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ONE CORNER OF OUR COMPANY

PRODUCTION TECHNOLOGY

FULL AUTOMATIC CELLS SORTING

FULL AUTOMATIC WELDING AND STRINGING

PRE-LAMINATION AUTOMATIC LINE

FULL AUTOMATIC LAMINATING MACHINE

PRODUCTION TECHNOLOGY

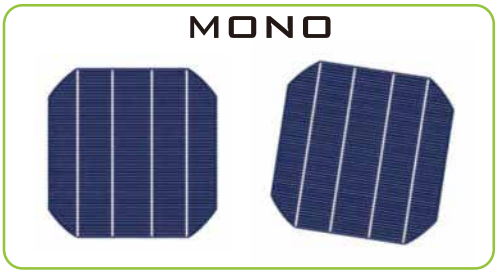
STRINGING

SOLAR CELL PRODUCTION

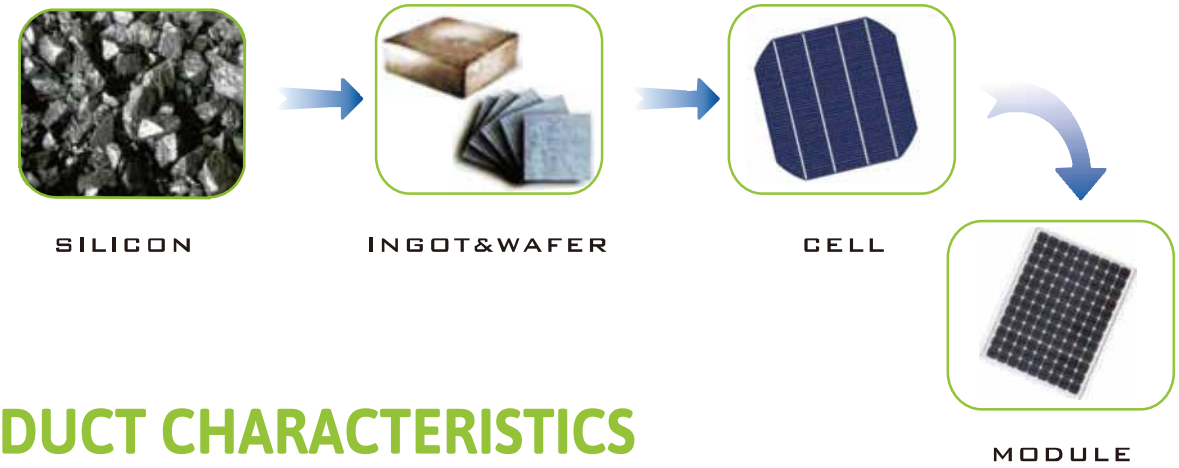
AUTOMATIC ENCAPSULATION

ENCAPSULATION

SOLAR CELLS



PHOTOVOLTAICS CHAIN

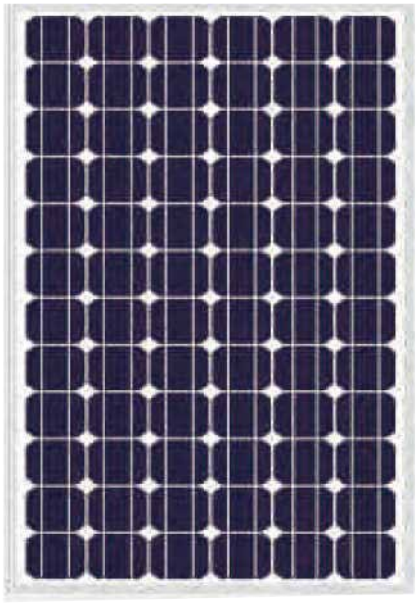


PRODUCT CHARACTERISTICS

1. Hight conversion efficiency with high reliability
2. Low mismatch of cell persormance during encapsul
3. Excellent performance under low light tolerance
4. Low hot spot effect
5. Low degradation under light exposure

