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## Solar Inverter



## Storage System



## Solar Panel



# GUANGDONG SAKO NEW ENERGY CO.,LTD.

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THE TOP OFF GRID SOLAR PRODUCTS FACTORY

离网逆变器.太阳能锂电池.储能系统专家



### COMPANY DEVELOPMENT ROUTES



### About us

Leading OEM/ODM manufacturer for off grid solar inverter, home inverter, pumping inverter, lithium iron battery pack, solar panel, storage solar system.

Established in 1993, SAKO is the professional manufacturer engaged in research, development, sale and service of high quality power and solar products, with main products cover: home inverter, off grid solar inverter, solar panel, lithium iron battery pack and storage solar system. As we SAKO produce all key components of solar system by ourselves, we have the advantage on cost control and quality control. Customer can do one stop shopping from SAKO and we give the warranty to the whole system based on our rich experience.

Both SAKO company and its products are qualified for exports. SAKO has obtained ISO9001, ISO14001, OHAS18001, TUV, CE, CB, CQC certificates. We can also help customer apply PSI, COC, SONCAP, SASO, SABER,etc.

SAKO products are very popular because of their the stable quality, competitive price and good service. You are most welcome to be our agent in your region. We also welcome OEM / ODM orders. Whether selecting a current product from our catalog or seeking engineering assistance for your application, you can talk to our team about your sourcing requirements.

Based on its rich experience, strong R&D, strict quality control systems, the spirit of creation, trust SAKO can offer you satisfied solar products and service.



## Qualification & Certificates



ISO9001



ISO14001



HSAS18001



## FOR INVERTER



CB FOR INVERTER



#### CB FOR LITHIUM BATTERY



MSDS



卷之三 論文選



CE FOR LITHIUM BATTERY



TUV FOR PANFI



SOC FOR PANEL (IEC61730)



#### QC FOR PANEL (IEC61215)

# Partners



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# MPPT Solar Inverter



## SUNON PRO Series



### MAIN FEATURES

- With 100A MPPT Solar Charge Controller Built-in
- With High PV Input Voltage Range(120-500VDC)
- Efficiently Work With or Without Battery
- With WIFI Function Optional
- LCD With Touch Button on the LCD Display

### Solar System Connection



IT CAN WORK WITH OR WITHOUT BATTERY

# MPPT Solar Inverter



### TECHNICAL PARAMETER

Model	SUNON PRO 3.5K	SUNON PRO 5.5K
The rated power	3500VA/3500W	5500VA/5500W
<b>INPUT</b>		
Voltage	230 VAC	
Selectable Voltage Range	170-280VAC(UPS), 90-280VAC(Appliances)	
Frequencty Range	50Hz/60Hz (Auto sensing)	
<b>OUTPUT</b>		
AC Voltage Regulation (Batt. Model)	230VAC ± 5%	
Surge Power	7000VA	11000VA
Efficiency(Peak)	> 90%	
Transfer Time	10MS(UPS),20MS(Appliances)	
Wave form	Pure sine wave	
No load current	1.0A	1.1A
<b>BATTERY</b>		
Battery voltage	24VDC	48VDC
Low battery alarming voltage	22.0VDC	44.0VDC
Low battery cut off protection voltage	21VDC	42VDC
Low battery recovery voltage	23.0VDC	46.0VDC
Floating Charge Voltage	27VDC	54VDC
Overcharge Protection	32VDC	64VDC
<b>MPPT SOLAR CHARGER &amp; AC CHARGER</b>		
Maximum PV Array Power	5000W	6000W
MPPT Range at Operation Vol.	120-450VDC	
Maximum PV Array Open Circuit Vol.	500VDC	
Number of MPPT trackers / Max output current	100A	
Maximum AC Charge Current	60A	
Maximum Charge Current	100A	
Maximum Efficiency	98%	
<b>BEST PANEL CONFIGURATION</b>		
Best Panel configuration	300Wp*9pcs*36V(2700Wp)*2Parallel	330Wp*9pcs*36V(2970Wp)*2Parallel
<b>PHYSICAL</b>		
Products Dimension, D*W*H(mm)	481mm*313mm*117mm	481mm*313mm*117mm
Packing size, D*W*H(mm)	543mm*394mm*204mm	543mm*394mm*204mm
Net Weight (kgs)	9.8KG	10.5KG
G.W. kg	11KG	11.7KG
<b>OPERATING ENVIRONMENT</b>		
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Operation Temperature	0°C-50°C	

## SUNPAX Series



### MAIN FEATURES

- Max. Can Be 9PCS in Parallel With Optional Kit
- With 100A MPPT Solar Charge Controller Built-in
- With High PV Input Voltage Range (120-450VDC)
- Efficiently Work With or Without Battery
- With WIFI Function Optional
- With Touch Button on the LCD Display

### Solar System Connection



IT CAN WORK WITH OR WITHOUT BATTERY

### TECHNICAL PARAMETER

Model	SUNPAX 5.5KW
The rated power	5500VA/5500W
INPUT	
Voltage	230 VAC
Selectable Voltage Range	170-280VAC(UPS), 90-280VAC(Appliances)
Frequencty Range	50Hz/60Hz (Auto sensing)
OUTPUT	
AC Voltage Regulation (Batt. Model)	230VAC ± 5%
Surge Power	11000VA
Efficiency(Peak)	>90%
Transfer Time	10MS(UPS),20MS(Appliances)
Wave form	Pure sine wave
No load current	1.3A
BATTERY	
Battery voltage	48VDC
Low battery alarming voltage	44.0VDC
Low battery cut off protection voltage	42VDC
Low battery recovery voltage	46.0VDC
Floating Charge Voltage	54VDC
Overcharge Protection	64VDC
MPPT SOLAR CHARGER & AC CHARGER	
Maximum PV Array Power	5500W
MPPT Range at Operation Vol.	120-420VDC
Maximum PV Array Open Circuit Vol.	450VDC
Number of MPPT trackers / Max output current	100A
Maximum AC Charge Current	80A
Maximum Charge Current	100A
Maximum Efficiency	98%
BEST PANEL CONFIGURATION	300Wp*9pcs*30V(2700Wp)*2Parallel
PHYSICAL	
Products Dimension, D*W*H(mm)	498mm*313mm*123mm
Packing size, D*W*H(mm)	577mm*395mm*217mm
Net Weight (kgs)	10.0KG
G.W. kg	11.3KG
OPERATING ENVIRONMENT	
Humidity	5% to 95% Relative Humidity (Non-condensing)
Operation Temperature	0°C-50°C

# MPPT Solar Inverter



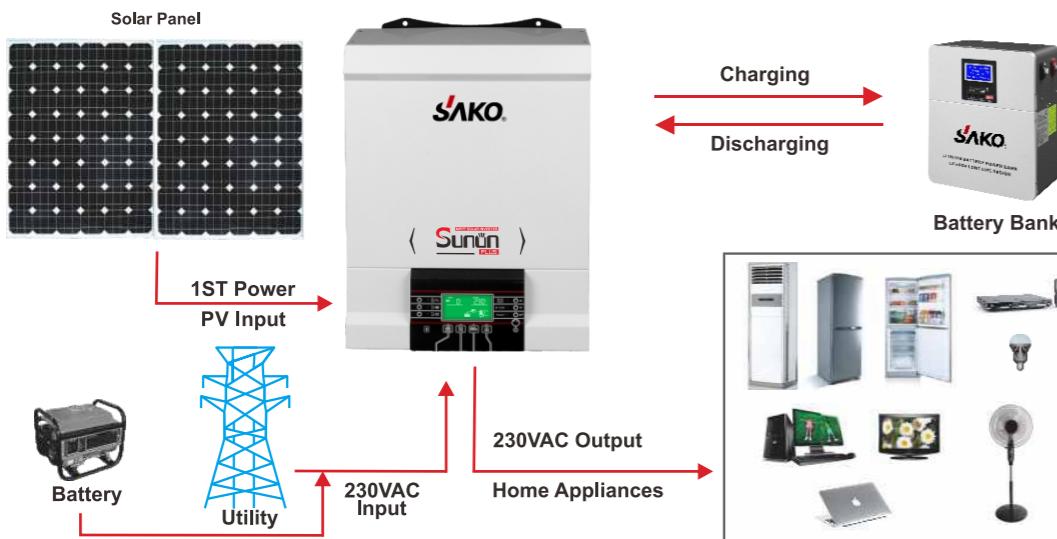
## SUNON PLUS Series



### MAIN FEATURES

- With 100A MPPT Solar Charge Controller Built-in
- With High PV Input Voltage Range(120-500VDC)
- Efficiently Work With or Without Battery
- With Local Wifi Built Inside (Remote Wifi Optional)
- LCD With Removable LCD

### Solar System Connection



### TECHNICAL PARAMETER

Model	SUNON PLUS 3.5KW	SUNON PLUS 5.5KW
The rated power	3500VA/3500W	5500VA/5500W
<b>INPUT</b>		
Voltage	230 VAC	
Selectable Voltage Range	170-280VAC(UPS), 90-280VAC(Appliances)	
Frequencty Range	50Hz/60Hz (Auto sensing)	
<b>OUTPUT</b>		
AC Voltage Regulation (Batt. Model)	230VAC ± 5%	
Surge Power	7000VA	11000VA
Efficiency(Peak)	> 90%	
Transfer Time	10MS(UPS),20MS(Appliances)	
Wave form	Pure sine wave	
No load current	1.0A	1.1A
<b>BATTERY</b>		
Battery voltage	24VDC	48VDC
Low battery alarming voltage	22.0VDC	44.0VDC
Low battery cut off protection voltage	21VDC	42VDC
Low battery recovery voltage	23.0VDC	46.0VDC
Floating Charge Voltage	27VDC	54VDC
Overcharge Protection	32VDC	64VDC
<b>MPPT SOLAR CHARGER &amp; AC CHARGER</b>		
Maximum PV Array Power	5000W	6000W
MPPT Range at Operation Vol.	120-450VDC	
Maximum PV Array Open Circuit Vol.	500VDC	
Number of MPPT trackers / Max output current	100A	
Maximum AC Charge Current	60A for 3.5KW, 80A for 5.5KW	
Maximum Charge Current	80A	
Maximum Efficiency	98%	
<b>BEST PANEL CONFIGURATION</b>		
Best Panel configuration	300Wp*9pcs*36V(2700Wp)*2Parallel	330Wp*9pcs*36V(2970Wp)*2Parallel
<b>PHYSICAL</b>		
Products Dimension, D*W*H(mm)	492*300*130mm	492*300*130mm
Packing size, D*W*H(mm)	570*395*215mm	570*395*215mm
Net Weight (kgs)	9.8KG	10.5KG
G.W. kg	11KG	11.7KG
<b>OPERATING ENVIRONMENT</b>		
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Operation Temperature	0°C-50°C	

