



Efficient, Eco-friendly, Economical

# SOLAR PRODUCT CATALOGUE

"Committed to Delivering Superior Solar Products that Combine Innovation, Sustainability, Efficiency"



**SUZHOU PRETA INTELLIGENCE AND TECHNOLOGY CO.,LTD**



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Suzhou Preta Intelligence and Technology Company Limited was established in 2018. It is a technology company specializing in the research, development and sales of integrated solar energy storage systems, portable power source, and other related products, as well as energy storage solutions. The company is based in Huaqiao, Kunshan, which is only a 25-minute drive from Shanghai Hongqiao Airport and high-speed rail station.

Suzhou Preta Intelligence and Technology Company Limited always puts customer needs first and takes technological innovation as the driving force for development. It has a technically experienced and highly innovative team. The company's products have also been certified by well-known domestic and international certifications such as CE, BIS, MSDS, UN38.3 and other related certifications. The products are exported to more than 20 countries worldwide, including Europe, Southeast Asia, India, South Africa, and other areas. Our own brand HBOWA has achieved great reputation in Europe, Africa and Southeast Asia.

## VISION

Cultivate top talents,  
 Construct a Creative business Enterprise,  
 Promote the development of new energy.

## MISSION

Intelligence creates quality,  
 Whole-hearted service,  
 Win the future together.

## VALUES

Sincere, Promising,  
 Combative, Enterprising.



Automatic  
Production Line



Adhering to the production concept of intelligent manufacturing, Suzhou Preta Intelligence and Technology Co.,Ltd has realized the automation of the whole process of cell module assembly, which covers OCV detection, tab cutting, CCS installation, bending and rolling, tab Busbar welding, traceable MAS system, etc mainstream technology, continues to realize the real short delivery cycle through "functional modularization, mechanism standardization, and parts generalization".

OUR FACTORY



Advanced production technology

We have been working on continuous product quality testing, to ensure product quality meets standards



BMS Testing

Aging Detection

Internal Resistance Detection

Volume separation detection



ISO 9001



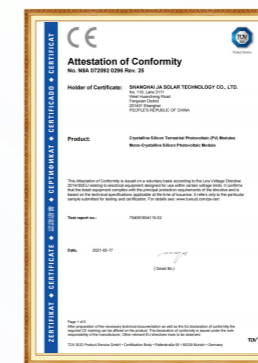
ISO 14001



ISO 45001



CE



CE



TUV



CQC



UN38.3



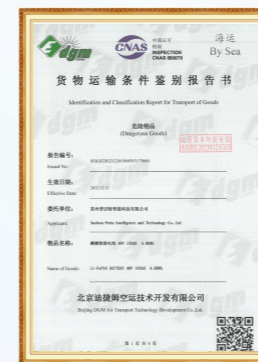
MSDS



BIS



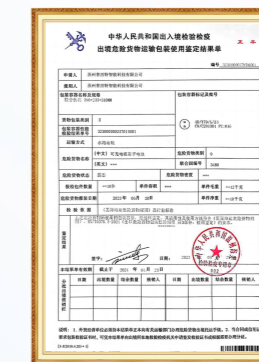
Patent



CNAS By Sea



Hazard  
Characteristics



Dangerous Goods  
Declaration



Patent

Focus on providing high-quality solutions for  
**Residential / Industrial / Commercial**  
**Energy Storage Systems**



## 铅酸替代锂电池组

### LEAD ACID REPLACEMENT BATTERY PACK



Our Lithium Iron Phosphate (LiFePO4) battery is the perfect replacement for traditional lead-acid batteries in home energy storage systems. It offers higher energy density, longer lifespan, and better charge/discharge efficiency. Lighter and more compact, it maintains excellent performance even after many cycles. With superior safety and stability, it's ideal for solar energy systems, grid storage, and backup power solutions.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
12.8V-48V

**Capacity:**  
50Ah, 100Ah, 150Ah, 200Ah 300Ah

**Energy:**  
0.5~5KWh

**BMS Communication Protocol:**  
CAN, RS485, RS232

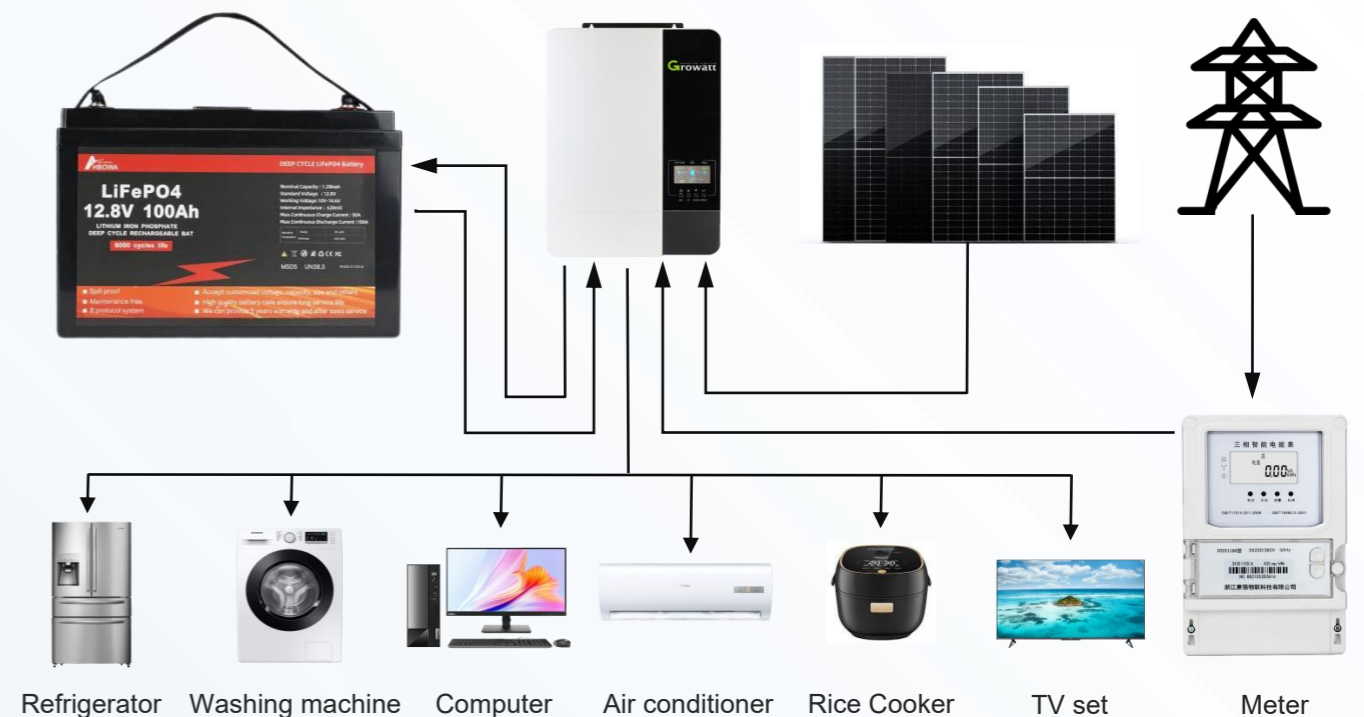
**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

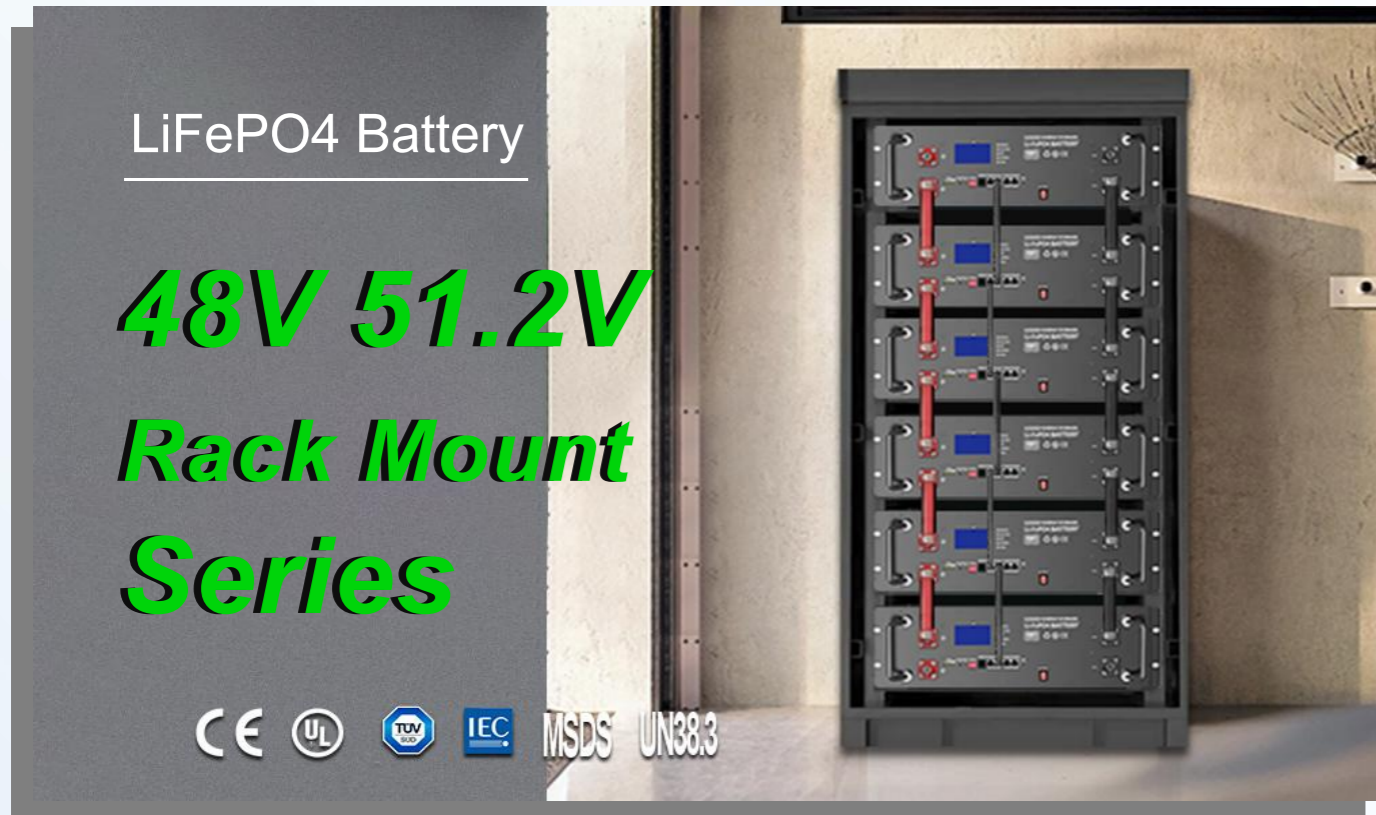
Model	XPD-1250	XPD-12100	XPD-12150	XPD-12200	XPD-24100	XPD-48100
Capacity	12V50Ah	12V100Ah	12V150Ah	12V200Ah	24V100Ah	48V100Ah
Continuous Discharge Current	25A	50A	50A	100A	50A	50A
Peak Protection Current	50A	100A	100A	200A	100A	100A
Working Voltage	10-14.6V			20-29.2V		37.5-54.75V
Standard Voltage	12.8V			25.6V		48V
Continuous Work Current	25A	50A	50A	100A	50A	50A
Max Charge Voltage	14.6V			29.2V		54.75V
Suggested DoD Model	90%					
Size(mm)	330*172*216	332*172*216	332*172*220	532*207*215	345*190*245	520*267*220
Humidity	<85%					
Cooling Type	Natural Cooling					
IP	IP65					
Useful Life	8-10 Years					
Certification Standard						
Safe Certifications	CE,FCC, CCC					
Shipping Classification	UN 38.3, UN 3480, Class 9					

**Advantage:** High-performance LiFePO4 battery cell, Long cycle life, safe, stable, lightweight, and easy to carry, All functions and specification can be easily customized.