MONOCRYSTALLINE SERIES

Component Power	Size (mm)	Weight (kgs)	Working Voltage vmp(v)	Working Current imp(A)	Open circuit voltage voc(v)	Short circuit current isc(A)	Chip arrangement (pcs)
10W	355*290*17	1.1	17	0.59	21.5	0.62	2*18
15W	465*295*25	1.7	17.2	0.87	21.6	0.92	2*18
20W	540*295*25	2.0	18	1.11	22.2	1.2	2*18
35W	450*540*25	2.8	18.5	1.89	22.5	2.07	4*9
40W	510*540*25	3.2	18.2	2.2	22.2	2.4	4*9
50W	645*540*30	4.0	18	2.78	22.2	3	4*9
60W	760*540*30	4.8	18.2	3.3	22.2	3.6	4*9
70W	835*540*30	5.2	18.5	3.78	22.5	4.15	4*18
80W	963*540*30	6.0	18.2	4.4	22.2	4.8	4*9
100W	1200*554*30	6.9	18.5	5.41	22.4	5.9	4*9
105W	1200*554*30	6.9	18.6	5.65	22.6	6.14	4*9
110W	1200*554*30	6.9	18.8	5.85	22.8	6.34	4*9
120W	963*808*30	8.0	18.5	6.49	22.5	7.11	6*12
130W	1070*808*30	8.8	18	7.22	22	7.78	6*12
140W	1070*808*30	8.8	18.5	7.57	22.5	8.06	6*12
150W	1210*808*30	10.0	18.5	8.11	22.6	8.6	6*18
160W	1270*808*35	10.8	36	4.44	44.1	4.85	6*12
170W	1270*808*35	10.8	37	4.59	45.5	4.98	6*12
190W	1580*808*35	13.2	36.3	5.23	44.5	5.65	6*12
195W	1580*808*35	13.2	36.5	5.34	44.8	5.75	6*12
200W	1580*808*35	13.2	37.0	5.41	45.2	5.82	6*12
205W	1580*808*35	13.2	37.2	5.51	45.3	5.94	6*12
210W	1580*808*35	13.2	37.5	5.6	45.5	5.99	6*12
215W	1580*808*35	13.2	37.7	5.7	45.7	6.1	6*12
260W	1580*1062*35	17.5	48.8	5.33	58.8	5.74	8*12
265W	1580*1062*35	17.5	48.9	5.42	59.0	5.78	8*12
270W	1580*1062*35	17.5	49	5.51	59.2	5.82	8*12
275W	1580*1062*35	17.5	49.2	5.59	59.4	5.9	8*12
280W	1580*1062*35	17.5	49 4	5 67	59.6	5.98	8*12
285W	1580*1062*35	17.5	49.6	5.75	59.8	6.06	8*12
290W	1580*1062*35	17.5	49.8	5.82	60.0	6.14	8*12
295W	1580*1062*35	17.5	50.0	5.9	60.2	6.22	8*12



SOLAR MODULE MONOCRYSTALLINE

SPN-190M / SPN-195M
SPN-200M / SPN-210M / SPN-215M

Specifications

Cell	Monocrystalline Silicon Solar Cell 125mm*125mm
No.of cell	72 (6*12)
Dimension(mm)	1580*808*35
Weight	kg

Characteristics

Model	SPN-190M	SPN-195M	SPN-200M	SPN-210M	SPN-215M
Open circuit voltage(Voc)	44.50	44.80	45.20	45.50	
Optimum operating voltage (Vmp)	36.30	36.5	37.0	37.5	
short circuit current(Isc)	5.65	5.75	5.82	5.99	
Optimum operating current(Imp)	5.23	5.34	5.41	5.60	
Maximum power at STC(pm)	190Wp	195Wp	200Wp	210Wp	

STC : Irradiance 1000w/m², Module Temperature 25℃, AM=1.5

Limits

Operating Temperature	-40℃ to +85℃
Maximum system voltage	1000V DC

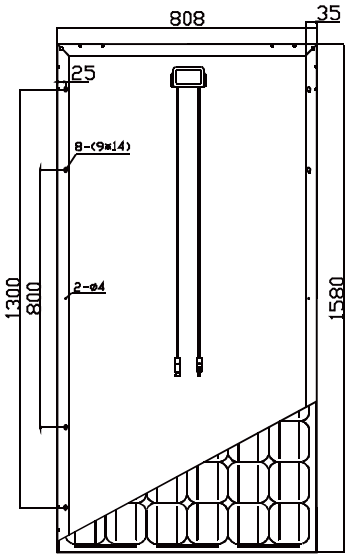
Temperature and Coefficinets

NOCT	45℃ ± 2℃	
Current temperature Coefficinet	%/℃	0.06
Voltage temperature Coefficinet	%/℃	-0.34
Power temperature Coefficinet	%/℃	-0.47

NOCT:Normal Operation Cell Temperature

Mechanical Parameters

Type of output terminal	Junction Box
Cable	LAPP (4.0mm²)
Lengths	900 mm
Frame	Anodized Aluminum Alloy
Front Glass	3.20mm tempered glass



