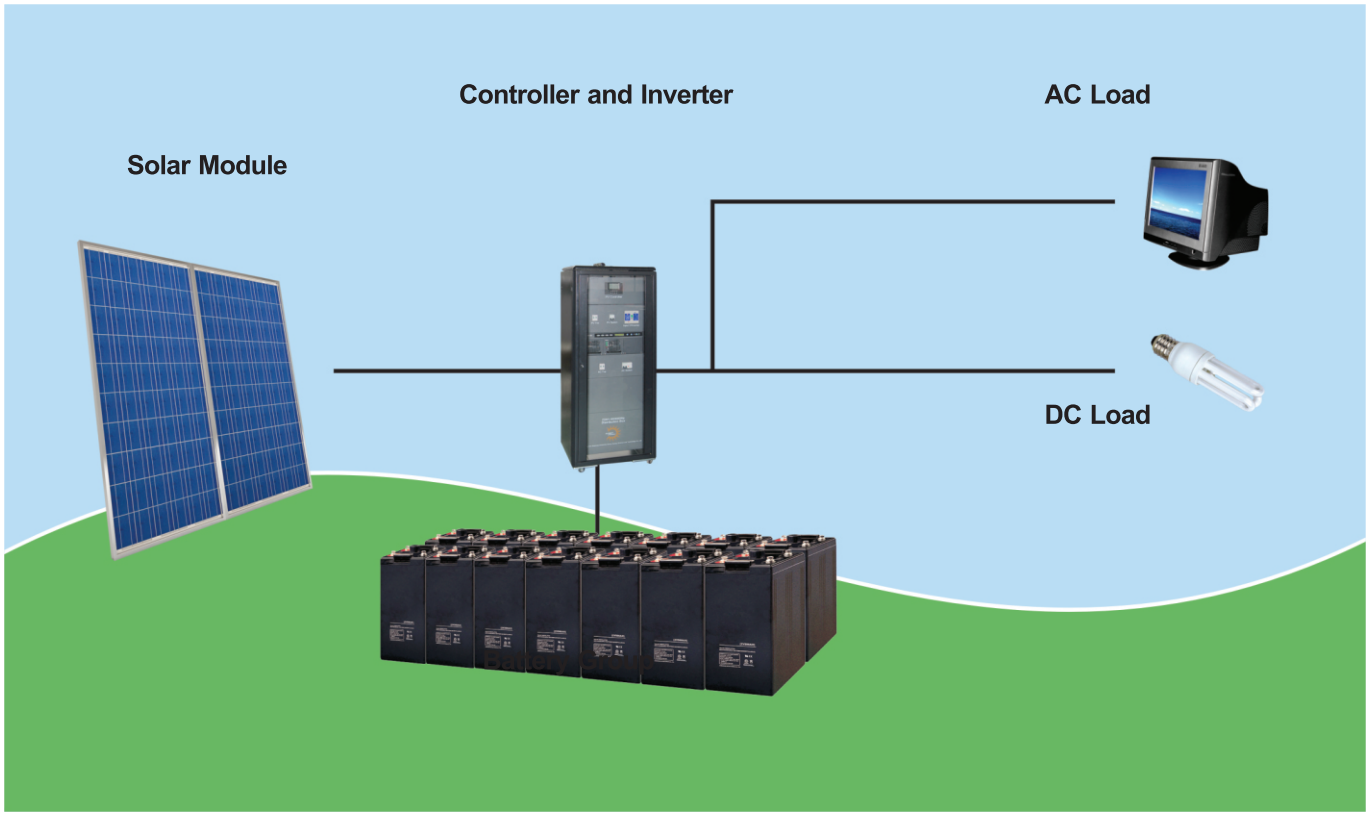
SOLAR POWER SYSTEM

Off-grid
Solar Power Systems



Wide application

The solar power system, widely used in a variety of electrical lighting, is especially suitable to remote villiage, school, hospital, private residential, island, army, and outside working.

Functions

A solar power system consists of solar modules, solar controller and battery(Group). If the output power is 220V AC or 110V AC, the inverter should be added into the configuration.

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Solar Module

Solar module, the most indispensable and valuable part of the solar power system, plays a role to convert the sunlight into electrical energy, which will be stored into battery and promote the working for loads.

Solar controller

The role of the solar controller is to control the working statement of the system and provide over-charging and over-discharging protection for the storage battery. The controller should also has the functions of compensating temperature in areas and light- control switch, time-control switch, etc.

Battery

Usually battery is lead-acid type, its function is to store up the electricity generated from solar module and release it when in need.

Inverter

The outputs of solar module are generally 17VAC or 35VAC, when supplying power for 220VAC or 110VAC loads, DC-AC inverter is DC-AC inverter is needed to convert DC solar power to AC power. In some cases, when comes to a variety of voltage load, DC-DC inverter is needed, e.g. convert the 24VDC power into the power of 5VDC.

Be Factors needs to considered for the Design of Solar Power System

Where is the applicable area for the solar power system? What is local longitude and latitude?

How much KWH need to be provided by the system per day?

What's the max rated power of loads for the solar system?

What's the output voltage, DC or AC?

What about the backup rainy days for the solar power system?

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5KW Off-grid Solar Power System

System Configuration

Solar Panels	Input Voltage(DC)	Output Voltage(AC)	Battery	Controller	Pure Sine Wave Inverter
500W (125W×4pcs)	24V	220V	150AH / 12V×4	30A / 24V	1KW / 24V

Working Details

Electrical Appliances	Model	Power(W)	Qty	Working time/Day(Hours)	Power Consumption/ Day(Wh)
Illuminators	energy-saving lamps	11 W	4	4	176 WH
Computers	LCD	100 W	1	4	400 WH
Washing Machines	Single-cylinder	230 W	1	0.5	115 WH
color TV	21"	70 W	1	4	280 WH
Audio Equipments		100 W	1	1	100 WH
Fans	14"	52 W	1	2	104 WH
Total		596 W			1175 WH
Remark: Backup 2-3 rainy days, sun irradiation condition: 5kwh/m2/d.					

Main Technical Parameters of 500 to 5000W off-grid Solar Power Systems

Model	Loads	Power	Working Time/day(h)	Configuration
500W System	A 29"colour TV Set	120 W	6	800W Sine Wave Inverter 220V Output
	Fans	40 W	8	
	Energy-saving Lamps	11 W×3	6	
1000W System	A 29"colour TV Set	120 W	6	1200W Sine Wave Inverter 220V Output
	Fans	70 W	10	
	Electric Cookers	800 W	0.5	
	Energy-saving Lamps	15 W×4	6	
3000W System	A 29"colour TV Set	120 W	6	3500W Sine Wave Inverter 220V Output
	A 150L Icebox	100 W	24	
	A 1HP Air Conditioner	800 W	4	
	Electric Cookers	800 W	0.5	
	A Computer With LCD Screen	100 W	6	
	Energy-saving Lamps	15 W×4	6	
5000W System	A 34"colour TV Set	150 W	6	5500W Sine Wave Inverter 220V Output
	A 150L Icebox	100 W	24	
	A 1HP Air Conditioner	800 W	8	
	Electric Cookers	800 W	1	
	A Computer With LCD Screen	100 W	6	
	Energy-saving Lamps	20 W×4	6	

Remark:The system contains solar modules, control system, batteries, inverters.

All the systems are under over charging, over loading and short circuit protection. All the listed home appliances can be run at the same time.