## 机架式储能电池组

### RACK-MOUNTED COMMUNICATION LIFEPO4 BATTERY PACK



Our rack-mounted Lithium Iron Phosphate (LiFePO4) battery is designed for seamless integration into home and commercial energy storage systems. With its modular design, it can be easily scaled to meet various energy needs. This battery offers high energy density, exceptional cycle life, and superior safety features, making it an ideal choice for both solar energy storage and backup power applications. Its compact, rack-mounted form factor ensures efficient use of space and easy installation.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
25.6V-51.2V

**Capacity:**  
50Ah,100Ah,150Ah,200Ah 280Ah

**Energy:**  
5KWh~15KWh

**Size:**  
Standard Size 2U,3U,4U,5U

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	XPA-24100	XPA-51100	XPA-51200	XPA-51280
Standard Voltage	25.6VDC	51.2VDC		
Voltage	21.6-28.8VDC	43.2-57.6VDC		
Norminal Capacity	100Ah	100Ah	150Ah	200Ah
Rated Capacity	2.56kWh	5.12kWh	10.24kWh	14.33kWh
Communication Protocol	CAN / RS485 / WIFI / 4G / Blue Tooth			
Efficiency (at 0.5C)	98%			
Cell Self-Discharge	<5 % / Month			
Maximum Allowed Modules in Parallel	15 (38.4kWh)	15 (76.8kWh)	15 (153.6kWh)	15 (215kWh)
Depth of Discharge	Up to 100%			
Useful Life	8-10 Years			
Cycle Life	6000 (@ 80% DoD)			
Protection	Over temperature, overcurrent, short circuit, over-charging, over-discharging, Low voltage			
<b>Charge Specifications</b>				
Recommended Charge Current	50A	50A	50A	100A
Maximum Charge Current	100A	100A	100A	200A
Recommended Charge Voltage	28.8V	57.6V		
Recommended Discharge Current	50A	50A	50A	100A
Maximum Discharge Current	100A	100A	100A	200A
Battery Recovery Voltage	21.6V	43.2V		
<b>Mechanical Specifications</b>				
Dimensions (mm)	484*330*165	484*425*176.5	520*773*164.5	484*750*240
Terminal Type	M6	M8		
Case Material	Industrial Grade Iron			
Enclosure Protection	IP20			
Installation	Cabinet			
Cell Type Chemistry	LiFeP04			
<b>Temperature Specifications</b>				
Discharge Temperature	-20~60°C	-20~60°C	-20~60°C	-20~60°C
Charge Temperature	0~55°C	0~55°C	0~55°C	0~55°C
Storage Temperature	-20~55°C	-20~55°C	-20~55°C	-20~55°C
<b>Certification Standard</b>				
Certifications	CE,FCC, CCC			
Shipping Classification	UN 38.3, UN 3480, Class 9			

**Advantage:** High-performance LiFePO4 battery cell, Long cycle life, safe, stable, lightweight, and easy to carry, All functions and specification can be easily customized.

## 壁挂式储能电池组

### WALL-MOUNTED POWER WALL TYPE LIFEPO4 BATTERY PACK



Our wall-mounted Lithium Iron Phosphate (LiFePO4) battery is the perfect solution for modern home energy storage. Designed for easy installation and minimal space usage, it combines high energy density with long cycle life and robust safety features. Ideal for solar energy systems and backup power, this battery ensures reliable performance and efficient energy management, all while being conveniently mounted on your wall.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
51.2V

**Capacity:**  
100Ah, 150Ah, 200Ah, 280Ah

**Energy:**  
5KWh~15KWh

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	XPB-51100	XPB-51150	XPB-51200	XPB-51280
Standard Voltage	51.2VDC			
Voltage	43.2-57.6VDC			
Norminal Capacity	100Ah	150Ah	200Ah	280Ah
Rated Capacity	5.12kWh	7.68kWh	10.24kWh	14.33kWh
Communication Protocol	CAN / RS485 / WIFI / 4G / Blue Tooth			
Efficiency (at 0.5C)	98%			
Cell Self-Discharge	<5 % / Month			
Maximum Allowed Modules in Parallel	15 (76.8kWh)	15 (115.2kWh)	15 (153.6kWh)	15 (215kWh)
Depth of Discharge	Up to 100%			
Useful Life	8-10 Years			
Cycle Life	6000 (@ 80% DoD)			
Protection	Over temperature, overcurrent, short circuit, over-charging, over-discharging, Low voltage			
<b>Charge Specifications</b>				
Recommended Charge Current	50A	50A	50A	100A
Maximum Charge Current	100A	100A	100A	200A
Recommended Charge Voltage	57.6V			
Recommended Discharge Current	50A	50A	50A	100A
Maximum Discharge Current	100A	100A	100A	200A
Battery Recovery Voltage	43.2V			
<b>Mechanical Specifications</b>				
Dimensions (mm)	410*592*160	530*1060*160	530*1060*160	530*800*267
Terminal Type	M6			M8
Case Material	Industrial Grade Iron			
Enclosure Protection	IP20(IP54)			
Installation	Wall-mounted			
Cell Type Chemistry	LiFeP04			
<b>Temperature Specifications</b>				
Discharge Temperature	-20~60°C	-20~60°C	-20~60°C	-20~60°C
Charge Temperature	0~55°C	0~55°C	0~55°C	0~55°C
Storage Temperature	-20~55°C	-20~55°C	-20~55°C	-20~55°C
<b>Certification Standard</b>				
Certifications	CE,FCC, CCC			
Shipping Classification	UN 38.3, UN 3480, Class 9			

**Advantage:** High-performance LiFePO4 battery cell, Long cycle life, safe, stable, lightweight, and easy to carry, All functions and specification can be easily customized.

## 堆叠式储能电池组

### STACKED ENERGY STORAGE SYSTEM BATTERY PACK



Our stackable Lithium Iron Phosphate (LiFePO4) battery system integrates seamlessly with inverters, allowing for easy stacking and expansion. With high energy density, long cycle life, and advanced safety features, it offers scalable energy capacity for residential and commercial applications. Reliable performance and adaptability make it an ideal choice for diverse energy storage needs.

#### Module Specification

**Cell type:**

LiFePO4(LFP)

**Nominal voltage:**

51.2V

**Capacity:**

100Ah. 5.12kWh per pack, Max.15 packs in parallel

**Energy:**

5KWh~30KWh

**BMS Communication Protocol:**

CAN, RS485, RS232

**Application:**

Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	XPC 5kw+5.12kwh	XPC 5kw+10.24kwh	XPC 5kw+15.36kwh	XPC 5kw+20.48kwh	XPC 5kw+25.6kwh
<b>Lithium Battery</b>					
Single module capacity	5.12kwh				
Module number	1pcs	2pcs	3pcs	4pcs	5pcs
Total capacity	5.12kwh	10.24kwh	15.36kwh	20.48kwh	25.6kwh
Standard voltage	51.2V				
Working voltage	43.2V-57.6V				
Standard discharge current	100A				
Standard charging current	50A				
Suggested DOD	90%				
Humidity	20%-60%				
Installation	Stacked				
IP rating	IP20				
Communication	CAN/RS485/RS232(WIFI,bluetooth is optional and need extra cost)				
Product size/unit	550*500*185mm				
N.W./unit	40kg				
<b>Battery Input</b>					
Battery type	LFP				
Rated Battery Input Voltage	48V ( Minimum Star tup Voltage 44V)				
Hybrid Charging Maxi mum Charging Current	80A				
Battery Voltage Range	40VDC~60VDC ± 0.6VDC(Under voltage Warning/Shutdown Voltage/Over voltage Warning/Over voltage Recovery...)				
<b>Solar Input</b>					
Maximum PV Open-circuit Voltage	500vDC				
PV Working Voltage Range	120-500VDC				
MPPT Voltage Range	120-450VDC				
Maximum PV Input Current	18A				
Maximum PV Input Power	5200W				
Maximum PV Charging Current	80A				
<b>AC Input (generator/grid)</b>					
Mains Maximum ChargingCurrent	60A				
Rated Input Voltage	220/230VAC				
Input Voltage Range	UPS Mains Mode: (170VAC~280VAC)±2% APL Generator Mode: (90VAC-280VAC)±2%				
Frequency	50Hz/ 60Hz (Automatic Detection)				
Mains Charging Efficiency	>95%				
Switch Time (bypass and inverter)	10ms(Typical Value)				
Maximum Bypass Overload Current	40A				
<b>AC Output</b>					
Output Voltage Waveform	Pure Sine Wave				
Rated Output Voltage (VAC)	230VAC (200/208/220/240VAC)				
Rated Output Power (VA)	5000( 4350/4500/4800/5000)				
Rated Output Power(W)	5000( 4350/4500/4800/5000)				
Peak Power	10000VA				
On-load Motor Capacity	4HP				
Output Frequency Range(Hz)	50Hz±0.3Hz/60Hz±0.3Hz				
Maximum Efficiency	>90%				
No-load Loss	Non Energy-saving Mode: <50W Energy-saving Mode: <25W (Manual Setup)				



## 高压堆叠储能电池组

### HIGH-VOLTAGE STACKED BATTERY ENERGY STORAGE SYSTEM



Our high-voltage stackable Lithium Iron Phosphate (LiFePO<sub>4</sub>) battery system is designed for easy stacking and expansion in residential and commercial energy storage applications. With high energy density, long cycle life, and advanced safety features, it provides scalable energy capacity to meet growing demands. This battery system offers flexibility to integrate with external inverters, allowing for customized energy management solutions tailored to specific needs.

