#### I-P-SPCSeries Low Frequency SolarPower Inverter with Built-in Solar Charge Controller 1500W



#### Component

1)Highquality low frequency <u>pure sine wave inverter</u>(with utility charge function and UPS function)

2)Built-in PWMsolar power charge controller

## Application

1)Off-grid solar power system

2) Utility and solar complementarypower generation system

### Features

1) Easy to install. To configure a solarsystem, users just need to connect it with solar panels and batteries.

2)CPU management, Intelligent control, modular design

3)LEDs LCD display.LCD can display various parameters(such as the output voltage, frequency,working mode)

4)Multifunction design, AVR UPS function.Users don't need to buy solar, controller, AC charger or stabilizer.

5) Externalbattery connection, it's convenient for users to expand use time and back-uppower time

6)With super load-carrying ability and highload capacity, this series of inverterscan not only drive resistance load; but also various kinds of inductive loads suchas motor, air conditioner, electric drills, fluorescent lamp, gas lamp. It candrive almost any kinds of load

7)Low frequency pure sine wave circuitdesign, stable quality, easy to maintenance, low failure rate and long servicelife (under proper operation, it can last at least 5 years)

8) Perfect protection: low voltageprotection, high voltage protection, over temperature protection, short-circuitprotection, overload protection

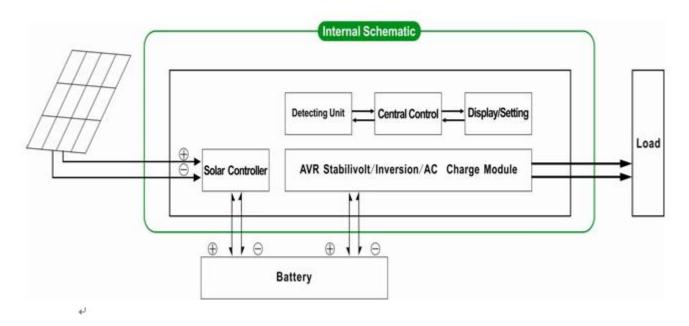
#### 9) CE / EMC / LVD/RoHS /FCC approvals

10) 2 years warranty, life-long technical support

#### Function

#### Off-grid solar power system

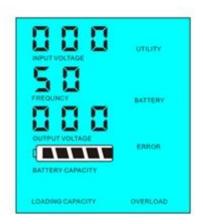
1. When connected withbattery and AC loads, users can set it to normal working mode or sleep mode.



1.1 Normal working mode FREQUENCY in the LCD display is set to 01. No matterit's connected AC loads or not, the inverter always convert DC to AC. It's ready to supply power to the AC loads. In this mode, the LCD will display output voltage as below:

	UTILITY
S D	Ń
	ERROR
BATTERY GAPACITY	OVERLOAD

1.2 Sleep mode FREQUNCY in the LCD display is set as 02. If the power of the connected AC loads is lower than 5% of the inverter's rated power, there will be no output from the inverter. Only the chip of inverter is working. The power consumption of the inverter is only 1-6W. The LCD shows the output voltage 0. If the power of the connected loads is over 5%, then the inverter will automatically convert DC to AC to supply power for the loads within 5s. The LCD shows the output voltage. As shown below:



Load's power < 5% of inverter's rated power

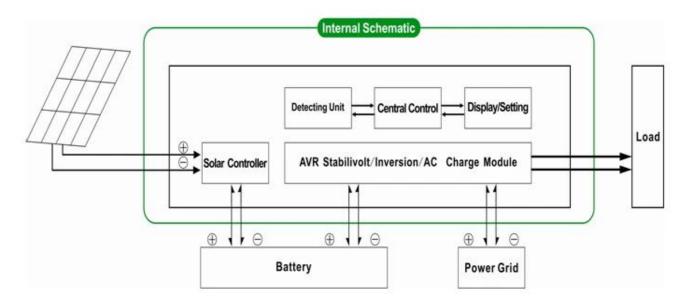


Load's power> 5% of inverter's rated power+

Kindly note:

- 1) Only thesolar panel charges the battery
- 2) Off-gridsolar power system. It is suitable for areas that are lack of utility orplentiful solar

# Utility and solar complementarypower generation system



2. UPSfunction When the inverter is connected to battery and utility, users can set it to utility first (AC first) batterystandby mode or battery first (DC first)utility standby mode.

2.1.Utility first (AC first) battery standby mode: FREQUENCY in the LCD display is set to 01. When utility and battery areconnected to the inverter, utility will supply power to the loads prior. Whenutility is cut off, the battery will automatically continue to supply power viapower inverter.