# MPPT Solar Inverter



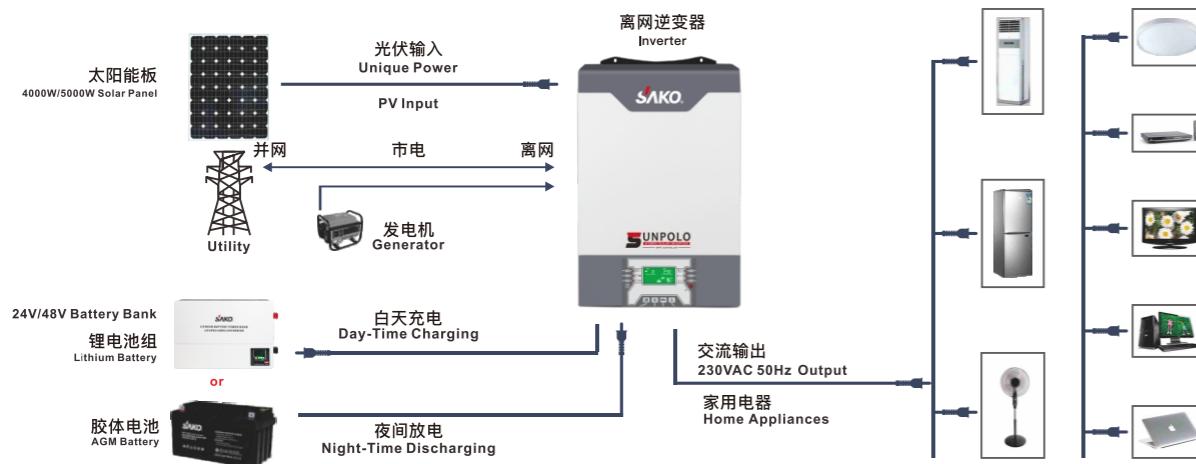
## SUNPOLO Series



### MAIN FEATURES

- Max.Can Be 9PCS in Parallel With Optional Kit
- 80A MPPT Solar Charge Controller up to 5000W Solar panel
- Efficiently Work With or Without Battery
- Built-in WIFI for Mobile Monitoring(Requires APP)
- 5KW Can Be off Grid and on Grid
- Compatible With Lithium Battery
- 5KW is Real Hybrid Can Work as Off Grid and On Grid Solar Inverters

### Solar System Connection



### TECHNICAL PARAMETER

MODEL	SUNPOLO-3K	SUNPOLO-5K
The rated power	3KW	5KW
<b>INPUT</b>		
Voltage	230 VAC	
Selectable Voltage	176-280 VAC at 100% load	110-280 VAC at 50% load
RangeFrequency Range	50Hz/60Hz (Auto sensing)	
<b>OUTPUT</b>		
AC Voltage Regulation (Batt. Model)	230VAC ± 3%	
Surge Power	6400VA for 5 sec	10400VA for 5 sec
Efficiency(Peak)	>95% ( Rated R load, battery full charged )	
Transfer Time	10ms (For Personal Computers), 20ms (For Home Appliances)	
Wave form	Pure sine wave	
<b>BATTERY</b>		
Battery voltage	24VDC	48VDC
Floating Charge Voltage	27VDC	54VDC
Overcharge Protection	32VDC	64VDC
<b>SOLAR CHARGER&amp;AC CHARGER</b>		
Solar Charger Type	MPPT	
Maximum PV Array Open Circuit Voltage	450VDC	
Maximum PV Array Power	4000W	5000W
MPP Range@ Operating Voltage	120-430VDC	120-430VDC
Maximum Solar Charge Current	80A	80A
Maximum AC Charge Current	80A	
<b>PHYSICAL</b>		
Dimension, D*W*H(mm)	492*303*129mm	456*303*147mm
Net Weight (kgs)	9.5	11.97
Communication Interface	Removable OTG USB/RS232/RS458/BLE/Dry-contact,BMS interface, 9pcs in parallel ( only 5KVA )	
<b>OPERATING ENVIRONMENT</b>		
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Operation Temperature	-10°C to 50°C	
Storage Temperature	-15°C to 60°C	

\*Product specifications are subject to change without further notice



# MPPT Solar Inverter



## SUNPOLO 6KW ON/OFF GRID SOLAR INVERTER



### MAIN FEATURES

- 120A Solar Charger+AC Charging current
- Communication: RS232,USB,RS485,WIFI
- Real Hybrid Can Feed to Grid
- Work with or without battery
- Parallel up to 9pcs optional
- Wifi Monitor
- USB On-the-go Function
- Dual AC & 12Vdc Output
- Touch Button and LCD
- Built inside with BMS
- 6KW PV input (27A)
- RGB Light

### Three lighting effects:



#### Cycling:

Quickly scroll with a color of your choice in a continuous circular motion



#### Wheel:

Illuminates with twinkling lights in a color of your choice



#### Chasing:

Radiates your selected color upward from the bottom of the ring

### User Programmable RGB lighting for different operation mode



Pink



Green



Sky Blue



Purple



Orange



Blue

### TECHNICAL PARAMETER

MODEL	SUNPOLO 6KW
Basical information	
Max. PV Input Power	6000W
Rated AC Output Power	6000W
PV Input (DC)	
Nominal DC Volt/Max DC Voltage	360VDC/500VDC
Start-up Voltage/Initial Feeding Voltage	120VDC
MPPT Voltage Range	120-450VDC
No. of MPPT Tracker/Max. Input Current	1/27A
AC Input (AC)	
AC Start-up Voltage/Auto Restart Volt.	120Vac-140Vac/180Vac
Acceptable Input Voltage Range	90-280Vac or 170-280Vac
Max. AC Input Current	40A
Grid Output in Grid-Tie/Hybrid Operation (AC)	
Nominal Output Volt	220Vac/ 230Vac/240Vac, Single Phase dual AC output
Output Voltage Range	184V-265Vac or 195-253V (Selectable)
Nominal Output Current	26.0A
Power Factor	1
Max. Conversion Efficiency (DC/AC)	96%
Battery Mode Output (AC)	
Nominal Output Volt	230Vac dual AC output+ 1pc*12Vdc/10A max
Waveform	Pure sine wave
Efficiency(DC to AC)	93%
Battery & Charger	
Battery Type Supported	Lead Acid /VRLA/AGM/Deep Cycle/Gel/Flooded/Tubular/Lithium-Ion
Nominal Battery Voltage	48Vdc
Max Solar Charge Current	120A
Max AC Charge Current	120A
Max Total Charge Current	120A
General	
Physical	
Products Dimension,D X W X H (mm)	356*471*149
Product Net Weight(kgs)	13.5
Packing Dimension,D X W X H (mm)	535*425*2224,1PC/CTN
Product Net Weight(kgs)	15
Parallel functions Optional	Yes, optional, max 9pcs
Communication Interface	RS232,USB,RS485,WIFI
Environment	
Humidity	5% to 95% Relative Humidity(Non-condensing)
Operating Temperature	-10°C to 50°C

# MPPT Solar Inverter





## SUNON-E Series



### MAIN FEATURES

- MPPT Solar Charge Controller Inside
- Smart battery protection. Compatible with LiFePo4
- Wide PV Input Range 130-450V
- Reliable quality, economic design
- Configurable battery & AC/Solar priority via LCD setting

### Solar System Connection



### TECHNICAL PARAMETER

MODEL	3KVA/2.4KW
The rated power	3000VA/2400W
INPUT	
Voltage	230VAC
Selectable Voltage Range	170-280VAC (UPS), 90-280VAC (Appliances)
Frequencty Range	50Hz/60Hz (Auto sensing)
OUTPUT	
AC Voltage Regulation (Batt. Model)	230VAC ± 5%
Surge Power	6000VA
Power factor	0.8
Efficiency(Peak)	> 90%
Transfer Time	10ms (UPS), 20ms (Appliances)
Wave form	Pure sine wave
No load current	1.0A
BATTERY	
Battery voltage	24VDC
Low battery alarming voltage	22.0VDC
Low battery cut off protection voltage	21VDC
Low battery recovery voltage	23.0VDC
Floating Charge Voltage	27VDC
Overcharge Protection	32VDC
MPPT SOLAR CHARGER & AC CHARGER	
Maximum PV Array Power	3000W
MPPT Range Operation Vol	130-450VDC
Maximum PV Array Open Circuit Vol.	450VDC
Number of MPPT trackers / Max output current	80A
Maximum AC Charge Current	60A
Maximum Charge Current	80A
Maximum Efficiency	98%
BEST PANEL CONFIGUTATION	
Maximum PV Array Power	3000W
Best Panel configuration	330Wp*9pcs*36V(2970Wp)
PHYSICAL	
Products Dimension, D*W*H(mm)	350mm*270mm*98mm
Packing size, D*W*H(mm)	413mm*350mm*173mm
Net Weight (kgs)	5.1KG
G.W. kg	5.8KG
OPERATING ENVIRONMENT	
Humidity	5% to 95% Relative Humidity (Non-condensing)
Operation Temperature	-10°C-50°C

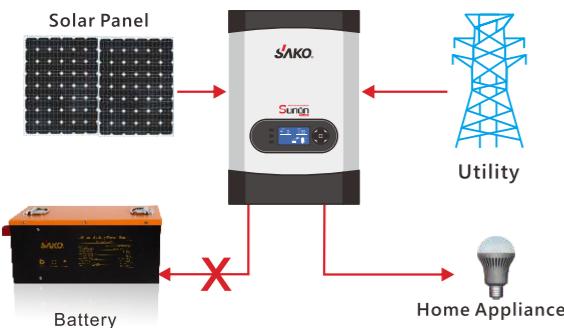
## SUNON Series



### MAIN FEATURES

- With 80A MPPT Solar Charge Controller Inside
- Can Work With or Without Battery
- Wide PV Input Range 120-450V
- With Anti Dust Kit

#### without battery status



If "solar first" is selected as output source priority and battery is not connected, solar energy and the utility will power the loads.

#### AC failed status



SUNON can operate as an off-grid inverter to provide continuous power even without the grid. It's a perfect power solution for remote regions or temporary AC power source such as camping or night market.