#### Module Specification

**Cell type:**

LiFePO<sub>4</sub>(LFP)

**Nominal voltage:**

102.4V

**Capacity:**

50Ah. 5.12kWh per pack

**Energy:**

10KWh~30KWh

**BMS Communication Protocol:**

CAN, RS485, RS232

**Application:**

Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	HVXP-P10.24	HVXP-P15.36	HVXP-P20.48
Stacking quantity	2pcs	3pcs	4pcs
Rated power	10.24kWh	15.36kWh	20.48kWh
Rated voltage	204.8V	307.2V	409.6V
working voltage range	160~233.6V	240~350.4V	320~467.2V
Size/mm	530*190*1186	530*190*1569	530*190*1952
Weight	106kg	150kg	195kg
Discharge rate max	0.8C/40A		
Charging rate max	0.5C/25A		
Discharge working temperature	-20°C~55°C		
Charging working temperature	0°C ~55 °C		
Rated capacity	>50Ah@23°C BOL		
Protection level	IP54		
Charging and discharging efficiency	>96%		
Communication method	CAN/RS485		
Certification Standard			
Safe Certifications	CE,FCC, CCC		
Shipping Classification	UN 38.3, UN 3480, Class 9		

#### Advantage:

Modular stacking design, flexible matching of energy storage units, expansion on demand, single-layer module capacity, built-in integrated inverter, convenient, lightweight, highly mobile, saving household electricity costs.

#### Features:

- Built-in soft-start function to reduce current impact.
- When multiple modules are series connected, module addresses are set automatically.
- Support for upgrading the battery module from the upper controller through CAN communication.
- The module is non-toxic, non-polluting and environmentally friendly.
- Cathode material is made from LiFePO<sub>4</sub> with safety performance and long cycle life.
- Battery management system (BMS) has protection functions including over-discharge, over-charge, over-current and high/low temperature.
- The system can automatically manage charge and discharge state and balance voltage of each cell.
- Flexible configuration, multiple battery modules can be connected to expand capacity and power.
- Adopted self-cooling mode rapidly reduced system entire noise.
- The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge.

## 高压堆叠储能电池组

### HIGH-VOLTAGE STACKED BATTERY ENERGY STORAGE SYSTEM



Our high-voltage stackable Lithium Iron Phosphate (LiFePO4) battery system, equipped with hybrid inverter, offers a comprehensive energy storage solution. Designed for seamless stacking and expansion, it delivers scalable energy capacity for residential and commercial applications. With its high energy density, long cycle life, and advanced safety features, this battery system ensures reliable performance and adaptability, providing uninterrupted power supply with built-in inverter functionality.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
102.4V

**Capacity:**  
50Ah. 5.12kWh per pack

**Energy:**  
10KWh~20KWh

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	HPIXP-P10.24	HPIXP-P15.36	HPIXP-P20.48
<b>Battery parameter</b>			
Single module capacity	5.12kWh		
Standard capacity	50Ah		
Standard voltage	102.4V		
Useful Life	8-10 Years		
Cycle Life	6000 (@ 80% DoD)		
Discharge rate max	0.8C/40A		
Charging rate max	0.5C/25A		
Module number	2pcs	3pcs	4pcs
Rated power	10.24kWh	15.36kWh	20.48kWh
Rated voltage	204.8V	307.2V	409.6V
working voltage range	160~233.6V	240~350.4V	320~467.2V
Size/mm	530*190*1186	530*190*1569	530*190*1952
Weight	106kg	150kg	195kg
<b>Mechanical Specifications</b>			
Case Material	Industrial Grade Iron		
Enclosure Protection	IP54		
Installation	Stacked		
Communication Protocol	CAN/RS485		
Working Temperature	0~55°C		
Storage Temperature	-20~55°C		
Humidity	≤80%		
<b>Certification Standard</b>			
Safe Certifications	CE,FCC, CCC		
Shipping Classification	UN 38.3, UN 3480, Class 9		

#### Features:

- Built-in soft-start function to reduce current impact.
- When multiple modules are series connected, module addresses are set automatically.
- Support for upgrading the battery module from the upper controller through CAN communication.
- The module is non-toxic, non-polluting and environmentally friendly.
- Cathode material is made from LiFePO4 with safety performance and long cycle life.
- Battery management system (BMS) has protection functions including over-discharge, over-charge, over-current and high/low temperature.
- The system can automatically manage charge and discharge state and balance voltage of each cell.
- Flexible configuration, multiple battery modules can be connected to expand capacity and power.
- Adopted self-cooling mode rapidly reduced system entire noise.
- The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge.

## 高压堆叠储能电池组

### HIGH-VOLTAGE STACKED BATTERY ENERGY STORAGE SYSTEM



#### High-Voltage Stacked Battery

Long cycle life, 6000 times cycle, 5 years warranty

It is equipped with intelligent BMS for each battery pack to manage modules effectively.

Our high-voltage stackable LiFePO4 battery system offers a scalable energy storage solution for residential and commercial applications. With its high-voltage design, it allows for efficient power conversion and integration with renewable energy systems. The stackable configuration enables easy expansion to meet growing energy demands. Equipped with advanced safety features and reliable performance, our high-voltage stackable battery provides a flexible and sustainable solution for your energy storage needs.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
51.2V / 102.4V

**Capacity:**  
50Ah / 100Ah. 5.12kWh per pack

**Energy:**  
10KWh~20KWh

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	XPHVD-512100	XPHVD-102450
Battery parameter		
Cell type	LFP	
Rated voltage	51.2V	102.4V
Rated capacity	100Ah	50Ah
Standard capacity	5.12kWh	
Charging and discharge rate max	1C/100A	1C/50A
Dimensions	550*500*171 mm	
Weight	40kg	
Useful Life	8-10 Years	
Cycle Life	6000 (@ 80% DoD)	
Module number max	8pcs	6pcs
Rated voltage	409.6V	614V
working voltage range	345.6~460.8V	518.4~691.2V
Rated capacity	40.93kwh	30.72kwh
Dimensions	550*500*1629 mm	550*500*1287 mm
Mechanical Specifications		
Case Material	Industrial Grade Iron	
Enclosure Protection	IP20	
Installation	Stacked	
Communication Protocol	CAN/RS485 (WIFI, Bluetooth optional)	
Working Temperature	0~55°C	
Storage Temperature	-20~55°C	
Humidity	≤80%	
Certification Standard		
Safe Certifications	CE,FCC, CCC	
Shipping Classification	UN 38.3, UN 3480, Class 9	

#### Features:

- Built-in soft-start function to reduce current impact.
- When multiple modules are series connected, module addresses are set automatically.
- Support for upgrading the battery module from the upper controller through CAN communication.
- The module is non-toxic, non-polluting and environmentally friendly.
- Cathode material is made from LiFePO4 with safety performance and long cycle life.
- Battery management system (BMS) has protection functions including over-discharge, over-charge, over-current and high/low temperature.
- The system can automatically manage charge and discharge state and balance voltage of each cell.
- Flexible configuration, multiple battery modules can be connected to expand capacity and power.
- Adopted self-cooling mode rapidly reduced system entire noise.
- The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge.

## 落地式储能电池

### FLOOR-STANDING BATTERY ENERGY STORAGE SYSTEM



Our floor-standing energy storage battery offers a substantial capacity of 51.2V and 280Ah, totaling 15kWh. Designed for robust performance and long-term reliability, this battery is suitable for residential, commercial, and industrial applications. Its floor-standing design ensures easy installation and convenient access for maintenance. With ample energy storage capacity, it provides a reliable backup power source during outages and contributes to overall energy efficiency in your system.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
51.2V

**Capacity:**  
280Ah

**Energy:**  
15KWh, max parallel: 15pcs

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	XPE-51280
Standard Voltage	51.2VDC
Voltage	43.2-57.6VDC
Norminal Capacity	280Ah
Rated Capacity	14.35kWh
Communication Protocol	CAN / RS485 / WIFI / 4G / Blue Tooth
Efficiency (at 0.5C)	98%
Cell Self-Discharge	<5 % / Month
Maximum Allowed Modules in Parallel	15 (215.04kWh)
Depth of Discharge	Up to 100%
Useful Life	8-10 Years
Cycle Life	6000 (@ 80% DoD)
Protection	Over temperature, overcurrent, short circuit, over-charging, over-discharging, Low voltage
<b>Charge Specifications</b>	
Recommended Charge Current	100A
Maximum Charge Current	200A
Recommended Charge Voltage	57.6V
Recommended Discharge Current	100A
Maximum Discharge Current	200A
Battery Recovery Voltage	43.2V
<b>Mechanical Specifications</b>	
Dimensions (mm)	850*530*250
Terminal Type	M8
Case Material	Industrial Grade Iron
Enclosure Protection	IP20
Installation	Floor-standing
Cell Type Chemistry	LiFePO4
<b>Temperature Specifications</b>	
Discharge Temperature	-20~60°C
Charge Temperature	0~55°C
Storage Temperature	-20~55°C
<b>Certification Standard</b>	
Certifications	CE,FCC, CCC
Shipping Classification	UN 38.3, UN 3480, Class 9

**Advantage:** High-performance LiFePO4 battery cell, Long cycle life, safe, stable, lightweight, and easy to carry, All functions and specification can be easily customized.

## 储能系统一体机

### ALL-IN-ONE ENERGY STORAGE SYSTEM



Our All-in-One energy storage system is wall-mounted or floor-installable, combining a 3kW off-grid inverter with a 2.5kWh battery. Versatile and space-saving, it ensures reliable power conversion and uninterrupted operation for residential and small commercial applications. With high-quality components and advanced control features, our All-in-One system delivers stable and sustainable energy supply for your home or business.

#### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Nominal voltage:**  
25.6V

**Capacity:**  
100Ah

**Energy:**  
2.5KWh + 3KW Off-grid Inverter

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS



#### PRODUCT SPECIFICATION

Model	XPF 3kW+2.5kWh All-in-one		
AC Output	Rated output power	3000W	
	Output waveform	pure sine wave	
	Frequency	50Hz±3 or 60Hz±3	
	Output voltage	220V-240VAC±5%	
	Output socket	Multifunctional (Japanese, American, European, Australian style optional)	
	Soft startup	yes	
	Waveform distortion	THD<3%	
	Protective function	Battery undervoltage, overvoltage protection, output overload protection, overtemperature protection, short circuit protection, anti-reverse connection protection	
Parallel interface	Anderson	Number of parallel connections: 2	
Communication	WIFI		
AC input	Mains power input	230V AC voltage (50Hz/60Hz)	
Switch	AC Inverter Switch, DC Li-ion Battery Switch		
Display	Display content	LED smart display	
	Battery Type	100Ah LiFePO4 battery	
Lithium batteries	Rated Capacity	25.6V/100Ah	
	Battery voltage range	21.6V-28.8V	
	Minimum charging current	5A	
	Maximum continuous charging current	100A	
	Maximum continuous discharge current	100A	
	Maximum pulse discharge current	100A(1s)	
	Normal temperature cycle life	6000 cycles at 25° C at room temperature	
	Smart cooling method	Smart fan cooling	
Working temperature	-20~60° C		
Storage temperature	-20-55°C		
Humidity	Maximum 90%, non-condensing		
Useful years	8-10 years		
Product dimensions	410*840*195mm		
Weight	50kg		
Certification Standard			
Certifications	CE,FCC, CCC		
Shipping Classification	UN 38.3, UN 3480, Class 9		

#### Features:

- The module is non-toxic, non-polluting and environmentally friendly.
- Cathode material is made from LiFePO4 with safety performance and long cycle life.
- Battery management system (BMS) has protection functions including over-discharge, over-charge, over-current and high/low temperature.
- The system can automatically manage charge and discharge state and balance voltage of each cell.
- Adopted self-cooling mode rapidly reduced system entire noise.
- The module has less self-discharge, up to 6 months without charging it on shelf, no memory effect, excellent performance of shallow charge and discharge
- Multi-functional LED intelligent digital screen display.

## 室内外储能机柜 (家用/商用)

### INDOOR/OUTDOOR ENERGY STORAGE CABINET(HOME/COMMERCIAL)



## HIGH VOLTAGE ENERGY STORAGE SYSTEM BATTERY

Home | Commercial

20KW/50kWh | 30KW/60kWh

### Integrated, unlimited possibilities

Flexible expansion | Safe and reliable | Cost-effective |  
Smart and friendly | Minimalist operation and maintenance

Our indoor/outdoor energy storage cabinet comes equipped with an integrated inverter, making it a comprehensive solution for both residential and commercial applications. Available in two configurations, 50kWh with a 25kW hybrid inverter and 60kWh with a 30kW hybrid inverter, this cabinet provides ample energy storage capacity along with seamless power conversion capabilities. Whether installed indoors or outdoors, it offers robust protection for your energy storage system components while ensuring efficient energy management and reliable operation for your home or business.

### Module Specification

**Cell type:**  
LiFePO4(LFP)

**Single module capacity:**  
102.4V100Ah, 10.24kWh

**Energy:**  
20KW Inverter + 51.2kWh Battery  
30KW Inverter + 61.4kWh Battery

**BMS Communication Protocol:**  
CAN, RS485, RS232

**Application:**  
Home Ess, Solar Ess, Solar off grid backup system, Solar Hybrid inverter UPS, Villa, Hospital, Supermarket



### PRODUCT SPECIFICATION

Model	XPB-20kw50kWh	XPB-30kw60kWh
<b>Lithium Battery</b>		
Cell type	LFP	
Single module capacity	10.24kWh	
Module number	5pcs	6pcs
Nominal Capacity	51.2kWh	61.4kWh
Nominal Voltage	512V	614.4V
Working voltage	432V-576V	518.4V-691.2V
Suggested DOD	80%	
Humidity	20%-60%	
Installation	Cabinet	
Communication	CAN/RS485/RS232(WIFI,bluetooth is optional and need extra cost)	
Product size/unit	773*560*165mm	
N.W./unit	80kg	
<b>Solar Input</b>		
Maximum PV Open-circuit Voltage	1000VDC	
PV Working Voltage Range	180VDC	
MPPT Voltage Range	150-850VDC	
Maximum PV Input Current	26+26A	36+36+36A
Maximum PV Input Power	39+39A	55+55+55A
Maximum PV Charging Current	26000W	39000W
<b>AC Output</b>		
Rated output current	30A	45A
Rated output voltage	220/380/VAC, 230/400/VAC	
Frequency	50Hz/ 60Hz	
Rated output power	20000W	30000W
Mains Type	Three phase	
Maximum bypass overload current	80A	200A
<b>Mechanical Specifications</b>		
Dimensions	1170*1031*1636mm	
Enclosure Protection	IP54	
Working Temperature	0~55°C	
Storage Temperature	-20~55°C	
Cooling Method	Air cooling/Natural cooling	
<b>Certification Standard</b>		
Safe Certifications	CE,FCC, CCC	
Shipping Classification	UN 38.3, UN 3480, Class 9	

### Features:

- The module is non-toxic, non-polluting and environmentally friendly.
- Cathode material is made from LiFePO4 with safety performance and long cycle life.
- Built-in start function to reduce current impact.
- When multiple modules are series connected, module addresses are set automatically.
- Support for upgrading the battery module from the upper controller through CAN communication.
- Battery management system (BMS) has protection functions including over- discharge, over-charge, over-current and high/low temperature.
- The system can automatically manage charge and discharge state and balance voltage of each cell.
- Adopted self-cooling mode rapidly reduced system entire noise.
- Suitable for load design of household appliances, communication base stations, optical storage devices, etc., easy to install and operate.
- Self-consumption and feed-in to the grid, Programmable multiple operation modes: On grid, off grid and UPS.
- Supporting WiFi(optional) monitoring and build-in 2 strings for 1 MPP tracker, 1 string for 1 MPP tracker

便携式户外储能电源

PORTABLE POWER STATION (HOME/OUTDOOR)



PRODUCT SPECIFICATION

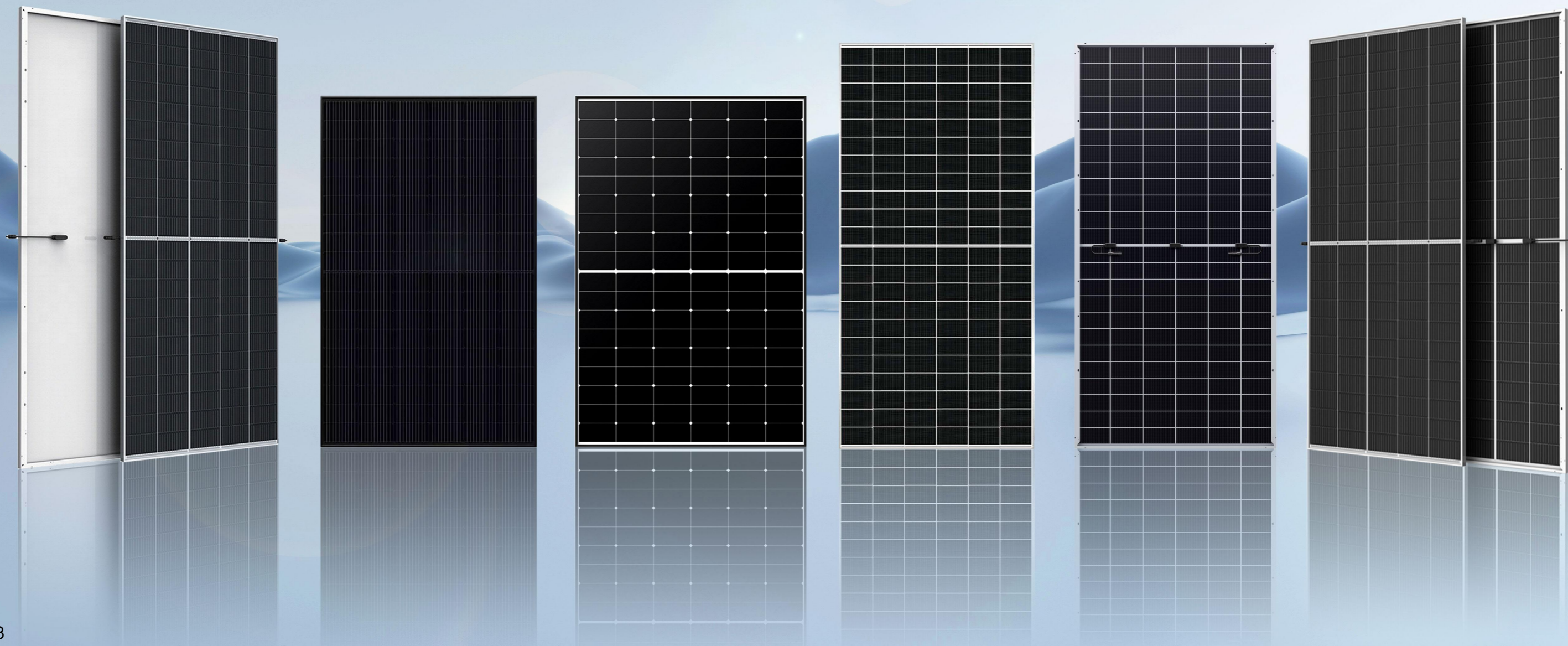
Model	Capacity (WH)	Specification	Packing
G1000 Power Station	1000WH (15.5-16V/64AH)	Mainframe size:375*235*223mm Mainframe weight:13KG Rated power:1000W Rated voltage:15.5-16V Material:Aluminium Ally+ABS Charging time: Adapter about 5hrs, Car charging About 10hrs, solar charging (100W) about 12hrs Accessories:Adapter*1, Vehicle charging to DC line *1, Manual*1	Packin: UN Box 1PCS in a UN Box Package size: 485*338*365mm N.W/G.W:13.4/15.9kg
S300 Power Station	299.52WH (14.8V/20.2AH)	Mainframe size:209*171*221mm Mainframe weight:4.8KG Rated power:300W Rated voltage:110V-240V Material:Aluminium Ally Charging time: Adapter about 5hrs, Car charging About 3hrs, solar charging (100W) about 3hrs Accessories:Adapter*1, Vehicle charging to DC line *1, Manual*1	Packing: UN Box 1PCS in a UN Box Package size: 315*285*320mm N.W/G.W: 4.8/6.6kg
S600 Power Station	500.24WH (14.8V/33.8AH)	Mainframe size:209*171*221mm Mainframe weight:5.8KG Rated power:500W Rated voltage:110V-240V Material:Aluminium Ally Charging time: Adapter about 5hrs, Car charging About 20hrs, solar charging (100W) about 5hrs Accessories:Adapter*1, Vehicle charging to DC line *1, Manual*1	Packing: UN Box 1PCS in a UN Box Package size: 315*285*320mm N.W/G.W: 5.8/7.6kg
S1200 Power Station	1038.96Wh (14.8V/70.2AH)	Mainframe size:209*173*303mm Mainframe weight:9.7KG Rated power:1000W Rated voltage:110V-240V Material:Aluminium Ally Charging time: Adapter about 5hrs, Car charging About 10hrs, solar charging (200W) about 5hrs Accessories:Adapter*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 405*301*330mm N.W/G.W:9.7/11.7kg
S1200-1 Power Station	1008WH (22.5V45AH)	Mainframe size:375*235*223mm Mainframe weight:13KG Rated power:1000W Rated voltage:110V-240V Material:Aluminium Ally+ABS Charging time: Power line AC Input About 2hrs, Car charging About 10hrs, Solar charging (500W) about 2hrs Accessories:Power line*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 490* 310*345mm N.W/G.W:11.8/13.8kg
G1200 Power Station	1008WH (22.5V45AH)	Mainframe size:355*185*285mm Mainframe weight:13KG Rated power:1000W Rated voltage:110V-240V Material:Aluminium Ally+ABS Charging time: Power line AC Input About 2hrs, Car charging About 10hrs, Solar charging (500W) about 2hrs Accessories:Power line*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 490*310*345mm N.W/G.W:13.2/15.2kg
G2000 Power Station	2106WH (22.4V/94AH)	Mainframe size:355*185*315mm Mainframe weight:19KG Rated power:2000W Rated voltage:110V-240V Material:Metal+PC Charging time: Power line AC Input About 2hrs, Car charging About 20hrs, Solar charging (400W) about 5hrs Accessories:Power line*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 391*221*351mm N.W/G.W: 19/21kg
S2000 Power Station	2000WH (22.4V/90AH)	Mainframe size:375*235*223mm Mainframe weight:26KG Rated power:2000W Rated voltage:110V-240V Material:Metal+PC Charging time: Power line AC Input About 2hrs, Car charging About 8hrs, Solar charging (800W) about 3hrs Accessories:Power line*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 585*328*442mm N.W/G.W:26/29kg
2000w Power Station	2106WH (22.4V/94AH)	Mainframe size:397*550*530mm Mainframe weight:23.6KG Rated power:2000W Rated voltage:110V-240V Material:Metal+PC Charging time: Power line AC Input About 2hrs, Car charging About 20hrs, Solar charging (400W) about 5hrs Accessories:Power line*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 478*358*450mm N.W/G.W:22.4/26kg
2000w Power Station	2000WH (31-32V/64AH)	Mainframe size:495.5*269*302H mm Mainframe weight:26KG Rated power:2000W Rated voltage:31-32V Material:ABS Charging time: Adapter about 2hrs, Car charging About 17hrs, solar charging (800W) about 3hrs Accessories:Power line*1, Vehicle charging to DC line *1, Manual*1	Packing:UN Box 1PCS in a UN Box Package size: 530*310*379mm N.W/G.W:24/29KG