Steps are as follows:

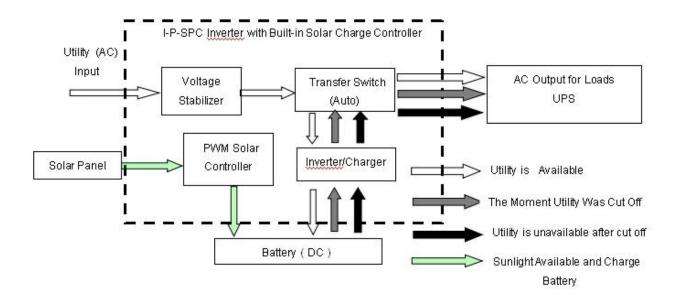
Step 1: When utility is available, it will drive he loads directly after voltage being stabilized and at the same time chargebatteries via power inverter .

Step 2: When utility is cut off, theinverter will convert DC to AC automatically to ensure

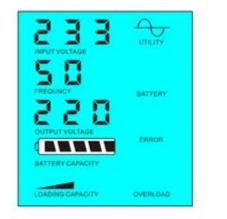
uninterrupted powersupply within 5ms.

Step 3: When utility is available again, inverter will automatically transfer to utility supplying power to loads and charge batteries via power inverter at the same time.

See Workflow as below.



LCD displayed as bellow:



Utility supply power and charge battery

Without utility and battery supply power

Utility supply power and chargebattery Withoututility and battery supply power

Kindly note:

1) There are 2 ways to charge the battery, utility and solarpanel

2) This system is suitable for power systems built in areas thatare lack of utility. Or people can use solar and utility at the same time.

2.2. Batteryfirst (DC first)utility standy mode: FREQUENCY in the LCD display is set as 03. When utility andbattery are connected to the inverter, battery will supply power to the loadsprior to utility. When battery capacity is not enough, utility will continue to supply power automatically.



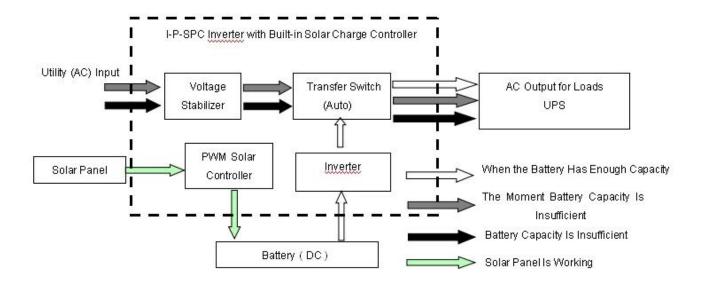
Stepsare as follows:

Step 1: When battery is available, it will drive the AC loadsvia power inverter.

Step 2: When battery does not have enough power, it willautomatically transfer to utility supplying power to the loads

Step 3: After the battery is fully charged (e.g. by solar orwind charge controller), it will automatically transfer to battery supplyingpower to the loads via power inverter.

See Workflow as below.



LCD displayed as bellow:



Battery available to supply power



Battery unavailable, utility supply power

Kindly note:

1) There is only one wayto charge the battery: solar panel

2) Thissystem is suitable for areas where electricity is expensive or environmentalareas where solar power can be fully used to save utility bill.such as homesolar&wind system,streetlight solar&wind system