### TECHNICAL PARAMETER

MODEL	SUNON 3KW	SUNON 5KW
The rated power	3KW	5KW
<b>PV INPUT(DC)</b>		
Max.PV Array Power	4000W	
Nominal PV Voltage	240VDC	
PV Array MPPT Voltage Range	120~450VDC	
Max.PV Array Open Circuit Voltage	500VDC	
Max.Charging Current(AC+solar)	80Amp	
<b>AC INPUT(AC)</b>		
Nominal Input Voltage	230VAC ± 5%	
Low Loss Voltage	170VAC±7V(UPS);90VAC±7V(Appliances)	
Low Loss Return Voltage	180VAC±7V(UPS);100VAC±7V(Appliances)	
High Loss Voltage	280VAC±7V	
High Loss Return Voltage	270VAC±7V	
Max.AC Input Voltage	300VAC	
Nominal Input Frequency	50Hz/60Hz(Auto detection)	
Transfer Time	10ms typical(UPS);20ms typical(Appliances)	
<b>BATTERY MODE OUTPUT(AC)</b>		
Nominal Output Power	3KVA/3KW	5KVA/5KW
Surge Power	6000VA	10000VA
Nominal Output Voltage	230VAC±5%	
Output Waveform	Pure Sinewave	
Efficiency(DC to AC)(Peak)	93%	
<b>UTILITY CHARGER</b>		
Nominal DC Voltage	24VDC	48VDC
Maximum Charging Current	60Amp	
Bulk Charging Voltage	29.2VCD 28.2VCD	58.4VCD 56.4VCD
Floating Charging Voltage	27VCD	54VCD
OverCharge Protection	33VCD	63VCD
<b>PHYSICAL</b>		
Dimension,DxWxH(mm)	481*313*117mm	
Net Weight(kgs)	9.8	10.5
Communication Port	RS-232/USB	
<b>ENVIRONMENT</b>		
Humidity	5~95% RH(Non condensing)	
Operating Temperature	-10 to 55°C	
Altitude	0~1000m	

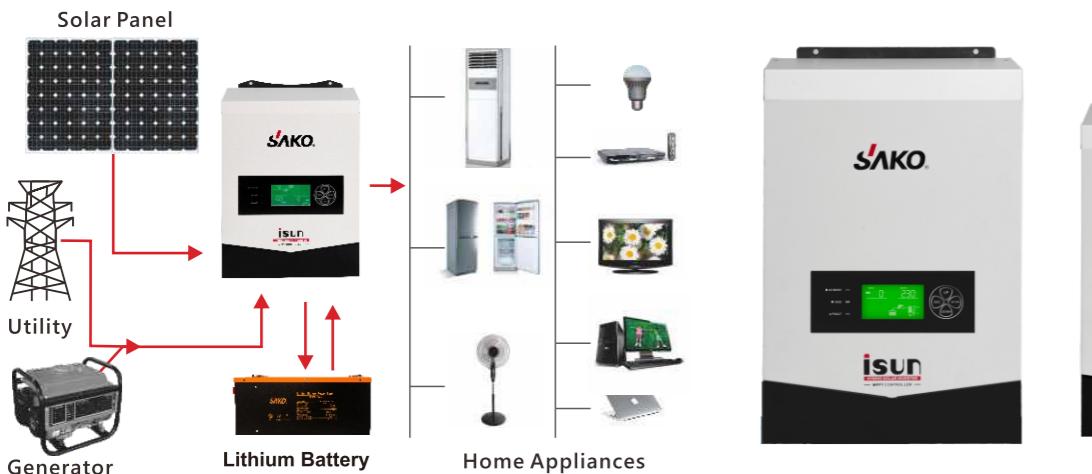
## ISUN Series



### MAIN FEATURES

- MPPT Solar Charge Controller Built Inside**
- LCD** Configurable AC/Solar input Priority Via LCD Setting
- Overload and Short Circuit Protection**
- Auto Restart While AC is Recovering**
- Selectable AC Input Voltage Range for Home Appliances and Personal Computers**

### Solar System Connection



### TECHNICAL PARAMETER

INVERTER MODEL	ISUN 1KW	ISUN 2KW	ISUN 3KW
Input Voltage Waveform		Sinusoidal (utility or generator)	
Nominal Input Voltage		230Vac	
Low Loss Voltage	170Vac±7V (UPS); 90Vac±7V (Appliances)		
Low Loss Return Voltage	180Vac±7V (UPS); 100Vac±7V (Appliances)		
High Loss Voltage		280Vac±7V	
High Loss Return Voltage		270Vac±7V	
Max AC Input Voltage		280Vac	
Nominal Input Frequency		50Hz / 60Hz (Auto detection)	
Low Loss Frequency		40±1Hz	
Low Loss Return Frequency		42±1Hz	
High Loss Frequency		65±1Hz	
High Loss Return Frequency		63±1Hz	
Output Short Circuit Protection		Circuit Breaker	
Efficiency (Line Mode)		>95% ( Rated R load, battery full charged )	
Transfer Time		10ms typical (UPS); 20ms typical (Appliances)	
Inverter Mode Specifications			
Rated Output Power	1KW	2KW	3KW
Output Voltage Waveform		Pure Sine Wave	
Output Voltage Regulation		230Vac±5%	
Output Frequency		50Hz/60Hz	
Peak Efficiency		93%	
Overload Protection		5s@?150% load; 10s@105%~150% load	
Surge Capacity		2* rated power for 5 seconds	
Nominal DC Input Voltage	12.0Vdc	24.0Vdc	24.0Vdc
Cold Start Voltage	11.5Vdc	23.0Vdc	23.0Vdc
Charge Mode Specifications			
Utility Charging Mode			
Charging Algorithm		3 steps	
AC Charging Current (Max)		25Amp (INPUT=230Vac)	
Voltage	14.1Vdc	28.2Vdc	28.2Vdc
Floating Charging Voltage	13.5Vdc	27Vdc	27Vdc
MPPT Solar Charging Mode			
Charging Current		40Amp	
System DC Voltage	12Vdc	24Vdc	24Vdc
Operating Voltage Range	18-80VDC	36-80Vdc	36-80Vdc
Max. PV Array Open Circuit Voltage		115Vdc	
DC Voltage Accuracy		±0.3%	
Max Charging Current (AC+ solar)		65Amp	
BEST PANEL CONFIGURATION			
Max. generated from solar charger	40Amp, 500W	40Amp, 1000W	40Amp, 1000W or 50Amp,1200W
Best Panel configuration	250Wp*2PCS*30V	270Wp*2PCS*30V 2 Parallel	270Wp*2PCS*30V 2 Parallel 300Wp*2PCS*30V 2 Parallel

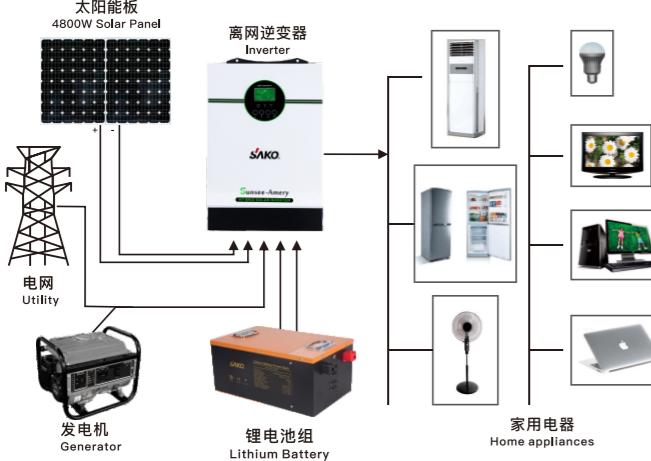
## SUNSEE-AMERY Series



### MAIN FEATURES

- Parallel Operation With up to 6pcs for 3KVA, 3pcs for 5KVA
- 3K Output is 120Vac, 5K Output is 120Vac/240Vac Split Phase
- 1pc\*80A MPPT for 3K, 2pcs\*80A MPPT for 5K
- Configurable Priority of AC/Solar Charge Via LCD Setting
- Automatic Restart While AC is Recovering
- Configurable Input Voltage for Home Appliances and Personal Computers Via LCD Setting
- Local WIFI Built Inside, Optional for Remote Wifi Kits

### Solar System Connection



### TECHNICAL PARAMETER

Model	SUNSEE Amery 1K	SUNSEE Amery 3K	SUNSEE Amery 5K
The rated power	1000VA/800W	3000VA/2400W	5000VA/5000W
INPUT			
Voltage	120VAC		
Selectable Voltage	95-140VAC (UPS), 65-140VAC (Appliances)		
Range Frequency Range	50Hz/60Hz (Auto sensing)		
OUTPUT			
AC Voltage Regulation (Batt. Model)	120VAC± 5%		
Surge Power	2000VA	4000VA	6000VA
Power factor	0.8	0.8	1.0
Efficiency(Peak)	> 90%		
Transfer Time	10ms (UPS), 20ms (Appliances)		
No load current	1.25A	2.0A	1.5A
BATTERY			
Battery voltage	12VDC	24VDC	48VDC
Low battery alarming voltage	11.0VDC	22.0VDC	44.0VDC
Low battery cut off protection voltage	10.5VDC	21VDC	42.0VDC
Low battery recovery voltage	11.5VDC	23.0VDC	46.0VDC
Floating Charge Voltage	13.5VDC	27VDC	54VDC
Overcharge Protection	15.5VDC	31VDC	60VDC
MPPT SOLAR CHARGER & AC CHARGER			
Maximum PV Array Power	480W	2000W	3840W
MPPT Range Operation Vol	15-80VDC	30-115VDC	60-115VDC
Maximum PV Array Open Circuit Vol.	102VDC	145VDC	145VDC
Standby Power Consumption	15W	48W	72W
Number of MPPT trackers / Max output current	1/ 1*40A	1/ 1*80A	2/ 2*80A
Maximum AC Charge Current	20A	60A	60A
Maximum Charge Current	60A	140A	220A
Maximum Efficiency	95%		
BEST PANEL CONFIGURATION			
Max. generated from solar charger	40A, 480W	80Amp, 2000W	2*80Amp, 7680W
Best Panel configuration	250Wp*2pcs*30V(500Wp)	250Wp*9pcs*30V(2250wp)	250Wp*15pcs*30V (3750Wp)*2Route
PARALLEL CONNECTION			
Max qty for parallel connection	/	6PCS	3PCS
PHYSICAL			
Products Dimension, D*W*H(mm)	386mm*278mm*108.8mm	465mm*303mm*130mm	670.5mm*625mm*157mm
Packing size, D*W*H(mm)	487mm*390mm*220mm	528mm*376mm*205mm	788mm*710mm*241mm
Net Weight (kgs)	7.0kg	9.7Kg	26.4Kg
G.W. kg	8.1Kg	11.0Kg	32.75Kg

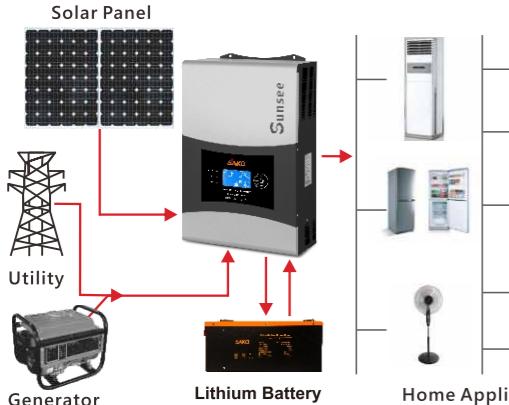
## SUNSEE Series



### MAIN FEATURES

- With MPPT Solar Charge Controller Inbuilt
- Parallel Operation With up to 6 Units Only Available for 5KVA
- LCD Configurable Priority of AC/Solar Charge Via LCD Setting
- Auto Restart While AC is Recovering
- Selectable Input Voltage Range for Home Appliances and Personal Computers