## PERC/N-Type/HJT/Bifacial

### Newest Technology Solar Panels

- ✓ 210mm 400W-670W
- ✓ 182mm 400W-420W/540W-560W
- ✓ 166mm 380W-400W/440W-460W
- ✓ N-Type 550W-585W/670W-700W





# HBOWA Trustworthy Quality

## Robust Quality Certified

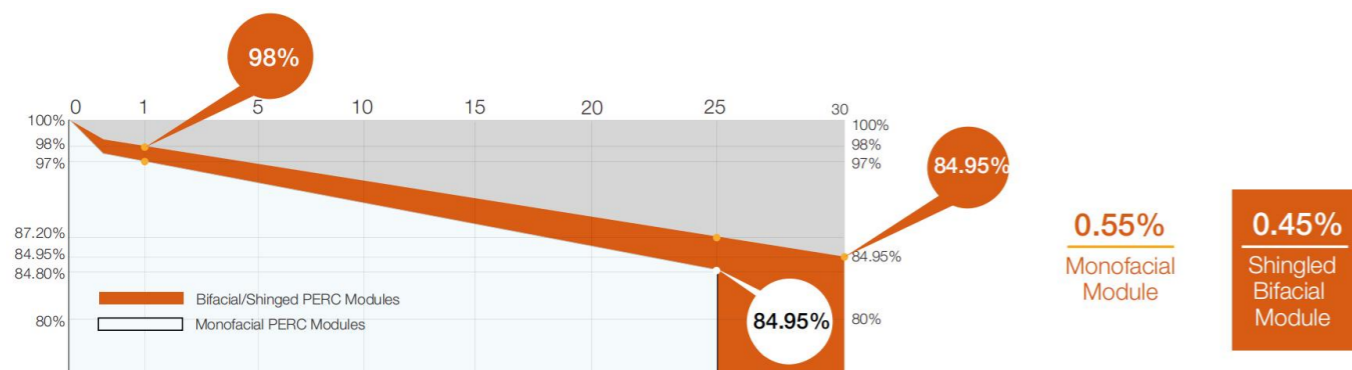
HBOWA is fully certified by professional third party testing organizations. Like TUV, UL. The modules can adapt to harsh climate environment.



## Advanced Warranty Guarantee

FIRST-YEAR POWER WARRANTY OF  $\geq 98\%$  FOR PV MODULES

Based on the advanced mono wafer and anti-LID technology, HBOWA offers a first-year power warranty of  $\geq 98\%$  for PV modules.



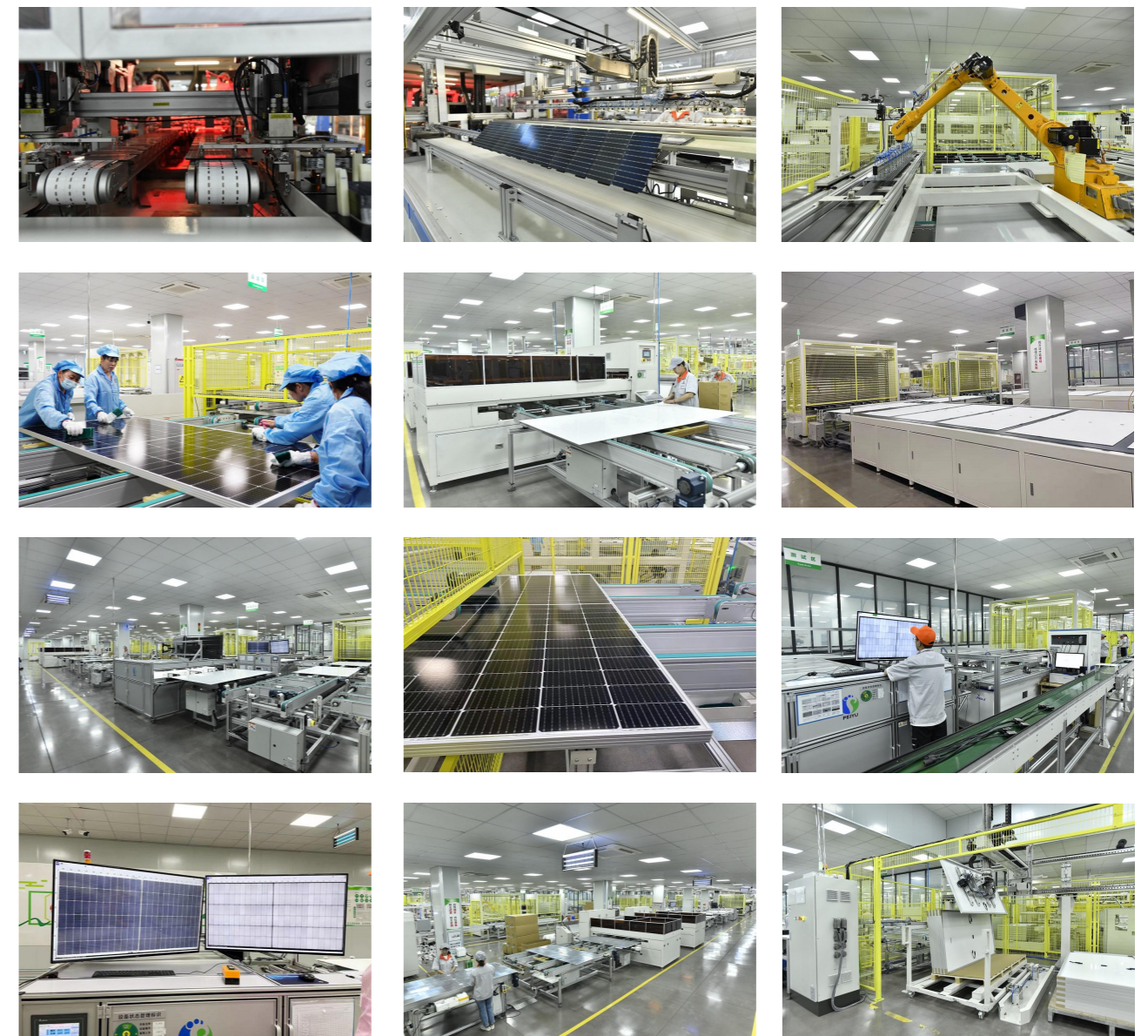
HBOWA Provides a 12-year product warranty (a 15-year warranty for Shingled products) and a 25-year performance warranty for all products (a 30-year warranty for Shingled/Bifacial products).

Through a comprehensive pre-sales and after-sales service system, HBOWA provides high-quality service to global customers.

# EQUIPMENT

## High-efficiency modular automatic production line

In order to achieve flexible manufacturing and maintain high quality standard, HBOWA divides module production into a number of relatively independent and highly interconnected modules, and adopts lean production based on statistical engineering, equipment improvement and various management systems with fully-automatic production lines to ensure the consistency and quality of finished products, improve the production efficiency, reduce the production costs, and increase the return on investment.