### Parameter

ControllerPV Max Input Voltage24V System[]50V 48V System]]100VSize W×D×H(mm)350*220*460Packing Size W×D×H(mm)370*240*480Net Weight (kg)23Gross Weight (kg)25General Parameter1Working Mode (Setting)22Sleep Mode, no utility, load's power is over 5% of rated output power, Inverter start to work automatically 3AC InputVoltage220V±35% or 110V+35%[Optional]]Frequency50Hz±3% or 60Hz±3% [Optional]]AC OutputVoltage7220V±37% or 230V±3 or 240V±37% or 100V±37% or 100V±37% or 100V±37% or 100V±37% or 100V±37% or 100V±37% or 100V±37% or 100V±37% or 040V±37% or 040V±37% or 100V±37% or 040V±37% or 040V±37% or 100V±37% or 040V±37% or 040V±37% or4C OutputVoltage $220V\pm37%$ or 230V±3 or 240V±37% or 100V±37% or 100V±37% or 040V±37% or 040V±37% or 100V±37% or 100V±37% or 040V±37% or 100V±37% or 040V±47% or 100V±37% or 100V±37% or 100V±37% or 100V±37% or 10	Mode		3000VA
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AC Output       Voltage       220V±3% or 230V±3 or 240V±3% or 100V±3% or 110V±3% (Optional)         Frequency       50Hz±0.5 or 60Hz±0.5 (Optional)         AC Charge       0~15A         Current       Depend on battery capacity and quantity         Battery       Automatic detection, Charge and discharge         Protection       protection[]Intelligent Management         PV Charge       Total Current of PV Input Should Be Less Than Rated         Current of PWM solar controller       Display Mode         Display       Input voltage[]output voltage]output frequency[]battery         capacity]Load condition[]Status Information       Pure sine wave output,Total Harmonic Distortion         Output Wave Type       Pure sine wave output,Total Harmonic Distortion         Overload Ability       []20% 1 min[]]130% 10s         Power Consumption       Sleep Mode       1~6W         Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       []5ms []AC to DC / DC to AC[]         Protection       Overload output[]short-circuit[]high-voltage input[]low-voltage input[]overheat         Environment       Temperature       -10°C[]50°C		U	
AC OutputVoltage110V±3% (Optional)Frequency50Hz±0.5 or 60Hz±0.5 (Optional)AC Charge Current0~15AUtility chargeCharge TimeDepend on battery capacity and quantityBattery ProtectionAutomatic detection, Charge and discharge protection]Intelligent ManagementPV ChargeTotal Current of PV Input Should Be Less Than Rated Current of PWM solar controllerDisplayDisplay ModeLCD+LEDDisplayInput voltage[output voltage[output frequency[battery capacity]Load condition]Status InformationOutput Wave TypePure sine wave output,Total Harmonic Distortion THD≤3Overload Ability[120% 1 min[]130% 10sPower ConsumptionSleep Mode Normal Mode Normal ModeConversion Efficiency80%~90%Transfer Time[5ms [AC to DC / DC to AC]ProtectionOverload output[short-circuit]high-voltage input]low- voltage input]overheatEnvironmentTemperature Humidity			
Frequency       50Hz±0.5 or 60Hz±0.5 (Optional)         AC Charge Current       0~15A         Charge Time       Depend on battery capacity and quantity         Battery       Automatic detection, Charge and discharge protection         PV Charge       Total Current of PV Input Should Be Less Than Rated Current of PWM solar controller         Display Mode       LCD+LED         Display       Input voltage[output voltage]output frequency[battery Information         Output Wave Type       Pure sine wave output, Total Harmonic Distortion THD≤3         Overload Ability       [120% 1 min][130% 10s         Power Consumption       Sleep Mode Normal Mode       1~3A         Conversion Efficiency       80%~90%         Protection       [250°C         Environment       Temperature       -10°C[50°C		Voltage	
AC Charge Current       0~15A         Utility charge       Charge Time       Depend on battery capacity and quantity         Battery       Automatic detection, Charge and discharge protection         PV Charge       Total Current of PV Input Should Be Less Than Rated Current of PWM solar controller         Display       Display Mode       LCD+LED         Display       Input voltage[]output voltage[]output frequency[]battery Information         Output Wave Type       Pure sine wave output,Total Harmonic Distortion THD≤3         Overload Ability       ]120% 1 min[]]130% 10s         Power Consumption       Sleep Mode Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       []5ms []AC to DC / DC to AC[]         Protection       Overload output[]short-circuit[]high-voltage input[]low- voltage input[]overheat         Environment       Temperature       -10°C[]50°C		Frequency	
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Battery Protection       Automatic detection, Charge and discharge protection]Intelligent Management         PV Charge       Total Current of PV Input Should Be Less Than Rated Current of PWM solar controller         Display       Display Mode       LCD+LED         Display       Input voltage[output voltage[output frequency]battery (apacity]Load condition]Status Information         Output Wave Type       Pure sine wave output, Total Harmonic Distortion THD≤3         Overload Ability       [120% 1 min]]130% 10s         Power Consumption       Sleep Mode Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms ]AC to DC / DC to AC]         Protection       Overload output]short-circuit]high-voltage input[low-voltage input]low-voltage input]low-voltage input]]overheat         Environment       Temperature       -10°C]50°C	Utility charge		Depend on battery capacity and quantity