MONOCRYSTALLINE SERIES

Component Power	Size (mm)	Weight (kgs)	Working Voltage vmp(v)	Working Current imp(A)	Open circuit voltage voc(v)	Short circuit current isc(A)	Chip arrangement (pcs)
10W	285*350*17	1.1	18	0.56	21.5	0.62	6*6
20W	485*350*25	2.0	18	1.1	21.5	1.23	6*6
30W	645*350*25	2.4	18.2	1.65	22.2	1.8	2*18
40W	780*350*25	2.9	18.2	2.2	22.2	2.37	2*18
50W	540*670*30	4.0	18	2.78	22.0	3.03	4*9
60W	630*670*30	4.7	18.2	3.3	22.2	3.56	4*9
75W	775*670*30	6.0	18.2	4.12	22.2	4.45	4*9
80W	775*670*30	6.0	18.6	4.3	22.4	4.69	4*9
90W	915*670*30	6.4	18.2	4.95	22.2	5.41	4*9
100W	1005*670*30	7.3	18	5.56	22.0	6.06	4*18
120W	1210*670*30	9.0	18.2	6.59	22.2	7.06	4*9
125W	1210*670*30	9.0	18.4	6.79	22.4	7.25	4*9
130W	1210*670*30	9.0	18.6	6.99	22.6	7.47	4*9
150W	1480*670*30	10.2	18.5	8.11	22.5	8.66	4*9
160W	1480*670*30	10.2	18.8	8.51	22.9	8.94	4*9
220W	1320*992*35	13.4	25.2	8.73	30.4	9.28	6*8
230W	1320*992*35	13.4	25.4	9.06	30.6	9.63	6*8
240W	1480*992*35	15.0	28.2	8.51	33.9	8.89	6*9
250W	1480*992*35	15.0	28.4	8.8	34.1	9.19	6*9
260W	1480*992*35	15.0	28.6	9.09	34.3	9.49	6*9
270W	1640*992*35	18.0	31.5	8.57	38.0	8.96	6*10
280W	1640*992*35	18.0	31.7	8.83	38.2	9.16	6*10
290W	1640*992*35	18.0	32.0	9.06	38.4	9.36	6*10
320W	1956*992* 35	21.0	37.7	8.49	45.7	8.94	6*12
330W	1956*992*35	21.0	37.9	8.71	45.9	9.16	6*12
340W	1956*992*35	21.0	38.1	8.92	46.1	9.38	6*12
350W	1956*992*35	21.0	38.3	9.14	46.3	9.6	6*12

SOLAR MODULE MONOCRYSTALLINE

SPN-320M/SPN-330M
SPN-340M/SPN-350M

Specifications

Cell	Monocrystalline Silicon Solar Cell 156mm*156mm
No.of cell	72 (6*12)
Dimension(mm)	1956*992*35
Weight	21 kg

Characteristics

Model	SPN-320M	SPN-330M	SPN-340M	SPN-350
Open circuit voltage(Voc)	45.7	45.9	46.1	46.3
Optimum operating voltage (Vmp)	37.7	37.9	38.1	38.3
short circuit current(Isc)	8.94	9.16	9.38	9.60
Optimum operating current(Imp)	8.49	8.71	8.92	9.14
Maximum power at STC(pm)	320Wp	330Wp	340Wp	350Wp

STC : Irradiance 1000w/m², Module Temperature 25℃, AM=1.5

Limits

Operating Temperature	-40℃ to +85℃
Maximum system voltage	1000V DC

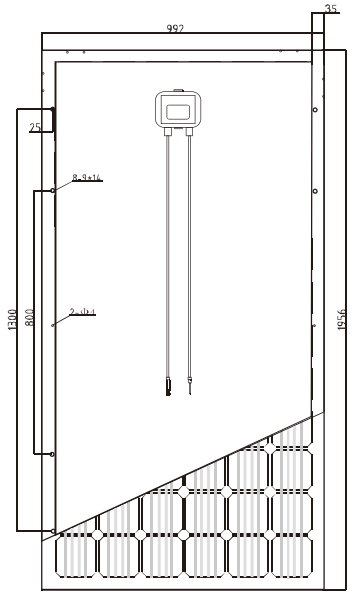
Temperature and Coefficinets

NOCT	45℃ ± 2℃	
Current temperature Coefficinet	%/℃	0.06
Voltage temperature Coefficinet	%/℃	-0.34
Power temperature Coefficinet	%/℃	-0.47

NOCT:Normal Operation Cell Temperature

Mechanical Parameters

Type of output terminal	Junction Box
Cable	LAPP (4.0mm²)
Lengths	900 mm
Frame	Anodized Aluminum Alloy
Front Glass	3.20mm tempered glass



POLYCRYSTALLINE SERIES

Component Power	Size (mm)	Weight (kgs)	Working Voltage vmp(v)	Working Current imp(A)	Open circuit voltage voc(V)	Short circuit current isc(A)	Chip arrangement (pcs)
10W	285*350*17	1.1	18	0.56	21.5	0.62	6*6
20W	485*350*25	2.0	18	1.11	21.5	1.23	6*6
30W	645*350*25	2.4	18.2	1.65	22.2	1.8	2*18
40W	465*670*25	3.3	18.2	2.2	22.2	2.37	4*9
50W	540*670*30	4.0	18	2.78	22	3.03	4*9
60W	630*670*30	4.7	18.2	3.3	22.2	3.56	4*9
70W	720*670*30	5.6	18.2	3.85	22.2	4.15	4*9
80W	775*670*30	6.0	18.6	4.3	22.4	4.69	4*9
90W	915*670*30	6.4	18.2	4.95	22.2	5.41	4*9
100W	1005*670*30	7.3	18	5.56	22	6.06	4*9
120W	1210*670*30	9.0	18	6.67	22	7.06	4*9
150W	1480*670*30	10.2	18.5	8.11	22.5	8.56	4*9
160W	1480*670*30	10.2	18.8	8.51	22.9	8.94	4*9
210W	1320*992*35	13.4	25. 0	8.4	30.2	8.92	6*8
220w	1320*992*35	13.4	25.2	8.73	30.4	9.28	6*8
230W	1480*992*35	15.0	28.0	8.21	33.7	8.66	6*9
240W	1480*992*35	15.0	28.2	8.51	33.9	8.89	6*9
250W	1480*992*35	15.0	28.4	8.8	34.1	9.19	6*9
255W	1640*992*35	18.0	31.0	8.23	37.6	8.66	6*10
260W	1640*992*35	18.0	31.2	8.33	37.8	8.76	6*10
265W	1640*992*35	18.0	31.3	8.47	37.9	8.86	6*10
270w	1640*992*35	18. 0	31. 5	8. 57	38. 0	8. 96	6*10
275w	1640*992*35	18. 0	31. 6	8. 7	38. 1	9. 06	6*10
310W	1956*992*35	21.0	37.5	8.27	45.5	8.7	6*12
320W	1956*992*35	21.0	37.7	8.49	45.7	8.94	6*12
330w	1956*992*35	21.0	37.9	8.71	45.9	9.16	6*12