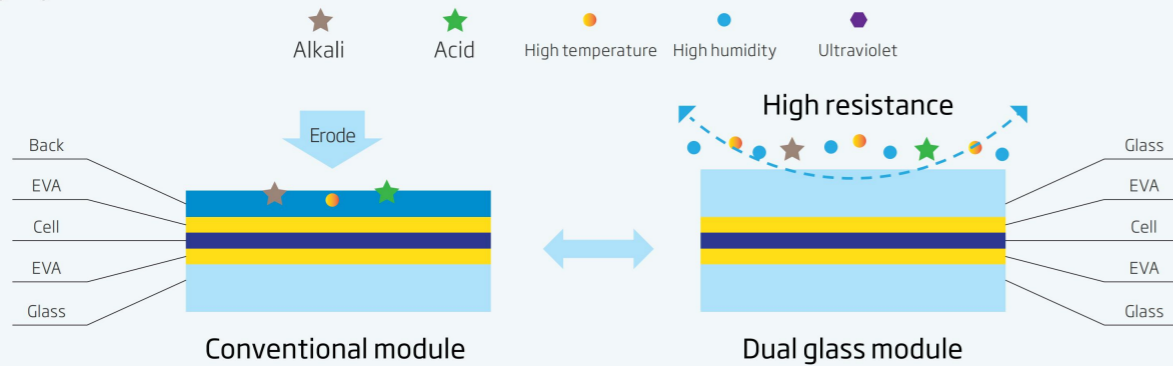
<b>15%</b> Production Cost Reduction	<b>15%</b> Equipment Efficiency Increase	<b>24*7</b> Supervisory Information System	<b>100+</b> Product and Process Improvement	<b>99.8%</b> Yield Rate	<b>35%</b> Productivity Increase
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# DUAL-GLASS TECHNOLOGY

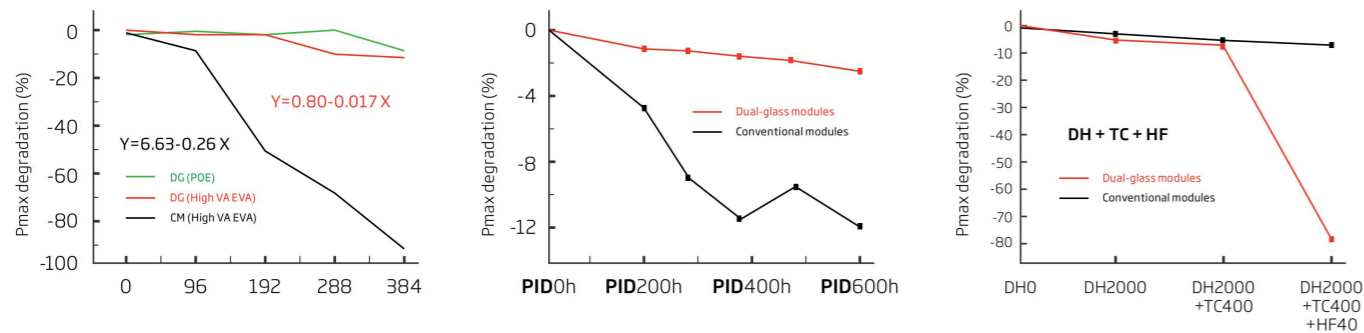
Dual-glass technology replaces the conventional glass-and-backsheet structure with a heat strengthened dual-glass structure.

This design enhances durability, resistance to environmental factors, and improves overall efficiency. The dual-glass configuration contributes to a longer lifespan of the solar panel and better energy production, making it a notable advancement in solar panel technology.

## Highly reliable



## Lower degradation

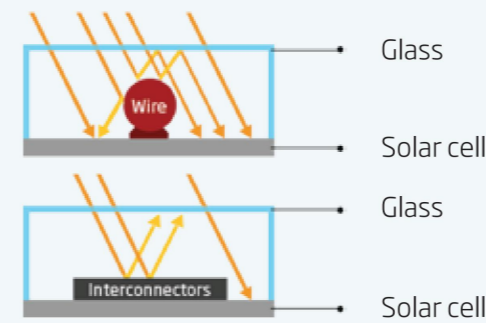


# MULTI-BUSBAR TECHNOLOGY

Compared to the conventional five busbar soldering process, the multi-busbar (MBB) technology can increase output power of PV modules by 2% with finer and narrower busbars.

Multi-Busbar Technology improves solar cell efficiency by using multiple, thinner busbars to enhance conductivity, reduce resistance, and minimize shading, resulting in more effective energy capture and increased reliability.

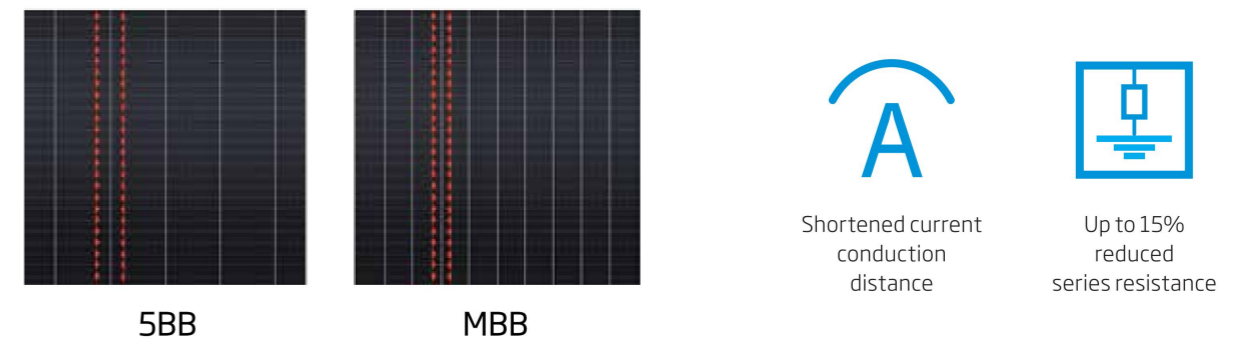
## Increased light absorption



## Rare chance of power loss due to micro-cracking



## Reduced resistance losses with over 50% shortened current conduction distance

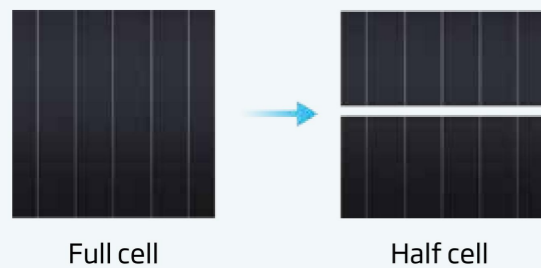


# HALF-CUT TECHNOLOGY

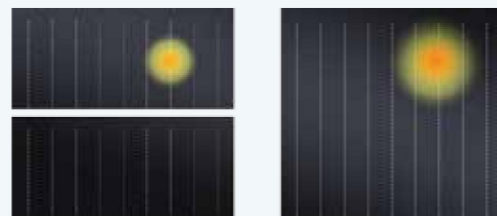
In this technology, the full cell is cut into two parts, which results in a reduction of electrical ribbon resistance and finally improves the overall module efficiency by more than 2%. Also, half-cut design allows the module to work at low operating temperatures, which can improve energy generation per watt.

Integrated half-cut technology into new generation module product series, which significantly improves the actual power generation, especially when combined with other outstanding technologies like multi-busbar and bifacial cell design.

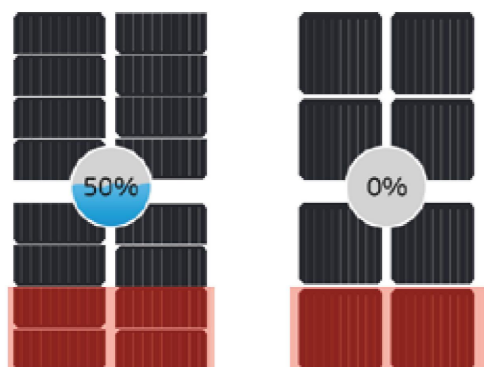
Better power generation with reduced internal resistance losses



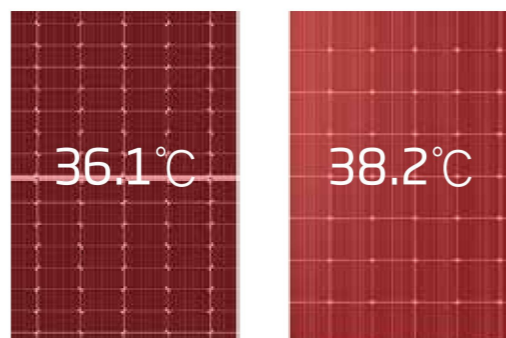
High reliability with strong resistance against hotspots



High power output with better shading tolerance



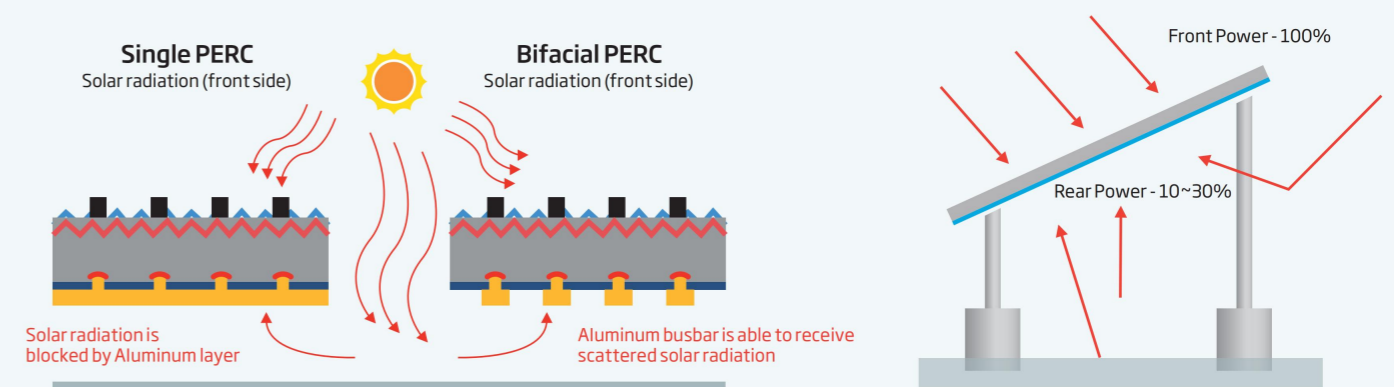
Lower operating temperature



# BIFACIAL TECHNOLOGY

Bifacial technology in solar panels captures sunlight from both the front and rear sides, boosting energy production by utilizing reflected sunlight. This innovative approach enhances overall efficiency and is gaining popularity for its ability to optimize solar energy system performance.

Fully utilizing the reflection and scattering of light, applying to highly reflective scenes such as water, sand, grass and white painted ground. With various types of brackets, more power is obtained, under lower kilowatt-hour costs.



High power generation



High reliability

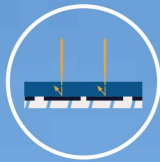


Low LCOE



Wide application

# High-efficiency mono-crystalline bifacial series



## PERC technology

The PERC technology features were the reduction of rear surface recombination by a combination of dielectric surface passivation and reduced metal/semiconductor contact area while simultaneously increasing rear surface reflection by use of a dielectrically displaced rear metal reflector



## 9 busbar cell technology

Increased cell bus-bar means more paths for electric charges, so there would be less resistance losses and more emitted electrons can be captured, thus it can increase power output by 2%.