Protection       protection[Intelligent Management         PV Charge       Total Current of PV Input Should Be Less Than Rated Current of PWM solar controller         Display       Display Mode       LCD+LED         Display       Input voltage[output voltage]output frequency[battery capacity]Load condition]Status Information         Output Wave Type       Pure sine wave output,Total Harmonic Distortion THD≤3         Overload Ability       [120% 1 min][130% 10s         Power Consumption       Sleep Mode       1~6W         Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms ]AC to DC / DC to AC[]         Protection       Overload output]short-circuit]high-voltage input[low-voltage input]overheat         Environment       Humidity       10%[]90%			
PV Charge       Total Current of PV Input Should Be Less Than Rated Current of PWM solar controller         Display       Display Mode       LCD+LED         Display       Input voltage[output voltage]output frequency[battery capacity]Load condition]Status Information         Output Wave Type       Pure sine wave output,Total Harmonic Distortion THD≤3         Overload Ability       [120% 1 min][130% 10s         Power Consumption       Sleep Mode Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms [AC to DC / DC to AC]         Protection       Overload output]short-circuit]high-voltage input[low-voltage input]ow-voltage input[]overheat         Environment       Humidity       10%[]90%			
Procession       Current of PWM solar controller         Display       Display Mode       LCD+LED         Display       Input voltage[output voltage[output frequency]battery capacity]Load condition]Status Information         Output Wave Type       Pure sine wave output,Total Harmonic Distortion THD≤3         Overload Ability       [120% 1 min]]130% 10s         Power Consumption       Sleep Mode       1~6W         Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms [AC to DC / DC to AC]]         Protection       Overload output[short-circuit]high-voltage input]low-voltage inp	PV Charge		
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Informationcapacity[]Load condition[]Status InformationOutput Wave TypePure sine wave output, Total Harmonic Distortion THD≤3Overload Ability[]120% 1 min[][]130% 10sPower ConsumptionSleep Mode Normal ModeSleep Mode1~6W Normal ModeConversion Efficiency80%~90%Transfer Time[]5ms []AC to DC / DC to AC[]ProtectionOverload output[]short-circuit[]high-voltage input[]low- voltage input[]overheatEnvironmentTemperature-10°C[]50°CHumidity10%[]90%			Input voltage output voltage output frequency battery
Output wave TypeTHD $\leq 3$ Overload Ability[120% 1 min][130% 10sPower ConsumptionSleep Mode $1 \sim 6W$ Normal Mode $1 \sim 3A$ Conversion Efficiency80% ~ 90%Transfer Time[5ms [AC to DC / DC to AC]ProtectionOverload output[short-circuit]high-voltage input]low-voltage input]overheatEnvironmentTemperature-10°C[50°CHumidity10%[90%			
Overload Ability     [120% 1 min][130% 10s       Power Consumption     Sleep Mode     1~6W       Normal Mode     1~3A       Conversion Efficiency     80%~90%       Transfer Time     [5ms [AC to DC / DC to AC]       Protection     Overload output[short-circuit]high-voltage input[low-voltage input]overheat       Environment     Temperature     -10°C[50°C	Output Wave Type Overload Ability		Pure sine wave output, Total Harmonic Distortion
Power Consumption       Sleep Mode       1~6W         Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms [AC to DC / DC to AC]]         Protection       Overload output[short-circuit[high-voltage input[]low-voltage input[]overheat         Environment       Temperature       -10°C[]50°C         Humidity       10%[]90%			·
Power Constription       Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms [AC to DC / DC to AC]         Protection       Overload output[short-circuit]high-voltage input]low-voltage input]overheat         Environment       Temperature       -10°C[50°C         Humidity       10%[90%			[]120% 1 min[]]130% 10s
Power Constription       Normal Mode       1~3A         Conversion Efficiency       80%~90%         Transfer Time       [5ms [AC to DC / DC to AC]         Protection       Overload output[short-circuit]high-voltage input]low-voltage input]overheat         Environment       Temperature       -10°C[50°C         Humidity       10%[90%	Power Consumption	Sleep Mode	1~6W
Conversion Efficiency       80%~90%         Transfer Time       [5ms [AC to DC / DC to AC]         Protection       Overload output[short-circuit[high-voltage input]low-voltage input]overheat         Environment       Temperature       -10°C[50°C         Humidity       10%[90%		Normal Mode	1~3A
Transfer Time       []5ms []AC to DC / DC to AC[]         Protection       Overload output[]short-circuit[]high-voltage input[]low-voltage input[]overheat         Temperature       -10°C[]50°C         Environment       Humidity	Conversion Efficiency		80%~90%
Protection Protection Temperature Environment Dverload output[]short-circuit[]high-voltage input[]low- voltage input[]overheat -10°C[]50°C Humidity 10%[]90%			5ms AC to DC / DC to AC
Voltage input/overheat       Temperature     -10°C[]50°C       Environment     Humidity	Protection		
Temperature-10°CEnvironmentHumidity10%			voltage input overheat
Environment Humidity 10% 90%	Environment	Temperature	-10°C∏50°C
Altitude ≤4000m		Humidity	10%[]90%
			≤4000m

Theabove is our standard parameter. Subject to change without prior notice.

Wehave our own professional inverter and controller R&D team and we provide technical support and OEM ODMservice

The controller information above is our company's standard parameter. It can be changed to other PWM solar charge controller.

## ConnectionDiagram



Others

Pleasesee the outline of the design,technical documents,user manuals,productbrochures, etc.Research and development department made  $1^{st}$  edition on May 5, 2014..