SOLAR MODULE POLYCRYSTALLINE

SPN-255P / SPN-260P
SPN-265P / SPN-270P / SPN-275P

Specifications

Cell	Polycrystalline Silicon Solar Cell 156mm*156mm
No.of cell	60 (6*10)
Dimension(mm)	1640*992*35
Weight	18.0 kg

Characteristics

Model	SPN-255P	SPN-260P	SPN-265P	SPN-270P	SPN-275P
Open circuit voltage(Voc)	37.6	37.8	37.9	38.0	38.1
Optimum operating voltage (Vmp)	31.0	31.2	31.3	31.5	31.6
short circuit current(Isc)	8.66	8.76	8.86	8.96	9.06
Optimum operating current(Imp)	8.23	8.33	8.47	8.57	8.7
Maximum power at STC(pm)	255Wp	260Wp	265Wp	270Wp	275Wp

STC : Irradiance 1000w/m², Module Temperature 25℃, AM=1.5

Limits

Operating Temperature	-40℃ to +85℃
Maximum system voltage	1000V DC

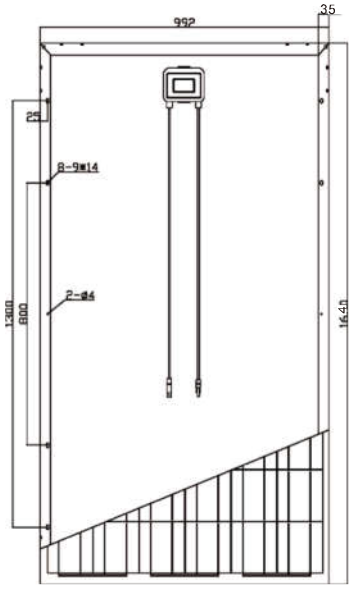
Temperature and Coefficinets

NOCT	45℃± 2℃	
Current temperature Coefficinet	%/℃	0.06
Voltage temperature Coefficinet	%/℃	-0.34
Power temperature Coefficinet	%/℃	-0.47

NOCT:Normal Operation Cell Temperature

Mechanical Parameters

Type of output terminal	Junction Box
Cable	LAPP (4.0mm²)
Lengths	900 mm
Frame	Anodized Aluminum Alloy
Front Glass	3.20mm tempered glass



FOLDING SOLAR PANEL

SUNRISE Folding solar panel

Poly-crystalline Type
160W/18V(20W X 8PCS) 485*350*25(mm) X 8
100W/18V(50W X 2PCS) 540*670*30(mm) X 2

Mechanical Characteristics

Dimensions	350mm(13.78")(W)X485mm(19.09")(L)X25mm(0.98")(H)
Weight	2.3kgs
Solar cells	36 cells in series(6x6matrix)
Outputcables	2.5mm2 AWG)Cables with polarized weatherproof connectors,TUV
Junction box	IP65,weatherproof,IEC certified
Bypass diodes	3 bypass diodes to prevent power decrease by partial shade
Construction	Front:High transmission low-iron tempered glass,3.2mm(0.126")
	Encapsulant:EVA
Frame	Clear anodized aluminum alloy type6063-T5(Siver)

High Quality

IEC 61215(Ed.2)and IEC 61730 by TUV Rheinland

Output power tolerance+3/-0%

ISO 9001:2008 Certified

Advanced Mechanical Test(8,000 Pa)Passed （IEC61215)

CQC11024065273(Mono);CQC11024065277(Poly)

Fast and Inexpensive Mounting

Delivered ready for connection

Pre-confectioned cables

Integrated bypass diodes

Limited Warranty

10 years for product defect

10 years for 90% of warranted min.power

25 years for 80% of warranted min.power




FOLDING SOLAR PANEL

Poly-crystalline Type

		SPN-160P	SPN-170P	SPN-180P
Nominal output (Pmpp)	W	160	170	180
Voltage at Pmax (Vmpp)	V	18.0	18.2	18.4
Current at Pmax (Impp)	A	8.89	9.34	9.78
Open circuit voltage (Voc)	V	22.0	22.2	22.4
Short circuit current (Isc)	A	9.69	10.21	10.71
Output tolerance	%		+3/-0	
No. of cells & connections	pcs		36(2X18)X8 in series	
Cell type	-		6" Poly-crystalline silicon	
Module efficiency	%	14.8	15.2	15.5
Temperature coefficient of Pmpp	%/K	-0.43	-0.43	-0.43
Temperature coefficient of Voc	%/K	-0.32	-0.32	-0.32
Temperature coefficient of Isc	%/K	0.048	0.048	0.048

※All data at STC (Standard Test Conditions). Above data may be changed without prior notice.