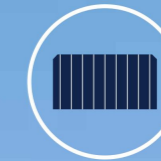
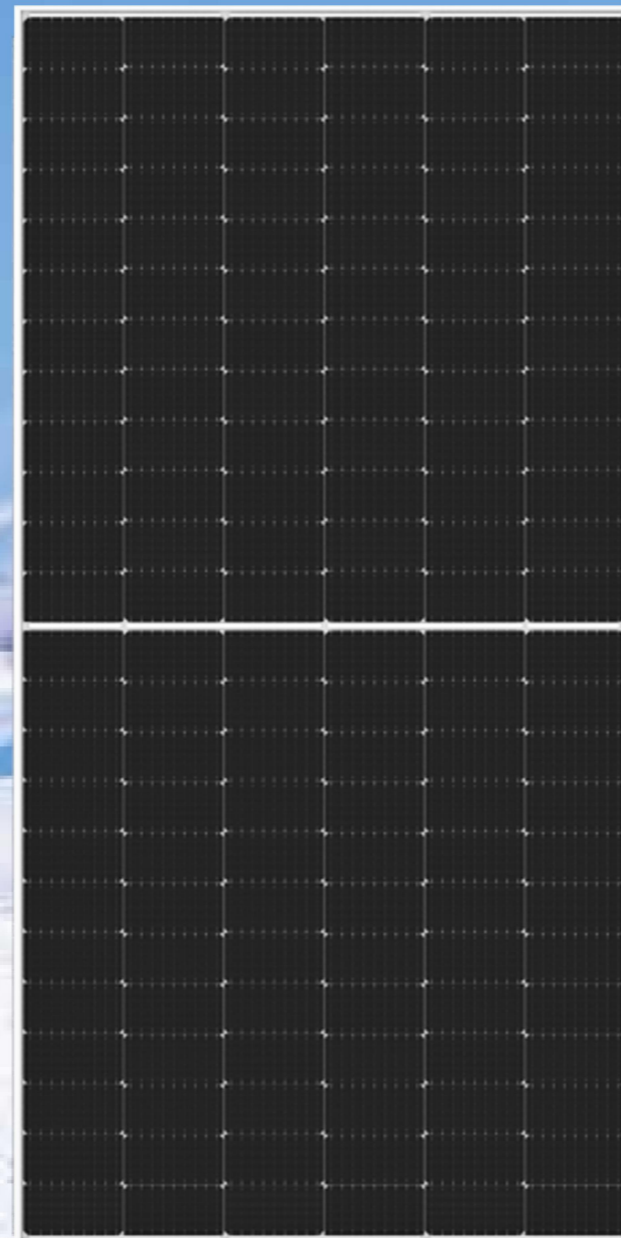
## Split module design

Better performance in shading conditions with split module design.



## Half-cut cell technology

Through reducing length of cell spacing, two half-cut cells can provide higher electric current, thus enhance 3% of power output. The output of two 9 bus-bar half-cut cells is even higher than one 12 bus-bar full cell.



## Bifacial cell technology

Generate electricity from backside of solar cell with environmental light reflections, brings additional 5%-25% more power generation.



## 1500V DC

High system voltage of J-box and glasses, reduce PV system cost.



## Ultra high strength frame

Specially designed for bifacial dual-glass series, passed 7200 Pa (front) mechanical load test, reducing shading with no C side design for short frame. (Note: \*120 Cells series)



## Special frame design with anti-fouling patent

155-degree angle, excellent anti-fouling performance, improve long-term power generation performance

Maximum Power Pmax (W)	365	370	375	380
Module Efficiency (%)	19.7%	20.0%	20.2%	20.5%
Dimensions / Weight	1755×1038×30 mm / 23.3kg			
Number of Cells	120 [2 x (10 x 6)]			

Maximum Power Pmax (W)	440	445	450	455
Module Efficiency (%)	19.9%	20.2%	20.4%	20.6%
Dimensions / Weight	2094×1038×35 mm / 27.5kg			
Number of Cells	144 [2 x (12 x 6)]			

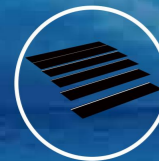
The specification described in this document may deviate slightly. Bluesun Solar Co., Ltd. reserves the right to make any adjustment to the information described herein at any time without notice.

# TOPCon technology monocrystalline series



## TOPCon technology

High efficiency and double-sided ratio. This technology demonstrates the ability to achieve 23%-26% solar cell efficiency, compared to 21% -23% shown by PERC technology.



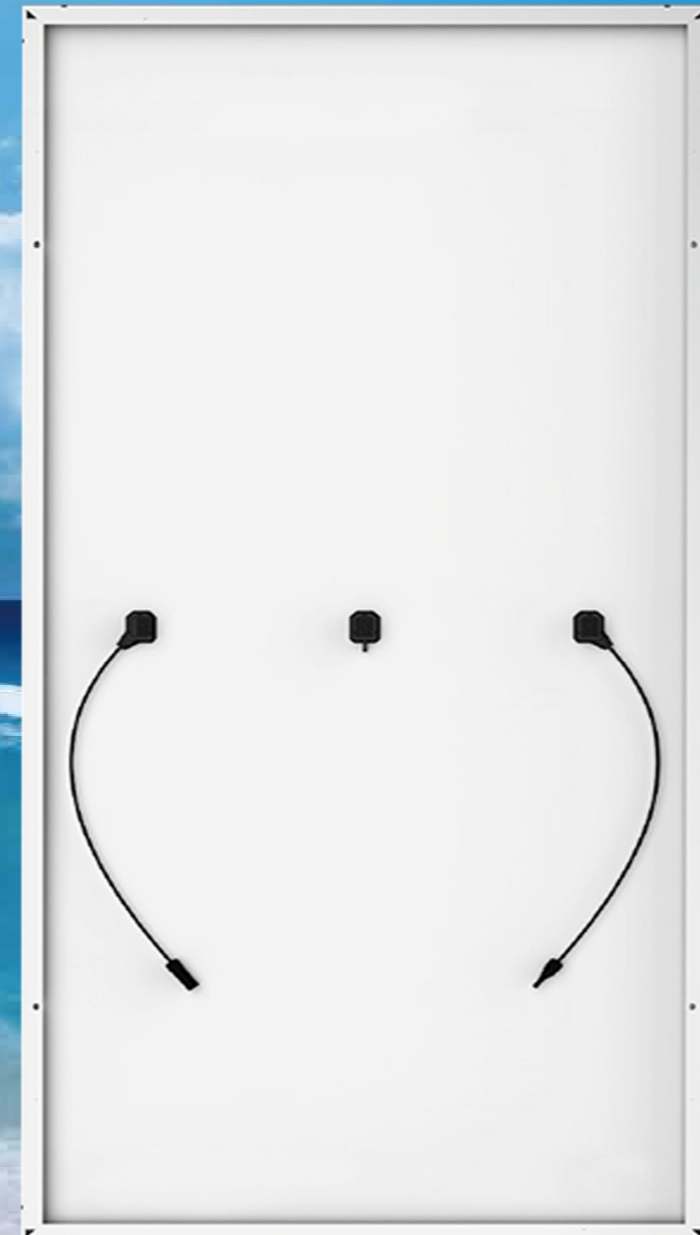
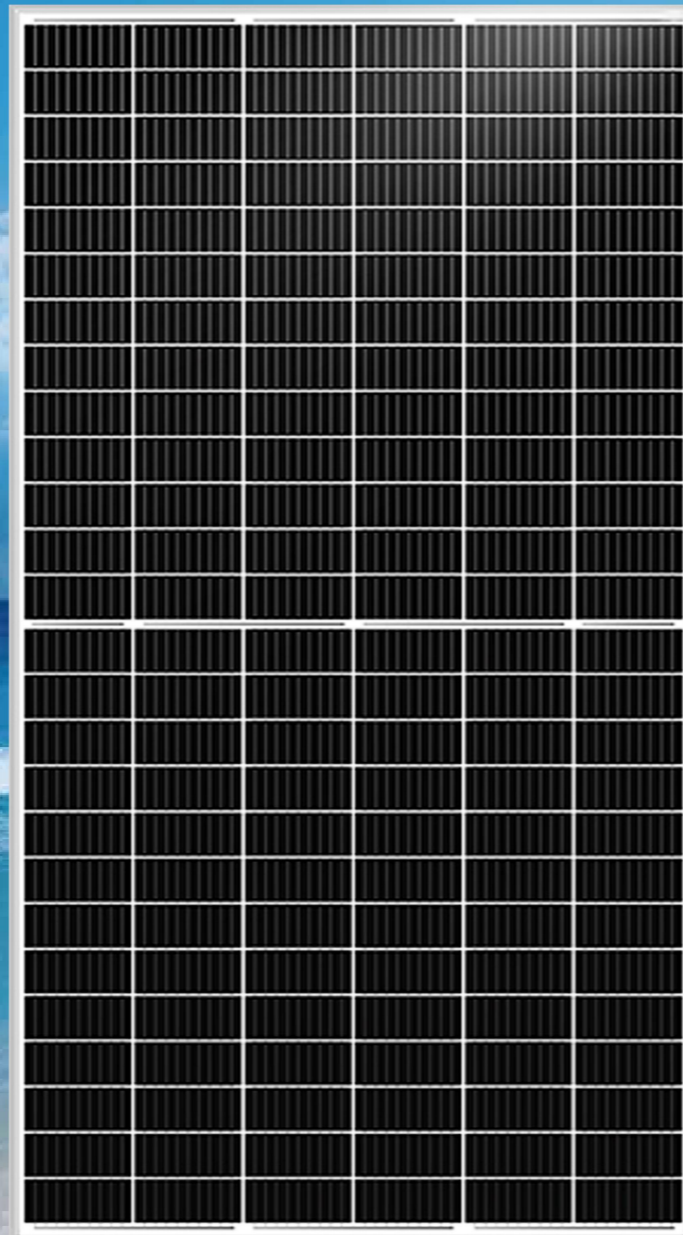
## Shingled module design

Shingled cells use flexible adhesives instead of metal alloys to achieve interconnections between the cells, which has better flexibility



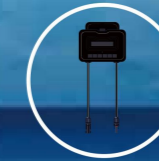
## Shingled cell technology

The cell is cut into 5 pieces, the current of single string is reduced (9A → 1.8A), and the current loss is greatly reduced



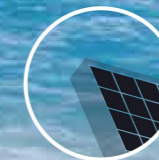
## Anti-UV

Backsheet with Fluoride on both sides, resistant to ultraviolet radiation, ensure long-term stable operation of modules.