### Solar System Connection



### Back Panel



### TECHNICAL PARAMETER

MODEL	SUNSEE-3K	SUNSEE-5K
The rated power	3000VA/2400W	5000VA/4000W
<b>INPUT</b>		
Voltage	230 VAC	
Selectable Voltage Range	90-280VAC (For Personal Computers), 170-280VAC (For Home Appliances)	
Frequencty Range	50Hz/60Hz (Auto sensing)	
<b>OUTPUT</b>		
AC Voltage Regulation (Batt. Model)	230VAC ± 5%	
Surge Power	6000VA	10000VA
Power factor	0.8	
Efficiency(Peak)	>90%	
Transfer Time	10ms (For Personal Computers), 20ms (For Home Appliances)	
Wave form	Pure sine wave	
No load current	1.36A	1.15A
<b>BATTERY</b>		
Battery voltage	24VDC	48VDC
Low battery alarming voltage	22.5VDC	43.5VDC
Low battery cut off protection voltage	21VDC	42VDC
Low battery recovery voltage	23.5VDC	45.5VDC
Floating Charge Voltage	27VDC	54VDC
Overcharge Protection	32VDC	62VDC
<b>MPPT SOLAR CHARGER &amp; AC CHARGER</b>		
Maximum PV Array Power	1440W	3840W
MPPT Range Operation Vol	18-145VDC	36-115VDC
Maximum PV Array Open Circuit Vol.		145VDC
Standby Power Consumption		2W
Maximum Solar Charge Current	60A	80A
Maximum AC Charge Current		60A
Maximum Charge Current		120A
Maximum Efficiency		98%
<b>BEST PANEL CONFIGURATION</b>		
Max. generated from solar charger	60Amp, 1800W	80Amp, 4800W
Best Panel configuration	250Wp*6pcs*30V(1500wp)	250Wp*18pcs*30V(4500Wp)
<b>PHYSICAL</b>		
Products Dimension, D*W*H(mm)	465*300*116	471*300*136
Packing size, D*W*H(mm)	543*394*204	549*394*224
Net Weight (kgs)	N.W.: 8.94, G.W.: 10.1KGS	N.W.: 11.2, G.W.: 12.45KGS
<b>OPERATING ENVIRONMENT</b>		
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Operation Temperature	0°C-50°C	

## SVP Series

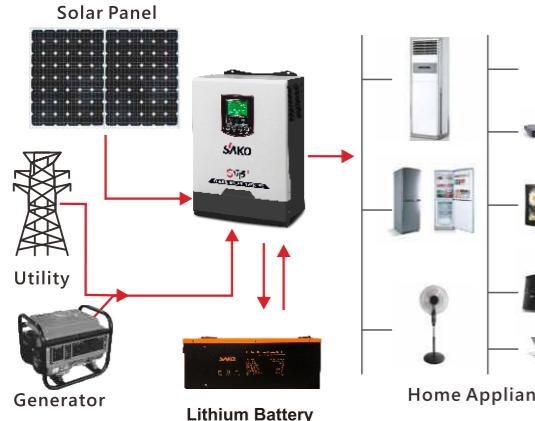
**SVP SERIES HYBRID SOLAR INVERTER,  
HIGH FREQUENCY**



### MAIN FEATURES

- Solar Charger and AC Charger Built Inside,** Compatible to Grid Power or Generator Power
- LCD** Configurable Priority of AC/Solar Charge Via LCD Setting
- Auto Restart While AC is Recovering, Auto Charge and Switch, Unattended Operation**
- Selectable Input Voltage Range for Home Appliances and Personal Computers**
- Smart Battery Charger and Management for Optimized Battery Performance**

### Solar System Connection



### Back Panel



### TECHNICAL PARAMETER

MODEL	SVP-1K	SVP-2K	SVP-3K
The rated power	1KW	2KW	3KW
<b>INPUT</b>			
Voltage	230 VAC		
Selectable Voltage	170-280VAC (For Personal Computers), 90-280VAC (For Home Appliances)		
RangeFrequency Range		50Hz/60Hz (Auto sensing)	
<b>OUTPUT</b>			
AC Voltage Regulation (Batt. Model)		230VAC ± 5%	
Surge Power	2000VA	4000VA	6000VA
Efficiency(Peak)	90%		93%
Transfer Time		10ms (For Personal Computers), 20ms (For Home Appliances)	
Wave form		Pure sine wave	
<b>BATTERY</b>			
Battery voltage	12VDC		24VDC
Floating Charge Voltage	13.5VDC		27VDC
Overcharge Protection	16VDC		32VDC
<b>SOLAR CHARGER&amp;AC CHARGER</b>			
Maximum PV Array Power	600W		1200W
PWM Range Operation Vol.	16-22VDC		32-44VDC
Maximum PV Array Open Circuit Vol.	40VDC		60VDC
Standby Power Consumption		2W	
Maximum Solar Charge Current		PWM 50A	
Maximum AC Charge Current	20A	20A	25A
Maximum solar Charge Current	50A		70A
Maximum Efficiency		98%	
<b>BEST PANEL CONFIGURATION</b>			
Max. generated from solar charger	600W		1200W
Best Panel configuration	150W*18V*4Parallel		330W*36V*4Parallel
<b>PHYSICAL</b>			
Dimension, D*W*H(mm)	400*320*190MM		420*390*193MM
Net Weight (kgs)	5.4	6.15	7.8
<b>OPERATING ENVIRONMENT</b>			
Humidity	5% to 95% Relative Humidity (Non-condensing)		
Operation Temperature	0°C-50°C		

## SKN-HDS Series



### MAIN FUNCTION:

- Solar charge controller and AC charger built inside, solar/battery/grid power complementary.
- User can select the work mode as solar priority or solar/AC together
- Support wide AC input range(90-280Vac)
- Solar charger/AC charger/Inverter/AVR/UPS 5 functions into 1
- Application: Fan, light, TV and office Appliances

### TECHNICAL PARAMETER

MODEL	SKN-HDS 800W	SKN-HDS 1000W	SKN-HDS 1600W	SKN-HDS 1800W
Capacity	800W	1000W	1600W	1800W
<b>DC INPUT</b>				
Input Voltage(VDC)	12VDC		24VDC	
DC Input Voltage Range(VDC)	10-15VDC		20-30VDC	
<b>PWM CONTROLLER</b>				
PV Input Voltage(VDC)	18-25V		36-50V	
PV Charge Current(A)		50A		
<b>AC BYPASS(THE SWITCH AT ON MODE)</b>				
AC Input Voltage Range(VAC)	220/230/240VAC 170-280V (Narrow Range) or 90-280VAC (Wide Range)			
Input Frequency(HZ)	50/60HZ			
Output Voltage Range(VAC)	SAME AS INPUT			
Output Frequency(HZ)	SAME AS INPUT			
Charge Current(A)	15-20A		10-15A	
Floating Voltage(V)	13.75±0.2V		27.5±0.4V	
Overcharge Voltage(V)	15.0±0.4V		30.0±0.8V	
AC Efficiency	> 97%			
Transfer Time(ms)	15ms			
<b>AC OUTPUT(BATTERY MODE)</b>				
Capacity(VA)	800VA	1000VA	1600VA	1800VA
Output Capacity(W)	800W	1000W	1600W	1800W
Output Voltage(VAC)	230VAC			
Output Frequency(HZ)	50/60HZ			
Output Current(A)	3.48A	4.35A	6.95A	7.83A
Output Voltage range(VAC)	230V±10%			
Output Frequency Range(HZ)	50/60HZ±0.1HZ			
Output Wave Form	Modified Sine Wave			
Power Factor	1			
Efficiency	> 85%			
Bypass transfer time(ms)	≤8ms			
Overload	Over load ≥ 110%, after 60s off			
<b>PROTECTION</b>				
Protection	Over temperature/Over load/ Short circuit protection Over charge , discharge protection			
<b>ENVIRONMENT</b>				
Noise(dB)	≤40(1 meter)			
Temperature	-20~45 degree			
Humidity	5% to 95% (no condensation)			
Altitude(m)	≤1500			
<b>PACKING</b>				
Dimension,D*W*H(mm)	360mm*135mm*355mm			
Net Weight (kgs)	/			

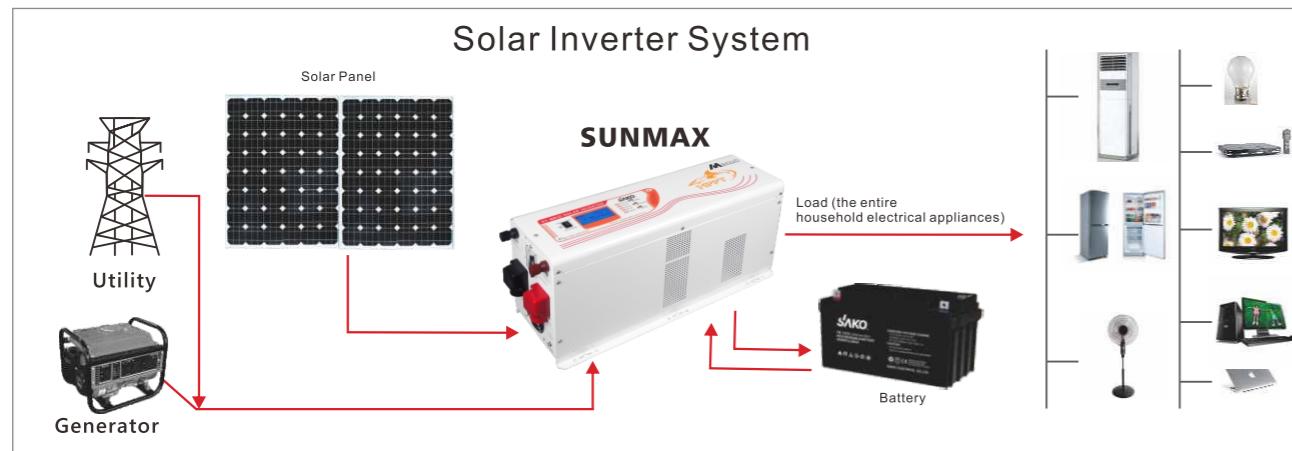
# MPPT Solar Inverter



## SUNMAX Series



### Solar System Connection



## TECHNICAL PARAMETER

MODEL	SUNMAX-1KW	SUNMAX-2KW	SUNMAX-3KW	SUNMAX-4KW	SUNMAX-5KW	SUNMAX-6KW
<b>DC INPUT</b>						
Input Voltage(Vdc)	12V/24V			24V/48V		
Min DC start voltage(Vdc)	10V/20V			20V/40V		
<b>AC Bypass</b>						
Nominal Input Voltage1	10V or 230Vac (Waveform: Sine wave or as generator)			230Vac		
Input AC Range(Vac)	90Vac±4%-135Vac±4% or 184Vac±4%-253Vac±4%			184Vac±4%-253Vac±4%		
Frequency Range(HZ)		57Hz or 60Hz (47Hz-53Hz for 50Hz, 57Hz-63Hz for 60Hz)				
Input Frequency(Hz)		50Hz/60Hz (Auto detection)				
Bypass Output Voltage(Vac)		Same as input voltage				
Bypass Output Frequency(Hz)		Same as input frequency				
Max Bypass Overload Current	10A		30A		40A	
AC Efficiency		> 95%				
Transfer Time(ms)		20ms (typical)				
<b>MPPT CHARGE CONTROLLER BUILT INSIDE</b>						
Solar charge controller(Optional)	MPPT 30A	MPPT 60A	MPPT 60A	MPPT 60A	MPPT 60A	MPPT 60A
Max PV input voltage( Vdc)				≤150Vdc		
The battery voltage (Vdc)			12V/24V/48V Auto identify and adaptive			
<b>CHARGER</b>						
Charge mode Input Voltage Range	80~145Vac or 95~255Vac			100~255Vac		
Automatic Charge mode				Three stage charge mode:Boost CC (constant current stage) → Boost CV (constant voltage stage) → Float (constant voltage stage)		
Nominal Charge Voltage				According to the battery type setup		
Charge Current(A)				17.5A/35A/70A		
Charger Short Circuit Protection				Circuit breaker		
<b>(INVERTER)</b>						
Capacity(VA)	1000	2000	3000	4000	5000	6000
Output Power(W)	1000	2000	3000	4000	5000	6000
Power Factor(PF)					1	
Output Voltage	120V or 230Vac (Sine wave )			230Vac (Sine wave )		
Output Frequency			50/60 ± 0.3Hz(auto tracking main first power connection)			
Wave				pure sine wave		
Inversion Efficiency				>88%		
Over load capacity"				(110%<load<125%) ±10%: Fault (shutdown output) after 15 minutes;		
Low Battery Alarm				10.5Vdc ± 0.3Vdc for 12V battery, 21.0Vdc ± 0.6Vdc for 24V battery, 42.0Vdc ± 1.2Vdc for 48V battery		
Power saverLoad				≤25W		