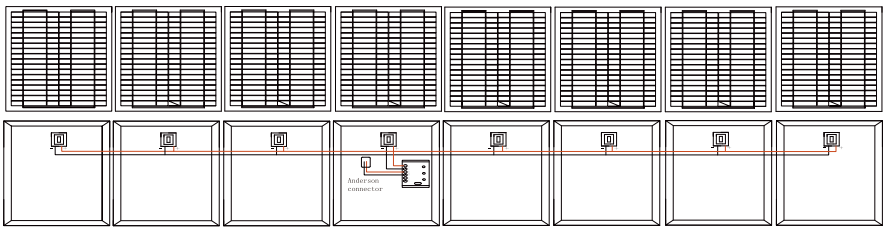
Mono-crystalline Type

		SPN-100M	SPN-120M	SPN-140M
Nominal output (Pmpp)	W	100	120	140
Voltage at Pmax (Vmpp)	V	18.0	18.2	18.5
Current at Pmax (Impp)	A	5.56	6.59	7.56
Open circuit voltage (Voc)	V	22.0	22.2	22.5
Short circuit current (Isc)	A	6.06	7.2	8.29
Output tolerance	%		+3/-0	
No. of cells & connections	pcs		36(4X9)X2 in series	
Cell type	-		6" Mono-crystalline silicon	
Module efficiency	%	15.5	15.8	16.1
Temperature coefficient of Pmpp	%/K	-0.45	-0.45	-0.45
Temperature coefficient of Voc	%/K	-0.33	-0.33	-0.33
Temperature coefficient of Isc	%/K	0.032	0.032	0.032

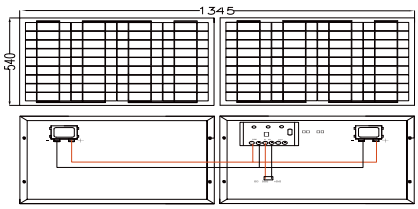
※All data at STC (Standard Test Conditions). Above data may be changed without prior notice.

Module Diagram(160W)

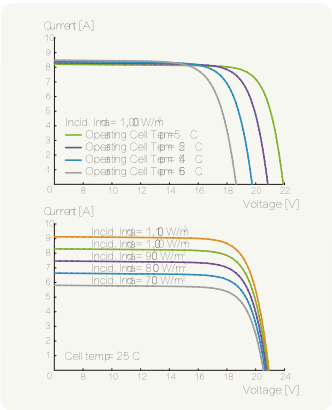
(unit : mm, inch)



Module Diagram(100W)



I-V Curves



Nominal Operating Cell Temperature	45 ℃ ± 2℃
Operating Temperature	-40 - 85℃
Maximum System Voltage	DC 1,000 V (IEC) DC 600 V (UL)
Maximum Reverse Current	15 A

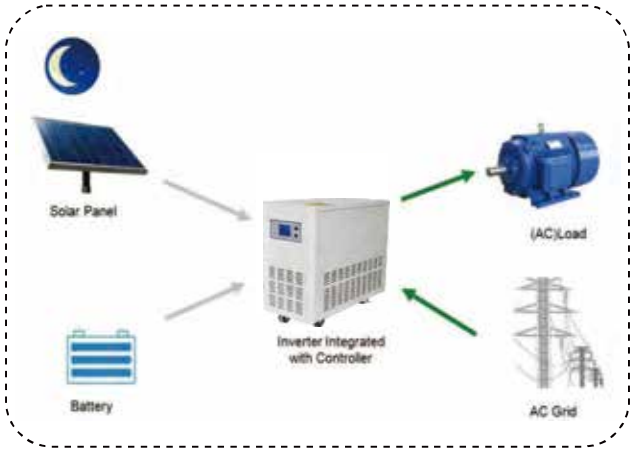
[Printed Date : June 2015]

HYBRID SOLAR HOME SYSTEM

WORKING MODE ANALYSIS

Mode1:solar energy as the first choice in the day.

