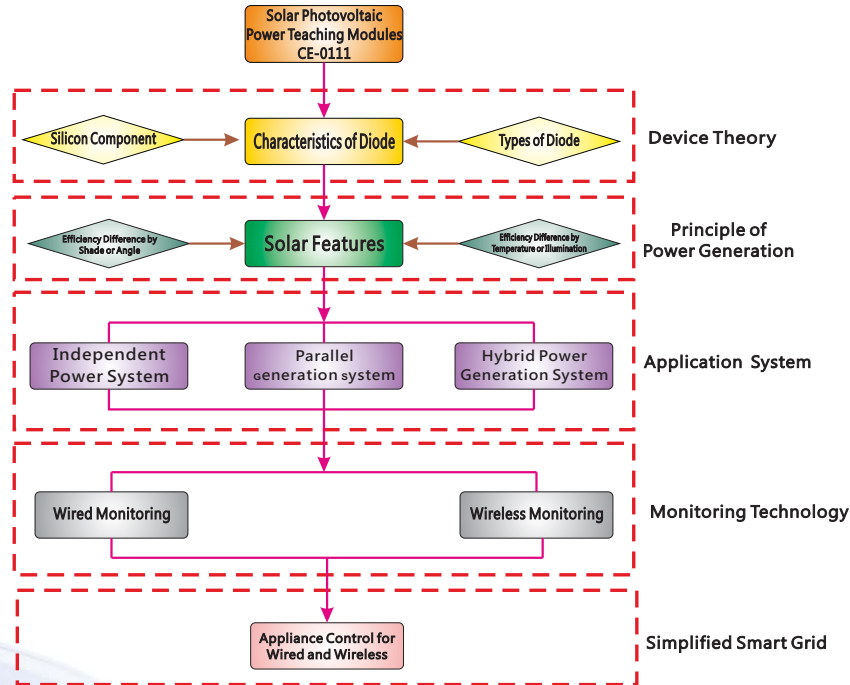


# Solar Photovoltaic Power Teaching Modules



## Curriculum Objectives

In order to achieve the goal of energysaving and carbon reduction, we develop the solar power system and corresponding teaching materials, one of the alternative energy. Teaching procedure is in a progressive manner that following theories of solar modules, conditions of power generation, environmental factors and how to build a system and its application, so that students can have a complete understanding and implementation of theories and system applications.

## Curriculum Outline

Through contents of courses, students can understand the theory of generating electricity of monocrystalline and polycrystalline solar panels, shading problems and overcome the way, how to complete the solar power system and how to supply the power to the electrical equipment.



## Product

Practical Teaching and Training System of Solar Energy

Education & Training

Solar Photovoltaic Power Teaching Modules CE-0111

Simulation-Based Platform CE-0112

Portable Solar Power Learning System CE-0117



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Dealer



The best choice of solar power system for education and training

# Solar Photovoltaic Power Teaching Modules CE-0111

## Device Theory

### Characteristics of Diode

- Experiment 1: Measuring Characteristic Curves of Diode

### Types of Diode

- 1.1 Types of Diode

### Silicon Component

- 1.2 Measuring Characteristic Curves of Single Diode
- 1.3 Measuring Characteristic Curves of Series With the Diode

## Principle of Power Generation

### Principle of Solar Power Generation

- Experiment 2 : Measuring Characteristic Curves of Solar Modules
  - 2.1 Understanding of Solar Module
  - 2.2 Recording Characteristic Curves of Solar Modules

### Efficiency Difference by Temperature or Illumination

- 2.3 Recording Characteristic Curves of Solar Modules
- 2.4 Recording Characteristic Curves of Solar Module Under Different Temperatures

### Efficiency Difference by Shade or Angle

- 2.5 Recording Output Power of Solar Module Under Different Tilt Angles
- 2.6 Recording Generating Power of One Day at Summer and Winter

- Experiment 3 : Experiment of a Small Watt of Solar Panel
  - 3.1 The Shading Phenomenon of Solar Photovoltaic Modules Without Bypass Diodes.
  - 3.2 The Shading Phenomenon of Solar Photovoltaic Modules With Bypass Diodes.

## Application System

### Independent Power System

- Experimental 4 : Independent System of Solar Power Generation System
  - 4.1 Building a Small Power of Solar Power Generation System-Independent
  - 4.2 Measuring Efficiency of the Standalone Converter.
- Experimental 5 : System Control of Solar Controller
  - 5.1 Measuring Solar Controller Battery Terminal Waveform
  - 5.2 Solar Controller Controls the Output Mode of Presentation

### Parallel Generation System

- Experiment 6 : Solar Power Generation System of Parallel Type
  - 6.1 Building a Small Power Parallel System
  - 6.2 Measuring Efficiency of the Shunt Converter

## Hybrid Power Generation System

- Experiment 7: Solar Photovoltaic Power Generation System of Disaster-type
  - 7.1 Understanding the Setting of Interface and Data of Header
  - 7.2 Setting up a Small Power of Hybrid Power System

## Monitoring Technology

### Wired Monitoring

- Experiment 8: Wired Monitoring (USB & RS-485)
  - 8.1 System Data Collection and Analysis
  - 8.2 System Failure Alarm System

### Wireless Monitoring

- Experiment 9 : Wireless Monitoring of ZigBee
  - 9.1 Point to Point Wireless Communication of ZigBee
  - 9.2 Wireless Network Analyzer
  - 9.3 Measurements of Packets of Wireless Network Analyzer
  - 9.4 System Data Collection and Analysis
  - 9.5 System Failure Alarm System
- Experiment 10 : Wireless Monitoring of WiFi
  - 10.1 WiFi How to Link to the District Network Wireless Communication
  - 10.2 WiFi How to Read the Data of Header
  - 10.3 System Data Collection and Analysis
  - 10.4 System Failure Alarm System

## Simplified Smart Grid

### Appliance Control for Wired and Wireless

- Experiment 11 : Appliance Control of Wired and Wireless Types
  - 11.1 Appliance Wired Control of RS-485 Cable Transmission Technology
  - 11.2 Appliance Wired Control of ZigBee Wireless Transmission Technology
  - 11.3 WiFi Wireless Transmission Technology Via Remote Electrical Control

## Related Products:

- ◆ Simulation-Based Platform For Solar Energy Teaching Practice(CE-0112)
- ◆ Portable Solar Power Learning System(CE-0117)
- ◆ Customized Solar Aids
- ◆ Related Import and Export Trade