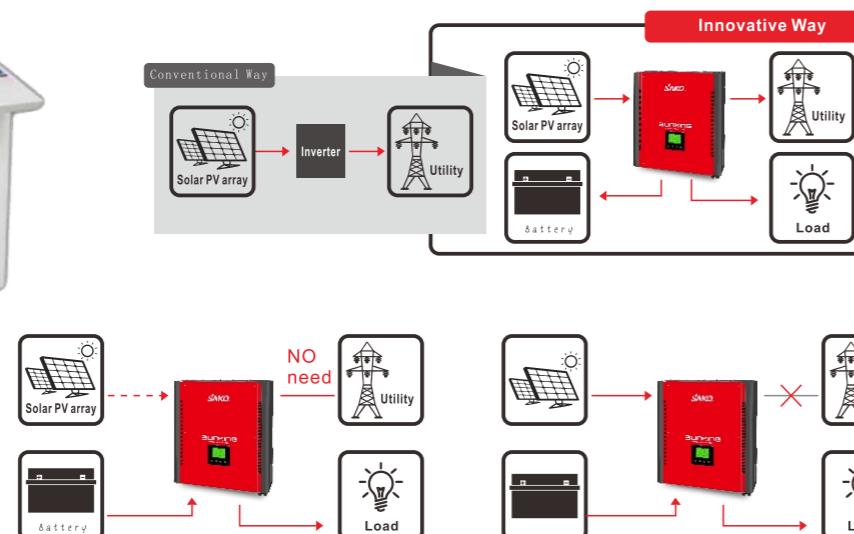
# MPPT Solar Inverter



# Hybrid Solar Inverter



## SUNKING Series



### MAIN FUNCTION:

- Pure sine wave output
- Self-consumption and Feed-in to the grid
- Programmable supply priority for PV, Battery or Grid
- User-adjustable battery charging current suits different types of batteries
- Programmable multiple operation modes: Grid-tie, off-grid and grid-tie with backup
- Built-in timer for various mode of on/off operation
- Multiple communication for USB, RS-232, Modbus and SNMP
- Monitoring software for real-time status display and control
- Parallel operation up to 6 units for 5KW and 10KW

# Hybrid Solar Inverter



### TECHNICAL PARAMETER

MODEL	SUNKING-3KW PLUS	SUNKING-5KW PLUS	SUNKING-10KW PLUS
Phase	1-phase in / 1-phase out		3-phase in / 3-phase out
Maximum PV Input Power	4500 W	10000 W	14850 W
Rated Output Power	3000 W	5000 W	10000 W
Maximum Charging Power	1200 W	4800 W	9600 W
<b>PV INPUT (DC)</b>			
Nominal DC Voltage / Maximum DC Voltage	360 VDC / 500 VDC	720 VDC / 900 VDC	720 VDC / 900 VDC
Start-up Voltage / Initial Feeding Voltage	116 VDC / 150 VDC	225 VDC / 250 VDC	320 VDC / 350 VDC
MPP Voltage Range	250 VDC ~ 450 VDC	250 VDC ~ 850 VDC	400 VDC ~ 800 VDC
Number of MPP Trackers / Maximum Input Current	1 / 1 x 18A	2 / 2 x 10A	2 / 2 x 18.6A
<b>GRID OUTPUT (AC)</b>			
Nominal Output Voltage	208/220/230/240 VAC		230 VAC (P-N) / 400 VAC (P-P)
Output Voltage Range	184 - 265 VAC		184 - 265 VAC* per phase
Nominal Output Current	13 A	21 A	14.5A per phase
Power Factor			> 0.99
<b>EFFICIENCY</b>			
Maximum Conversion Efficiency (DC/AC)		96%	
European Efficiency@ Vnominal		95%	
<b>AC INPUT</b>			
AC Start-up Voltage/Auto Restart Voltage	120 - 140 VAC / 180 VAC		120 - 140 VAC per phase / 180 VAC per phase
Acceptable Input Voltage Range	170 - 280 VAC		170 - 280 VAC per phase
Maximum AC Input Current	30 A		40 A
<b>PV INPUT (DC)</b>			
Maximum DC Voltage	500 VDC	900 VDC	900 VDC
MPP Voltage Range	250 VDC ~ 450 VDC	250 VDC ~ 850 VDC	400 VDC ~ 800 VDC
Number of MPP Trackers / Maximum Input Current	1 / 1 x 18A	2 / 2 x 10A	2 / 2 x 18.6A
<b>BATTERY MODE OUTPUT (AC)</b>			
Nominal Output Voltage	202/208/220/230/240 VAC	202/208/220/230/240 VAC	230 VAC (P-N) / 400 VAC (P-P)
Output Waveform			Pure Sinewave
Efficiency (DC to AC)		93%	91%
<b>PV INPUT (DC)</b>			
Nominal DC Voltage / Maximum DC Voltage	360 VDC / 500 VDC	720 VDC / 900 VDC	720 VDC / 900 VDC
Start-up Voltage / Initial Feeding Voltage	116 VDC / 150 VDC	225 VDC / 250 VDC	320 VDC / 350 VDC
MPP Voltage Range	250 VDC ~ 450 VDC	250 VDC ~ 850 VDC	400 VDC ~ 800 VDC
Number of MPP Trackers / Maximum Input Current	1 / 1 x 18A	2 / 2 x 10A	2 / 2 x 18.6A
<b>GRID OUTPUT (AC)</b>			
Nominal Output Voltage	202/208/220/230/240 VAC	202/208/220/230/240 VAC	230 VAC (P-N) / 400 VAC (P-P)
Output Voltage Range	184 - 264.5 VAC		184 - 264.5 VAC per phase
Nominal Output Current	13 A	21 A	14.5 A per phase
<b>AC INPUT</b>			
AC Start-up Voltage / Auto Restart Voltage	120 - 140 VAC / 180 VAC		120 - 140 VAC / 180 VAC per phase
Acceptable Input Voltage Range	170 - 280 VAC		170 - 280 VAC per phase
Maximum AC Input Current	30 A		40 A
<b>BATTERY &amp; CHARGER</b>			
Nominal DC Voltage		48 VDC	
Maximum Charging CurrentDefault	25A, 5A - 25A (Adjustable)	Default 60A, 5A - 100A (Adjustable)	Default 60A, 10A - 200A (Adjustable)
<b>INTERFACE</b>			
Communication Port	RS-232/USB	RS-232/USB and CAN Interface	
Intelligent Slot			Optional SNMP, Modbus and AS-400 cards available



## SAKO Main Solar Inverter Comparision



Mode no.	Rated power	PF	Battery input voltage	AC output Voltage	Built in solar charge controller capacity	Max PV input (Watt)	Built in Ac charger	Max. PV input	With WIFI control or not?	Support no batery working	Parellel function available with extra charge	Can self consumption and feed-into the grid
HDS 800W	800W	1.0	12vdc	220vac	50A PWM	600W	yes	25Vdc	No	No	No	No
HDS 1.6KW	1.6KW	1.0	24vdc	220vac	50A PWM	1200W	yes	50Vdc	No	No	No	No
SVP 1KW/12V	1KW	1	12vdc	220vac	50A PWM	600W	yes	40Vdc	No	No	No	No
SVP 2KW/24V	2 KW	1	24vdc	220vac	50A PWM	1200W	yes	60Vdc	No	No	No	No
SVP 3KW/24V	3 KW	1	24vdc	220vac	50A PWM	1200W	yes	60Vdc	No	No	No	No
ISUN 1KW	1KW	1	12vdc	220/230vac	40A MPPT	480W	Yes	100vdc	No	No	No	No
ISUN 3KW	3 KW	1	24vdc	220/230vac	50A MPPT	960W	Yes	115vdc	No	No	No	No
SUNSEE-3KVA/2.4KW	2.4KW	0.8	24vdc	220/230vac	60A MPPT	1440W	Yes	145vdc	No	No	No	No
SUNSEE-5KVA/4KW	4 KW	0.8	48vdc	220/230vac	80A MPPT	3840W	yes	145vdc	No	No	Yes, up to 6pcs	No
SUNON 3KW	3 KW	1	24vdc	230Vac	80A MPPT	4000W	Yes	500Vdc	No	No	No	No
SUNON 5KW	5 KW	1	48vdc	230Vac	80A MPPT	4000W	Yes	500Vdc	No	No	No	No



## SAKO Main Solar Inverter Comparision

Mode no.	Rated power	PF	Battery input voltage	AC output Voltage	Built in solar charge controller capacity	Max PV input (Watt)	Max. PV input	With WIFI control or not?	Support no batery working	Parrellel function available with extra charge	Can self-comsumption and feed-into the grid	With Removable LCD or not
SUNON- E 3K	3kva/ 2.4kw	0.8	24vdc	230Vac	80A MPPT	3000W	450Vdc	No	No	No	No	No
SUNON PRO 3.5KW	3.5KW	1	24vdc	230Vac	100A MPPT	5000W	450Vdc	No	Yes	No	No	No
SUNON PRO 5.5KW	5.5KW	1	48vdc	230Vac	100A MPPT	6000W	450Vdc	No	Yes	No	No	No
SUNPOLO 3KW	3 KW	1	24vdc	230Vac	80A MPPT	4000W	450Vdc	Yes	Yes	No	No	No
SUNPOLO 5KW	5 KW	1	48vdc	230Vac	80A MPPT	5000W	450Vdc	Yes	Yes	Yes, up to 9pcs	Yes	No
SUNPOLO 6KW	6KW	1	48vdc	230Vac	120A MPPT	6000W	450Vdc	Yes	Yes	Yes, up to 9pcs	Yes	No
SUNON PLUS 3.5KW	3.5KW	1	24vdc	230Vac	100A MPPT	5000W	450Vdc	Yes	Yes	No	No	Yes
SUNON PLUS 5.5KW	5.5KW	1	48vdc	230Vac	100A MPPT	6000W	450Vdc	Yes	Yes	No	No	Yes
SUNPAX 5.5KW	5.5KW	1	48vdc	230Vac	100A MPPT	5500W	450Vdc	No	Yes	Yes, up to 9pcs	No	No
SUNSEE AMERY 1K	800 W	0.8	12vdc	110/120vac	40A MPPT	600W	100vdc	No	No	No	No	No
SUNSEE AMERY 3K	2.4KW	0.8	24vdc	110/120vac	80A MPPT	2400W	145vdc	Yes	No	Yes, up to 6pcs	No	No
SUNSEE AMERY 5K	5 KW	1	48vdc	110V/220vac (Split Phase)	2*80A MPPT	4800W	145vdc	Yes	No	Yes, up to 3pcs	No	No
SUNMAX-1012	1KW	1	12vdc	230Vac or 120Vac	60A MPPT	600W	145vdc	No	No	No	No	No
SUNMAX-2024	2KW	1	24vdc	230Vac or 120V	60A MPPT	1440W	145vdc	No	No	No	No	No
SUNMAX- 3024	3KW	1	24vdc	230Vac or 120V	60A MPPT	1440W	145vdc	No	No	No	No	No
SUNMAX-5048	5KW	1	48vdc	230Vac	60A MPPT	2880W	145vdc	No	No	No	No	No
SUNMAX-6048	6KW	1	48vdc	230Vac	60A MPPT	2880W	145vdc	No	No	No	No	No