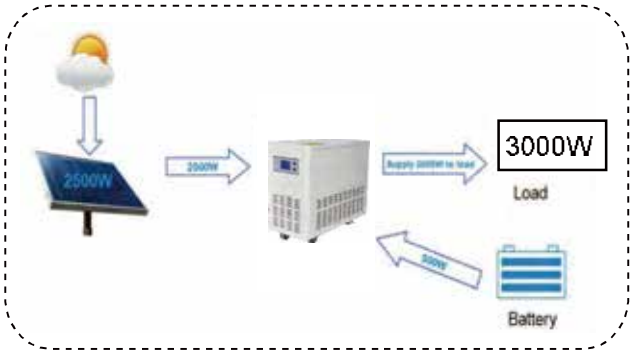
Mode2:grid power as the first choice in the night.



Working in the day

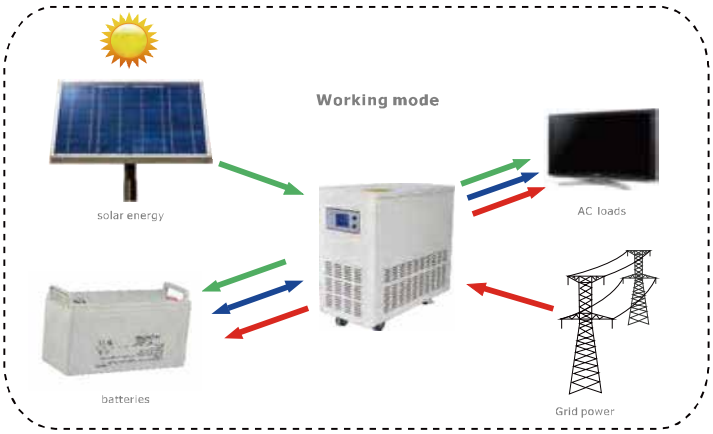
Solar energy is surplus

Solar energy is short



AVR Function

HYBIRD SOLAR INVERTER AND CONTROLLER



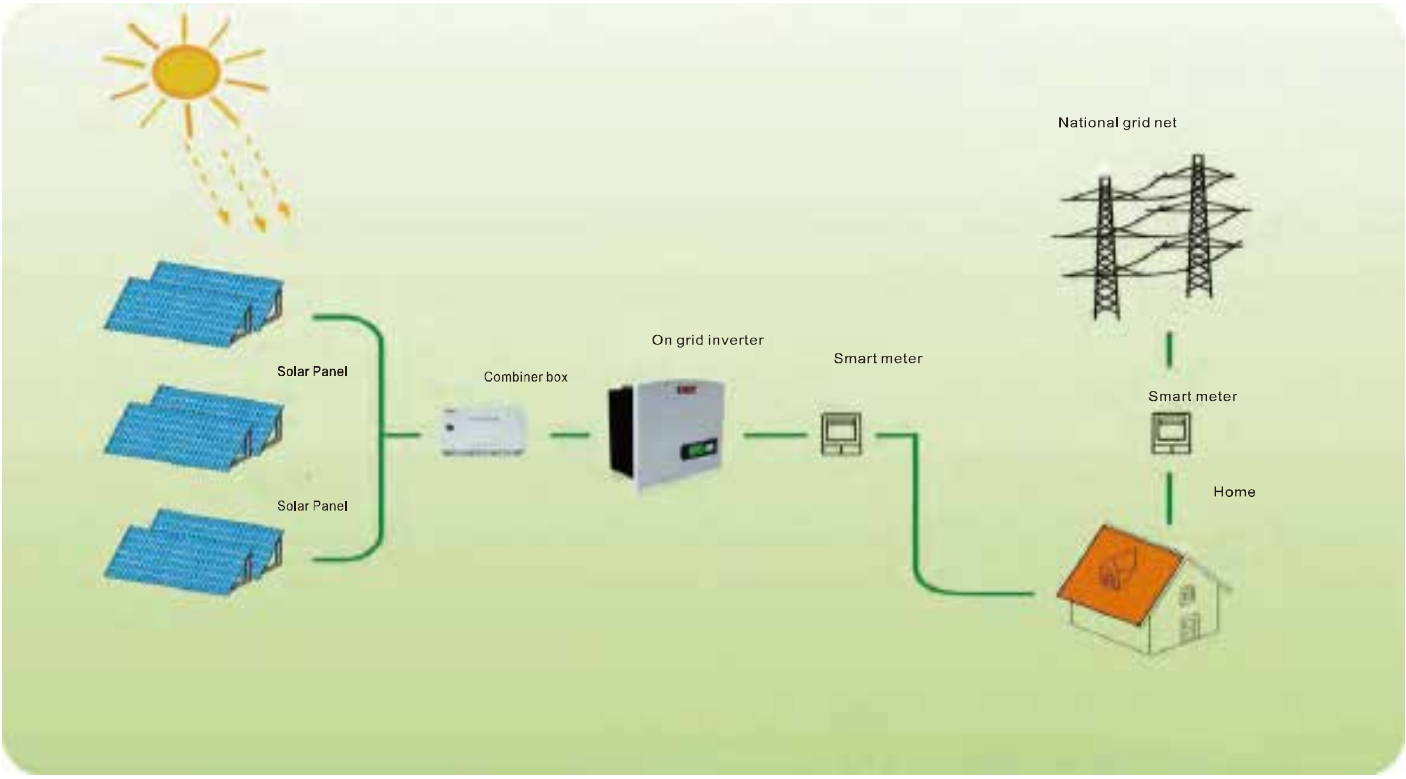
Features

* The system can provide electricity produced by solar energy to loads directly
* Continuous, standard and stable pure sine wave with LCD display
* PV priority mode or AC priority model is identified and swithched automatically
* The system will act as UPS UPS.Auto-switched,self-recovery and unattended operation functions
* AC140V－280V (The system build in stabilizer with AVR function)
* Integrated with inverter, solar controller inside, adopts 1 CPU control

All-around Protection

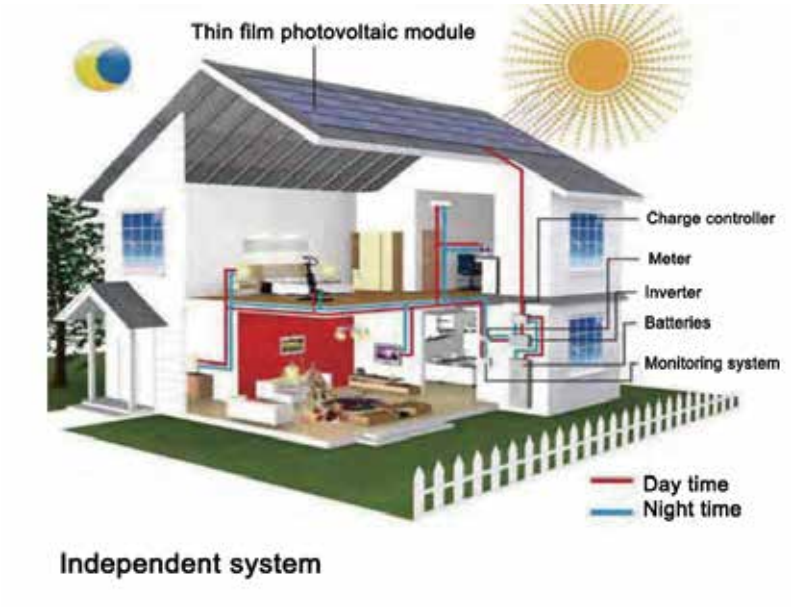
* DC over-voltage protection/over-voltage self-revcovery
* DC low-voltage protection/low-voltage self-revcovery
* Overheat/short-circuit/overload protection

ON GRID SOLAR POWER SYSTEM



OFF GRID SOLAR POWER SYSTEM

Off-Grid System Solution



Independent system

System Component

◎ Solar Pancl
◎ Solar Rack
◎ Controller (Hybrid Solar Inverter)
◎ Inveter
◎ AC Box
◎ DC Box
◎ Battery (Lead-acid or Gel)
◎ Battery Rack
◎ Lightning Protection Device

Off-grid system is suitable for villas, tourist resorts, prairie areas, desert, remote mountainous areas, post and telecommunication, border island and other places without electricity. The system provide power for electricity load, stored in the battery at the same time. the continuous power supply time depends on the power of solar panel and battery capacity. The system stability of power supply is subject to the weather and use conditions.

System Characteristic

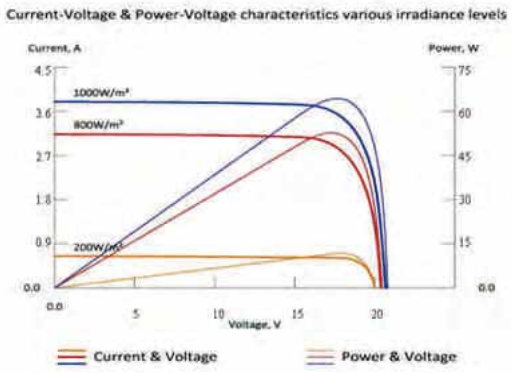
Solar panel (W)	500	1000	2000	3000	5000	Configuration Conditon
Average daily sunlight (h)	4					Loading power w
Average daily generating capacity (wh)	2000	4000	8000	12000	20000	Working voltage(v)
Inverter output power (wh)	1800	3600	7200	10800	18000	daily sunlight (h)
Loading consumption power (wh)	≤500	≤3000	≤6000	≤9000	≤15000	Working raining days
Standard testing condition	AM1.5 1000W/m² 25℃					Working time(h)

SOLAR SECURITY SYSTEM

Solar Panel 60W Specification

TypeOf Module	SPN-60M
Maximum Power (W)	60
Tolerance (%)	±3%
Open Circuit Voltage (V)	22.2
Short Circuit Current (A)	3.6
Maximum Power Voltage (V)	18.2
Maximum Power Current (A)	3.3
Module Efficiency (%)	15.8
Solar Cell Efficiency (%)	18.2
Series Fuse Rating (A)	15
Terminal Box	IP65
Maximum system voltage (V)	DC1000
Operating Temperature (℃)	-40℃-85℃

Electrical Characteristics



Product Feature

- Bypass diode minimizes the power drop by shade.
- The conversion efficiency of solar cell is above 16.8%.
- White tempered glass ,EVA resin,weather proof film and anodized aluminum frame to provide efficient protection from the severest environmental conditions.
- Waterproof.Perfect for grid applications.
- Product guarantee 5 years.