# Home Inverter



## SKN-MA Series



### TECHNICAL PARAMETER

MODEL	SKN-MA-500VA	SKN-MA-800VA	SKN-MA-1000VA	SKN-MA-1500VA
<b>DC INPUT</b>				
Input Voltage (VDC)	12	12	12	12
Input Current (A)	25A Max.	41.7A Max.	66.6A Max.	83.3A Max.
Input DC Range (VDC)	10~14	10~14	10~14	10~14
<b>AC BYPASS</b>				
Input AC Range (VAC)	110VAC~270VAC			
Input Frequency Range (Hz)	Same As The City Power			
Input Current (A)	2.7	4.5	7.27	9.09
Charge Current (A)	10±2A(Big) / 20±2A(Small) Optional			
Transfer Time (ms)	UPS Setting:<= 10 ms / Inverter Setting:<= 20ms			
Inversion Efficiency	≥ 95%			
<b>AC OUTPUT</b>				
Capacity (VA)	500	800	1000	1500
Output Power (W)	300	500	800	1000
Output Voltage (VAC)	220VAC ± 5% (In Inverter Model)			
Output Frequency (Hz)	50Hz/60Hz			
Output Current (A)	1.36	2.28	3.63	4.55
Voltage Precision (VAC)	220VAC ± 3%			
Frequency Precision (Hz)	50±1% / 60±1% (In Inverter Model)			
Wave Distortion (TCKJ)	<= 5%			
Power Factor (PF)	0.6-0.66			
Overload Capacity	105%~110%, 60s, 110%~125%, 15s, >125%, 3s			
Inversion Efficiency	≥ 82%			
Bypass Transfer Time (ms)	≤ 10ms (UPS) or ≤ 20ms (Inverter) Optional			
<b>PROTECTION</b>				
Protection	Over temperature/ over load/ over voltage/ low battery/ low voltage/ input low/ hight voltage/ short current Protection			



# Home Inverter



## SKN-S Series

### TECHNICAL PARAMETER

MODEL	SKN-S 1KW	SKN-S 2KW	SKN-S 3KW	SKN-S 4KW	SKN-S 5KW	SKN-S 6KW				
<b>DC INPUT</b>										
Input Voltage(Vdc)	12V/24V48V		24V/48V							
Min DC start voltage(Vdc)	10V/20V		20V/40V							
<b>AC Bypass</b>										
Nominal Input Voltage(Vac)	110V or 230V		230V							
Input AC Range(Vac)	110V:80-140V or 220V:165V-265V(Wide)/ 185-265V(Narrow) or 90-265V(1-3KW)		165V-265V(Wide) 185-265V(Narrow)							
Frequency Range(Hz)	50Hz or 60Hz(47Hz -53Hz for 50Hz)----(57Hz -63Hz for 60Hz)}									
Input Frequency(Hz)	50Hz/ 60Hz (Auto detection)									
Bypass Output Voltage(Vac)	same as input voltage									
Bypass Output Frequency(Hz)	same as input frequency									
Pass through without Battery	Yes									
Max Bypass Overload Current	10A	30A	30A	40A	40A	40A				
AC Efficiency	> 95%									
Transfer Time(ms)	20ms (typical)									
<b>CHARGER</b>										
Charging mode Input Voltage Range	85-135V or 175-255V(wide)/195-255V(narrow)		175-255V(wide)/195-255V(narrow)							
Automatic Charge mode	Three stages charge mode:Boost CC (constant current stage) → Boost CV (constant voltage stage) → Float (constant voltage stage)									
Nominal Charge Voltage	According to the battery type setup									
Charging Current(A)	70A(max)									
<b>INVERTER</b>										
Capacity(VA)	1000	2000	3000	4000	5000	6000				
Output Power(W)	1000	2000	3000	4000	5000	6000				
Power Factor(PF)	1									
Output Voltage	120VAC or 230VAC (Pure Sine Wave)230VAC (Pure Sine Wave)									
Output Frequency	50/60 ± 0.3Hz(auto tracking main first power connection)									
Wave Form	pure sine wave									
Inversion Efficiency	>88%									
Over load capacity	"(110%<load<125%) ±10%: Fault (shutdown output) after 15 minutes;(125%<load<150%) ±10% : Fault (shutdown output) after 60s;Load>150% ±1									
saver	Load ≤25W (Enabled on "P/S auto" setting of Remote control)									

# Home Inverter



## FIBEST(DVD TYPE)



### TECHNICAL PARAMETER

MODEL	FIBEST 800W	FIBEST 1000W	FIBEST 1600W	FIBEST 1800W
Capacity	800W	1000W	1600W	1800W
<b>DC INPUT</b>				
Input Voltage(VDC)	12VDC		24VDC	
DC Input Voltage Range(VDC)	10-15VDC		20-30VDC	
<b>AC BYPASS(THE SWITCH AT ON MODE)</b>				
AC Input Voltage Range(VAC)	220/230/240VAC 170-280V (Narrow Range) or 90-280VAC (Wide Range)			
Input Frequency(HZ)	50/60HZ			
Output Voltage Range(VAC)	SAME AS INPUT			
Output Frequency(HZ)	SAME AS INPUT			
Charge Current(A)	15-20A		10-15A	
Floating Voltage(V)	13.75±0.2V		27.5±0.4V	
Overcharge Voltage(V)	15.0±0.4V		30.0±0.8V	
AC Efficiency	> 97%			
Transfer Time(ms)	15ms			
<b>AC OUTPUT(BATTERY MODE)</b>				
Capacity(VA)	800VA	1000VA	1600VA	1800VA
Output Capacity(W)	800W	1000W	1600W	1800W
Output Voltage(VAC)	230VAC			
Output Frequency(HZ)	50/60HZ			
Output Current(A)	3.48A	4.35A	6.95A	7.83A
Output Voltage range(VAC)	230V±10%			
Output Frequency Range(HZ)	50/60HZ±0.1HZ			
Output Wave Form	Modified Sine Wave			
Power Factor	1			
Efficiency	> 85%			
Bypass transfer time(ms)	≤8ms			
Overload	Over load ≥ 110%, after 60s off			
<b>PROTECTION</b>				
Protection	Over temperature/Over load/ Short circuit protection Over charge , discharge protection			

# PWM Solar Charge Controller



## SC-D Series



### TECHNICAL PARAMETER

MODEL	10A/15A/20A	30A/40A	50A/60A	30A/40A	50A/60A
System	12V/24V				48V
Max. Input Voltage of solar panel	55V				100V
Self-consumption	≤12mA	≤10mA			≤12mA
Max. charge current	10A/15A/20A	30A/40A	50A/60A	30A/40A	50A/60A
Max. discharge current	10A/15A/20A	30A/40A	50A/60A	30A/40A	50A/60A
LVD	11.0V ADJ9V....12V;*2/24V				44V ADJ36V-48V
LVR	12.6V ADJ11V....13.5V;*2/24V				50.4V ADJ44-54V
Float Voltage	13.8V ADJ13V....15V;*2/24V				55V ADJ52-60V
Boost charging	14.4V;*2/24V Battery Voltage less than 12V start boost charging 2 hours				57.6V Battery Voltage less than 48V start boost charging 2 hours
Battery Over Voltage Protection	16.5V;*2/24V				66V
Reverse Connection Protection	Yes				Yes
Load Over Current Protection	Yes,each two minutes restart once				Yes,each two minutes restart once
Charge Type	PWM				PWM
Temperature Compensation	24mV/°C for 12V system; *2/24V				24mV/°C for *4/48V
Working Temperature	-20°C ...+55°C				-20°C ...+55°C
Terminal Scale	28---10 AWG 16m				14---6 AWG 16m
Waterproof grade	IP32				IP32
Size	168*92*41.5mm	190*108*41.5mm	200.1*127*55.3mm	190*108*41.5mm	200.1*127*55.3mm
Net weight	320g	410g	690g	410g	690g

# PWM Solar Controller



## SC-E/F Series



### TECHNICAL PARAMETER

MODEL	SC-E-10A	SC-E-20A	SC-E-30A	SC-F-20A	SC-F-30A
System	12V/24V Auto				
Max. Input Voltage of solar panel	55V				
Self-consumption	$\leq 12\text{mA}$				
Max. charge current	10A	20A	30A	20A	30A
Max. discharge current	10A	20A	30A	20A	30A
LVD	11.0V ADJ9V....12V;*2/24V				
LVR	12.6V ADJ11V....13.5V;*2/24V				
Float Voltage	13.8V ADJ13V....15V;*2/24V				
Boost charging	14.4V;*2/24V Battery Voltage less than 12V start boost charging 2 hours				
Battery Over Voltage Protection	16.5V;*2/24V				
Reverse Connection Protection	Yes				
Load Over Current Protection	Yes, each two minutes restart once				
Charge Type	PWM				
Temperature Compensation	-24mV/ $^{\circ}\text{C}$ for 12V system; *2/24V				
Working Temperature	$-20^{\circ}\text{C}...+55^{\circ}\text{C}$				
Terminal Scale	28---10 AWG 16m				
Waterproof grade	IP32				
Size	133*70*35mm		148*91*39mm		
Net weight	170g	200g	200g	200g	200g
Qty per Carton	100PCS/Ctn			50PCS/Ctn	
G.W. Per Carton	16.9kg	20kg	20kg	10kg	10kg

# MAIN FUNCTION

- Industrial-Grade Micro Processor Control
- High Degree Power Save Function, Night Consumption <1W
- PV Array Maximize Utilization  $\geq 99\%$
- Data Communication RS232
- With The Solar Reverse Polarity Protection
- With The Over-Temperature Protection
- With The Over-Discharge Protection
- Upgrade Service
- Parameters Of Charge And Discharge Are Adjustable