Quality Assurance

- Electrical Insulation t
- Outdoor exposure test
- Hot-spot endurance test
- UV-exposure
- Thermal cycling test
- Humidity freeze test
- Damp heat Test
- Robustness of terminations test
- Wet leakage current test
- Mechanical load test
- Hail impact test
- Bypass diode thermal test

Quality Assurance

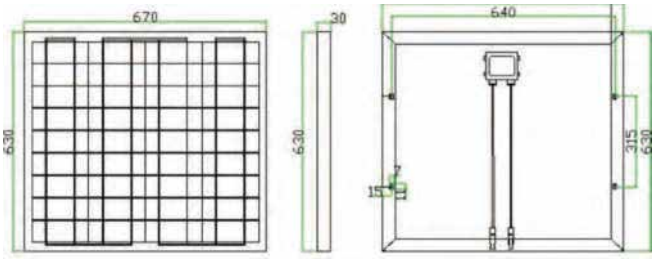
short Circuit Curent Temperature Coefficiant	%/℃	0.06
Open Circuit Voltage Temperature Coefficent	%/℃	-0.34
Maximum Power Temperature Coefficent	%/℃	-0.47

performance Warranty : 90%output , 12 years
80%output , 25years

Physical Specifications

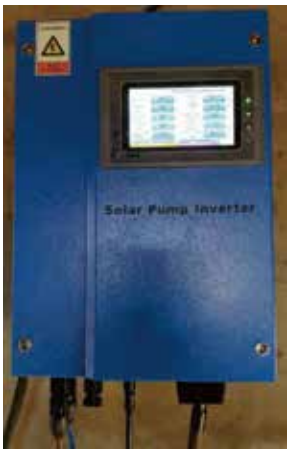
Dimension: 1580*808*35MM
630*670*30MM

Weight: 13.2KG/PCS 4.7 KG/PCS
Packing: 2pcs in one carton

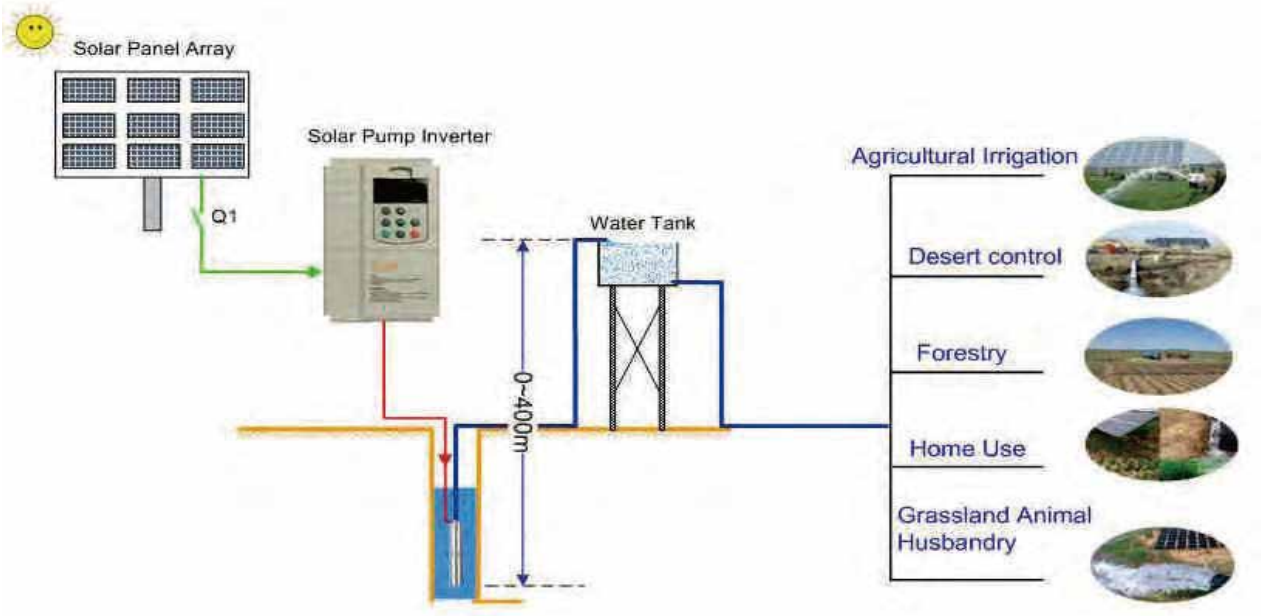


SOLAR AND WIND HYBRID POWER STATION

SOLAR PUMPING SYSTEM



SYSTEM STRUCTURE



ENGINEERING CASE

Project location:Belgium

Project name : 2MW On grid solar power station

Project location:France

Project name:5MW On grid solar farm power station

Project location:Germany

Project name:1.5MW On grid solar power station