# MPPT Solar Controller



## SC-M Series



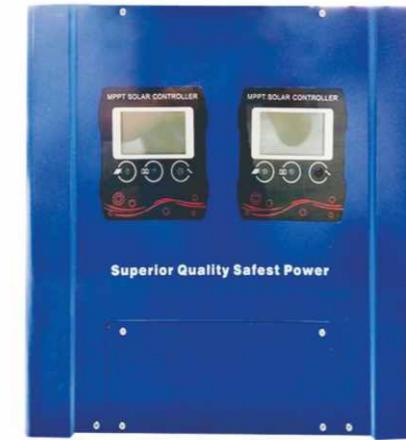
### TECHNICAL PARAMETER

MODEL	240S40	240S80	240S100	360T20	360T40	360T60	480T15	480T30	480T50									
Charge Mode	MPPT (Maximum Power Point Tracking)																	
Charge Method	Three Stage Intelligent Auto (Constant Current MPPT, Constant Voltage, Floating Charge System)																	
Charge Efficiency	$\geq 96.8\%$																	
MPPT Efficiency $\geq 99\%$																		
PV INPUT FEATURES																		
Input P.V. Range (VDC)	$\leq 450\text{VDC}$			$\leq 900\text{VDC}$			$\leq 900\text{VDC}$											
Input P.V. Power (W)	9.6KW Max.	19.2KW Max.	24KW Max.	9KW Max.	18KW Max.	30KW Max.	9KW Max.	18KW Max.	30KW Max.									
Solar Charge Current (A)	40A Max.	80A Max.	100A Max.	20A Max.	40A Max.	60A Max.	15A Max.	30A Max.	50A Max.									
SOLAR CHARGE PV FEATURES																		
Normal Battery	240VDC(72V/96V/120V/144V)			360VDC(240V/264V/288V/			480VDC(240V/288V/336V/											
Bank Voltage (VDC)	168V/192V/216V Optional)			312V/336V Optional)			360V/384V/432V Optional)											
PV MPPT Working Voltage Range (VDC)	320~450VDC (NosBatt*16V ~450VDC)			480~900VDC (NosBatt*16V ~900VDC)			640~900VDC (NosBatt*16V ~900VDC)											
PV Max. Input Voltage (VDC)	480VDC			960VDC			960VDC											
Night Self-Consumption (W)	$\leq 1\text{W}$			$\leq 1\text{W}$			$\leq 1\text{W}$											
SOLAR CHARGE BATTERY FEATURES																		
Fast Charge Voltage (VDC)	280VDC (NosBatt*14V, 13.85~15V Adjustable)			420VDC (NosBatt*14V, 13.85~15V Adjustable)			560VDC (NosBatt*14V, 13.85~15V Adjustable)											
Float Charge Voltage (VDC)	273VDC (NosBatt*13.65V)			409.5VDC (NosBatt*13.65V)			546VDC (NosBatt*13.65V)											
Soft Starting Time (S)	$\leq 20\text{S}$			$\leq 20\text{S}$			$\leq 20\text{S}$											
Communication Port	RS232			RS232			RS232											
Battery Type Selectable	Gel Battery(Default), Sealed Lead Acid, Vented, Gel, NiCd Battery, Others Available																	

# MPPT Solar Charge Controller

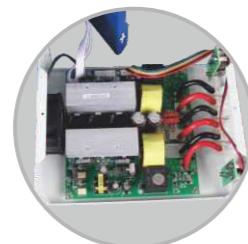


## SC-M Series



### Main Features

- Industrial-grade Micro Processor Control
- 12V,24V and 48V can be adaptive
- Built-in maximum power point tracking algorithm, the charging efficiency is 15%-20% higher than PWM mode
- With the charging overcurrent protection function, the controller will automatically reduce the charge current
- With the Solar reverse polarity protection
- With the Overtemperature protection
- With DC power supply function, can be connected DC energy-saving lamps
- Wall hanging case
- Application for off-grid solar power system



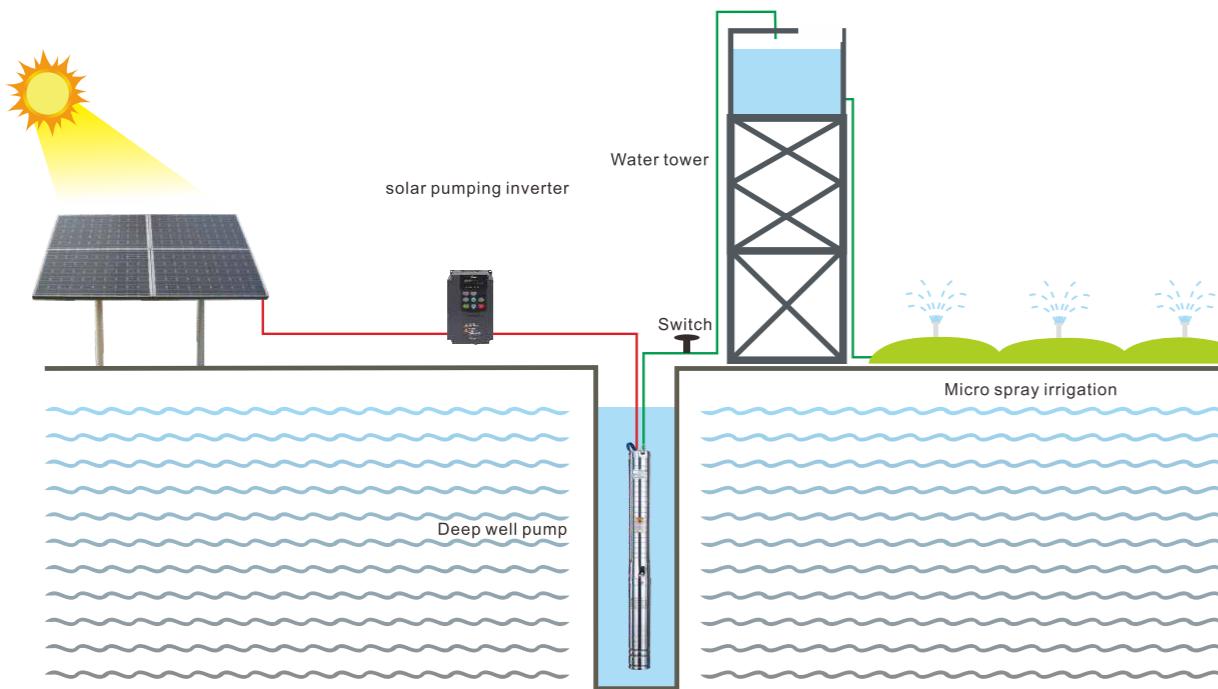
# MPPT Solar Charge Controller



### TECHNICAL PARAMETER

MODEL	SC-M-20A	SC-M-30A	SC-M-40A	SC-M-50A	SC-M-60A	SC-M-80A	SC-M-100A	SC-M-120A
<b>P.V. Input Features</b>								
Input P.V. Range(Vdc)	165VDC MAX							
Solar Charge Current(A)	20A Max 30A Max 40A Max 50A Max 60A Max 80A Max 100A Max 120A Max							
<b>Solar Charging Features</b>								
Normal Battery Voltage(Vdc)	12/24/48VDC							
Battery Type Choose	Gel/Sealed/other(User-defined)							
Fast Charge Voltage(Vdc)	14.0V ; X2/24V ; X4/48V other(User-defined)							
Floating Charge Voltage(Vdc)	13.8V ; X2/24V ; X4/48V other(User-defined)							
Overcharge Alarm Voltage(Vdc)	15.0V ; X2/24V ; X4/48V other(User-defined)							
Overcharge Protection Voltage(Vdc)	15.0V ; X2/24V ; X4/48V other(User-defined)							
Overcharge Recovery Voltage(Vdc)	13.6V ; X2/24V ; X4/48V other(User-defined)							
<b>DC Output Features</b>								
DC Output Current(A)	20A Max	30A Max	40A Max	50A Max	60A Max	80A Max	100A Max	120A Max
Overdischarge Alarm Voltage(Vdc)	11.0V/11.0V*2/11.0V*4							
Overdischarge Protection Voltage(Vdc)	10.8V/10.8V*2/10.8V*4							
Overdischarge Recovery Voltage(Vdc)	13.2V/13.2V*2/13.2V*4							
<b>PROTECTION</b>								
Protection	Overcharge protection, Overdischarge protection, Solar reverse polarity protection, Overtemperature protection							
<b>Display Features</b>								
Display method	LED+LCD							
Display substance	PV status, Battery status, DC Output status, fault status							
<b>AMBIENT</b>								
Noise(dB)	< 55dB (1 meter)							
Working Temperature	-20°C ~ 50°C							
Humidity	0~95% (no condensation)							
Sea Level(m)	≤1500							
<b>DIMENSION</b>								
L×W×H (products size) mm	L205*W167*H93.5mm	L260*W223*H93.5mm	L410*W375*H140mm					
L×W×H (package size) mm	L640*W565*H305mm	L640*W565*H305mm	L429*W398*H151mm					
Weight(NW Kg)	2.1Kg	3.0Kg	6.5KGS					
QTY PER CTN	8PCS/CTN	4PCS/CTN	4PC/CTN					
Packge Weight(GW Kg)	21Kg	15Kg	7.5Kgs					

# Solar Pumping System



# Solar Pumping System



## SKI-P SERIES SOLAR PUMP INVERTER



### TECHNICAL PARAMETER

MODEL	SKI-P 0R75-T3	SKI-P 1R5-T3	SKI-P 2R2-T3	SKI-P 3R7-T3	SKI-P 5R5-T3	SKI-P 7R5-T3	SKI-P 11-T3	SKI-P 15-T3	SKI-P 18-T3	SKI-P 22-T3	SKI-P 30R-T3	SKI-P 37R-T3
<b>DC INPUT</b>												
400VDC-800VDC												
DC Input Voltage	4.3A	7.3A	10A	19A	27A	34A	50A	64A	73A	89A	119A	148.1A
<b>AC OUTPUT</b>												
Output Power	0.75KW	1.5KW	2.2KW	3.7KW	5.5KW	7.5KW	11KW	15KW	18.5KW	22KW	30KW	37KW
Rated Output Voltage	3Phase 380-460VAC											
Output Frequency(HZ)	0-50/60HZ											
Rated Output Current	2.2A	3.7A	5A	9A	13A	17A	25A	32A	37A	45A	60A	75A
Max Efficiency	97%											
<b>PROTECTION</b>												
Input DC Voltage Low	≤400VDC:E10(RUN) LU(STOP)											
Input DC Voltage High	≥400VDC:E007(Speed Up) E008(Speed Down)E009(Constant Speed)											
Over Load	E011											
Over Temperature	E016											
<b>AMBIENT</b>												
Display	LCD/LED											
Communication Interface	RS485											
Temperature	-20~45 Degree C											
Noise(dB)	<50(dB)											
<b>DIMENSION</b>												
Product Size L*W*H	200*130*180			250*50*190			325*220*220			550*325*300		
QTY In Each Carton	8			6			2			1		
Packing Size	480*380*460			650*295*485			610*400*315			550*325*300		
Weight(KG)	17.5kg			18.5kg			22kg			23kg		
	14kg			14kg			16kg			16kg		
	33kg											



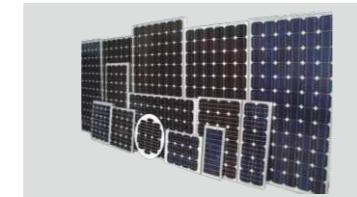
# Solar Panel



## POLY Series

### MAIN FUNCTION:

Solar modules fall into the mid-range of price and efficiency and is aimed at residential and commercial application. It comes in the outputs from 20Watt to 335Watt and is made of high efficiency poly - crystalline silicon solar cell. Each cell is tested and matched to maximized output. The modules are manufactured according to the requirements of international standards with 20 years warranty.



## TECHNICAL PARAMETER

Model	Power Maximum (Pmax,W)	Vmp (V)	Solar Cells Type	Solar Cells Number	Panel size (mm)	Weight (kg)
TDP-335W-72	335	36	156	72	1960*992*40mm	22.43
TDP-330W-72	330	36	156	72	1960*992*40mm	22.43
TDP-320W-72	320	36	156	72	1960*992*40mm	22.43
TDP-310W-72	310	36	156	72	1960*992*40mm	22.43
TDP-300W-72	300	36	156	72	1960*992*40mm	22.43
TDP-290W-72	290	36	156	72	1960*992*40mm	22.43
TDP-280W-60	280	30	156	60	1650*992*40mm	18.25
TDP-270W-60	270	30	156	60	1650*992*40mm	18.25
TDP-260W-60	260	30	156	60	1650*992*40mm	18.25
TDP-250W-60	250	30	156	60	1650*992*40mm	18.25
TDP-240W-60	240	30	156	60	1650*992*40mm	18.25
TDP-200W-72	200	36	156	72	1350*992*40mm	15
TDP-170W-36	170	18	156	36	1480*670*40mm	11.05
TDP-160W-36	160	18	156	36	1480*670*40mm	11.05
TDP-150W-36	150	18	156	36	1480*670*40mm	11.05
TDP-145W-36	145	18	156	36	1480*670*40mm	11.05
TDP-140W-36	140	18	156	36	1480*670*40mm	11.05
TDP-100W-36	100	18	156	36	1020*670*30mm	7.75
TDP-95W-36	95	18	156	36	1020*670*30mm	7.75
TDP-80W-36	80	18	156	36	770*670*30mm	6.22
TDP-60W-36	60	18	156	36	670*606*25mm	4.38
TDP-50W-36	50	18	156	36	670*540*25mm	3.94
TDP-40W-36	40	18	156	36	670*430*25mm	3.36
TDP-30W-36	30	18	156	36	630*350*25mm	2.46
TDP-20W-36	20	18	156	36	345*250*17mm	1.9
TDP-10W-18	10	18	156	36	345*250*17mm	0.98

## MONO Series



### MAIN FUNCTION:

Solar modules fall into the mid-range of price and efficiency and is aimed at residential and commercial application. It comes in the outputs from 10Watt to 400Watt and is made of high efficiency mono-crystalline silicon solar cell. Each cell is tested and matched to maximized output. The modules are manufactured according to the requirements of international standards with 20 years warranty.



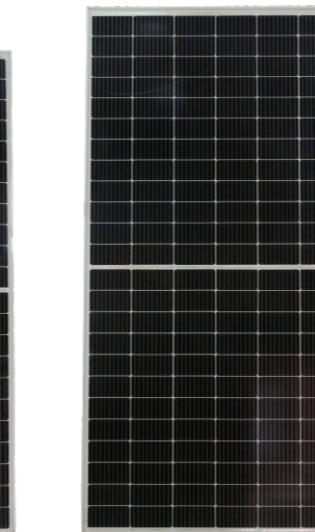
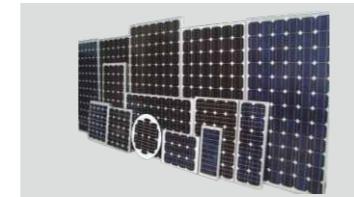
### TECHNICAL PARAMETER

Model	Power Maximum (Pmax,W)	Vmp (V)	Solar Cells Type	Solar Cells Number	Panel size (mm)	Weight (kg)
TDM-400W-72	400	36	156	72	1960*992*40mm	22.43
TDM-390W-72	390	36	156	72	1960*992*40mm	22.43
TDM-380W-72	380	36	156	72	1960*992*40mm	22.43
TDM-370W-72	370	36	156	72	1960*992*40mm	22.43
TDM-360W-72	360	36	156	72	1960*992*40mm	22.43
TDM-350W-72	350	36	156	72	1960*992*40mm	22.43
TDM-340W-72	340	36	156	72	1960*992*40mm	22.43
TDM-330W-72	330	36	156	72	1960*992*40mm	22.43
TDM-320W-72	320	36	156	72	1960*992*40mm	22.43
TDM-310W-72	310	36	156	72	1960*992*40mm	22.43
TDM-300W-60	300	30	156	60	1650*992*40mm	18.25
TDM-290W-60	290	30	156	60	1650*992*40mm	18.25
TDM-280W-60	280	30	156	60	1650*992*40mm	18.25
TDM-270W-60	270	30	156	60	1650*992*40mm	18.25
TDM-260W-60	260	30	156	60	1650*992*40mm	18.25
TDM-250W-60	250	30	156	60	1650*992*40mm	18.25
TDM-240W-60	240	30	156	60	1650*992*40mm	18.25
TDM-200W-72	200	36	156	72	1350*992*40mm	15
TDM-180W-36	180	18	156	36	1480*670*40mm	11.05
TDM-170W-36	170	18	156	36	1480*670*40mm	11.05
TDM-160W-36	160	18	156	36	1480*670*40mm	11.05
TDM-150W-36	150	18	156	36	1480*670*40mm	11.05
TDM-145W-36	145	18	156	36	1480*670*40mm	11.05
TDM-140W-36	140	18	156	36	1480*670*40mm	11.05
TDM-100W-36	100	18	156	36	1020*670*30mm	7.75
TDM-95W-36	95	18	156	36	1020*670*30mm	7.75
TDM-80W-36	80	18	156	36	770*670*30mm	6.22
TDM-60W-36	60	18	156	36	670*606*25mm	4.38
TDM-50W-36	50	18	156	36	670*540*25mm	3.94
TDM-40W-36	40	18	156	36	670*430*25mm	3.36
TDM-30W-36	30	18	156	36	630*350*25mm	2.46
TDM-20W-36	20	18	156	36	345*250*17mm	1.9
TDM-10W-18	10	18	156	36	345*250*17mm	0.98

## MONO HALF-CUT MODULE

### MAIN FUNCTION:

Solar modules fall into the mid-range of price and efficiency and is aimed at residential and commercial application. It comes in the outputs from 440W-600W and is made of high efficiency mono-crystalline silicon solar cell. Each cell is tested and matched to maximized output. The modules are manufactured according to the requirements of international standards with 20 years warranty.



### TECHNICAL PARAMETER

Model No.	Pmax (W)	Vmp (V)	Imp (A)	Voc (V)	Isc (A)	Cells Size (mm)	Cells Qty (PCS)	Cells Array (PCS)	Panel Size (L*W*T mm)	Weight (kg)
<b>9/10/11BB PERC 182MM 580W-600W Mono Crystalline Silicon Solar Panels</b>										
SK-600M	600	45.53	13.18	54.1	14.1	182	156	6*26	2464*1134*35mm	30.0Kg
SK-595M	595	45.39	13.11	53.95	14.03	182	156	6*26	2464*1134*35mm	30.0Kg
SK-590M	590	45.22	13.05	53.8	13.96	182	156	6*26	2464*1134*35mm	30.0Kg
SK-585M	585	45.07	12.98	53.65	13.89	182	156	6*26	2464*1134*35mm	30.0Kg
SK-580M	580	44.9	12.92	53.5	13.82	182	156	6*26	2464*1134*35mm	30.0Kg
<b>9/10/11BB PERC 182MM 530W-550W Mono Crystalline Silicon Solar Panels</b>										
SK-550M	550	41.95	13.12	49.8	13.98	182	144	6*24	2279*1134*35mm	28.5Kg
SK-545M	545	41.80	13.04	49.65	13.92	182	144	6*24	2279*1134*35mm	28.5Kg
SK-540M	540	41.65	12.97	49.5	13.85	182	144	6*24	2279*1134*35mm	28.5Kg
SK-535M	535	41.5	12.9	49.35	13.78	182	144	6*24	2279*1134*35mm	28.5Kg
SK-530M	530	41.35	12.82	49.2	13.71	182	144	6*24	2279*1134*35mm	28.5Kg
<b>9/10BB PERC 182MM 495W-505W Mono Crystalline Silicon Solar Panels</b>										
SK-505M	505	38.52	13.11	45.7	13.97	182	132	6*22	2073*1133*35mm	25.1Kg
SK-500M	500	38.37	13.03	45.55	13.88	182	132	6*22	2073*1133*35mm	25.1Kg
SK-495M	495	38.22	12.95	45.4	13.80	182	132	6*22	2073*1133*35mm	25.1Kg
<b>9/10BB PERC 182MM 430W-450W Mono Crystalline Silicon Solar Panels</b>										
SK-450M	450	34.16	13.85	41.25	13.17	182	120	6*20	1904*1134*35mm	24.5Kg
SK-445M	445	34.01	13.77	41.17	13.09	182	120	6*20	1904*1134*35mm	24.5Kg
SK-440M	440	33.82	13.69	41.05	13.01	182	120	6*20	1904*1134*35mm	24.5Kg
SK-435M	435	33.64	13.61	40.94	12.93	182	120	6*20	1904*1134*35mm	24.5Kg
SK-430M	430	33.46	13.53	40.83	12.85	182	120	6*20	1904*1134*35mm	24.5Kg
<b>9BB PERC 166MM 440W-460W Mono Crystalline Silicon Solar Panels</b>										
SK-460M	460	41.90	10.98	49.7	11.73	166	144	6*24	2094*1038*35mm	23.5Kg
SK-455M	455	41.70	10.92	49.5	11.66	166	144	6*24	2094*1038*35mm	23.5Kg
SK-450M	450	41.50	10.85	49.3	11.6	166	144	6*24	2094*1038*35mm	23.5Kg
SK-445M	445	41.30	10.78	49.1	11.53	166	144	6*24	2094*1038*35mm	23.5Kg
SK-440M	440	41.10	10.71	48.9	11.46	166	144	6*24	2094*1038*35mm	23.5Kg

## Solar Project for Reference



50,000SETS SAKO SOLAR CONTROL INVERTERS INTEGRATED MACHINE TO LIGHT THE TIBET RESIDENTS.



## Solar Project for Reference



SAKO can offer large-scale centralized 3phase energy storage solution



## Solar Project for Reference



## Solar Project for Reference



2015-2017, 30KW SOLAR PUMPING SYSTEM IN YEMEN



HOME SOLAR SYSTEM INSTALLATION IN MIDDLE EAST



Lithium Battery Storage Solar System in South Africa



THE SOLAR POWER SYSTEM FOR HOME USE IN ARGENTINA