## 1500V DC

High system voltage of J-box and glasses, reduce PV system cost.



## Ultra high strength frame

Specially designed to withstand 2400Pa – 5400Pa mechanical load.

Maximum Power Pmax (W)	550	560	570
Module Efficiency (%)	23.4%	23.8%	24.3%
Dimensions / Weight	2056*1140*35 mm / 25kg		
Number of Cells	166 (12 x 34)		

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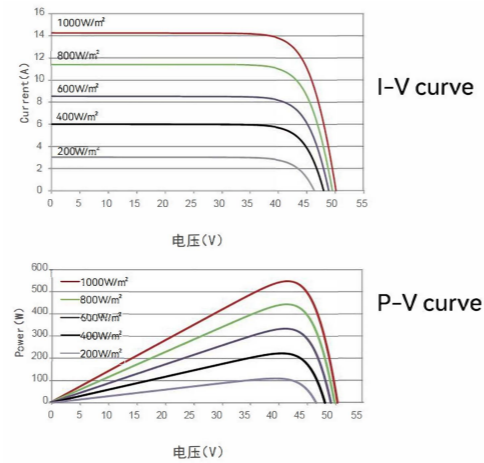
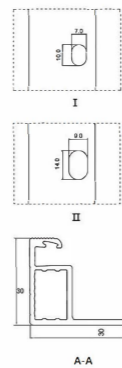
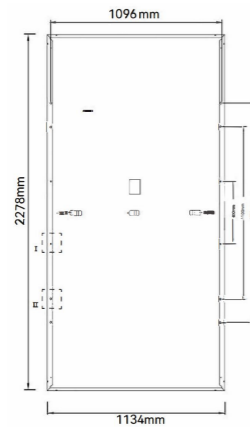


## 182 144 Cells P-Type Mono-facial Module 540-560 Watt

Maximum output power  
**560W**

Maximum efficiency  
**21.68%**

Power tolerance  
**0~+3%**



### Electrical Parameters (STC\*)

Maximum Power(W)	540	545	550	555	560
Maximum Power Voltage(V)	41.63	41.79	41.95	42.11	42.27
Maximum Power Current(A)	12.97	13.04	13.11	13.18	13.25
Open Circuit Voltage(V)	49.60	49.75	49.90	50.05	50.20
Short Circuit Current(A)	13.94	14.02	14.09	14.17	14.24
Module Efficiency(%)	20.90	21.10	21.29	21.48	21.68
Power tolerance	0~+3%				

\* Irradiance 1000W/m<sup>2</sup>, Module Temperature 25°C, Air Mass 1.5

### Mechanical Parameters

Cell Type	182×91mm Perc
Number of Cells	144cells (2x72)
Dimensions	2278×1134×30mm
Weight	26.4KG
Glass	3.2mm, Anti-Reflection Coating
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated,MC4 Compatible
Cable	4 mm <sup>2</sup> ,300 mm standard

### Temperature Coefficient

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Isc	0.048%/°C
Temperature Coefficient of Voc	-0.28%/°C
Temperature Coefficient of Pmax	-0.35%/°C

### Electrical Parameters (NOCT\*)

Maximum Power(W)	402.3	406.0	409.8	413.5	417.2
Maximum Power Voltage(V)	38.53	38.68	38.82	38.97	39.12
Maximum Power Current(A)	10.44	10.50	10.55	10.61	10.66
Open Circuit Voltage(V)	46.50	46.64	46.78	46.92	47.06
Short Circuit Current(A)	11.22	11.28	11.34	11.40	11.47

\*Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

### Application Parameters

Operational Temperature(°C)	-40°C~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	25A
Wind/ Snow Load	2400Pa/5400Pa

### Packaging Configuration

Pallet	36 pieces
40HQ	720 pieces

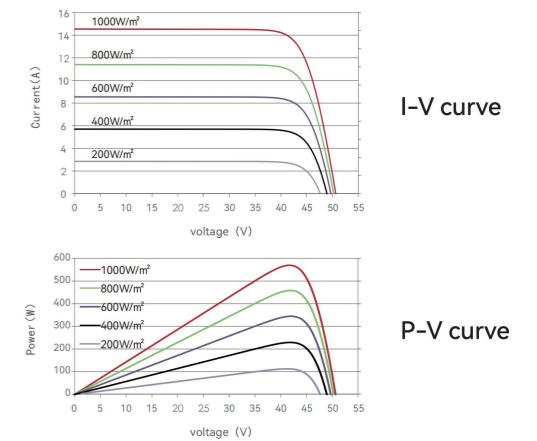
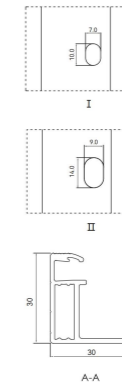
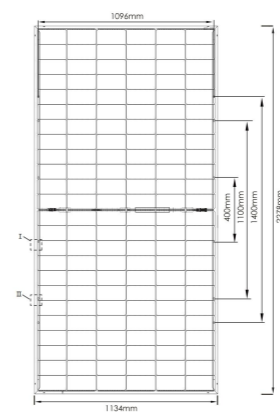


## 182 144 Cells P-Type Mono-Bifacial Module 540-560 Watt

Maximum output power  
**560W**

Maximum efficiency  
**21.68%**

Power tolerance  
**0~+3%**



### Electrical Parameters (STC\*)

Maximum Power(W)	540	545	550	555	560
Maximum Power Voltage(V)	41.63	41.79	41.95	42.11	42.27
Maximum Power Current(A)	12.97	13.04	13.11	13.18	13.25
Open Circuit Voltage(V)	49.60	49.75	49.90	50.05	50.20
Short Circuit Current(A)	13.94	14.02	14.09	14.17	14.24
Module Efficiency(%)	20.90	21.10	21.29	21.48	21.68
Power tolerance	0~+3%				

\* Irradiance 1000W/m<sup>2</sup>, Module Temperature 25°C, Air Mass 1.5

### Electrical Parameters (NOCT\*)

Maximum Power(W)	402.3	406.0	409.8	413.5	417.2
Maximum Power Voltage(V)	38.53	38.68	38.82	38.97	39.12
Maximum Power Current(A)	10.44	10.50	10.55	10.61	10.66
Open Circuit Voltage(V)	46.50	46.64	46.78	46.92	47.06
Short Circuit Current(A)	11.22	11.28	11.34	11.40	11.47

\* Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

### Backside Power Gain ( For 550W )

Backside Power Gain(%)	10%	15%	20%	25%	30%
Maximum Power(Pmax/W)	605.0	632.5	660.0	687.5	715.0
Open Circuit Voltage(Voc/V)	49.84	49.84	49.94	49.94	49.94
Short Circuit Current(Isc/A)	15.38	16.08	16.78	17.48	18.17
Maximum Power Voltage(Vmp/V)	41.99	41.99	42.09	42.09	42.09
Maximum Power Current(Imp/A)	14.41	15.06	15.68	16.33	16.99

### Mechanical Parameters

Cell Type	182×91mm Perc
Number of Cells	144cells (2x72)
Dimensions	2278×1134×30mm
Weight	30KG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated,MC4 Compatible
Cable	4 mm <sup>2</sup> ,300 mm standard

### Temperature Coefficient

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Isc	0.048%/°C
Temperature Coefficient of Voc	-0.28%/°C
Temperature Coefficient of Pmax	-0.35%/°C

### Application Parameters

Operational Temperature(°C)	-40°C~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	25A
Wind/ Snow Load	2400Pa/5400Pa
Packaging Configuration	36PCS/PLT,720PCS/40HQ



**420-445W**

## 182 108 Cells N-Type Mono-Bifacial Module 420-445 Watt

Maximum output power

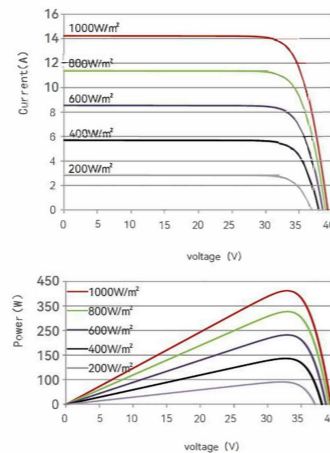
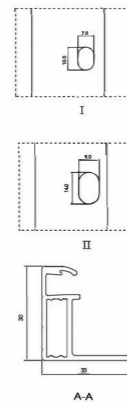
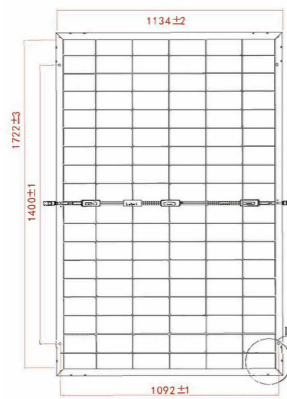
**445W**

Maximum efficiency

**22.79%**

Power tolerance

**0~+3%**



I-V curve

P-V curve

### Electrical Parameters (STC\*)

Maximum Power(W)	420	425	430	435	440	445
Maximum Power Voltage(V)	31.37	31.49	31.61	31.73	31.85	31.97
Maximum Power Current(A)	13.39	13.50	13.60	13.71	13.81	13.92
Open Circuit Voltage(V)	37.43	37.55	37.67	37.79	37.91	38.03
Short Circuit Current(A)	14.12	14.23	14.34	14.45	14.56	14.67
Module Efficiency(%)	21.51	21.76	22.02	22.28	22.53	22.79
Power tolerance	0~+3%					

\* Irradiance 1000W/m<sup>2</sup>, Module Temperature 25°C, Air Mass 1.5

### Electrical Parameters (NOCT\*)

Maximum Power(W)	312.9	316.6	320.4	324.1	327.8	331.5
Maximum Power Voltage(V)	29.03	29.14	29.25	29.37	29.48	29.59
Maximum Power Current(A)	10.78	10.86	10.95	11.04	11.12	11.21
Open Circuit Voltage(V)	35.08	35.19	35.31	35.42	35.53	35.64
Short Circuit Current(A)	11.37	11.46	11.54	11.63	11.72	11.81

\*Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

### Backside Power Gain ( For 430W )

Backside Power Gain(%)	10%	15%	20%	25%	30%
Maximum Power(Pmax/W)	473.0	494.5	516.0	537.5	559.0
Open Circuit Voltage(Voc/V)	38.62	38.62	38.72	38.72	38.72
Short Circuit Current(Isc/A)	15.17	15.86	16.55	17.24	17.93
Maximum Power Voltage(Vmp/V)	32.69	32.69	32.79	32.79	32.79
Maximum Power Current(Imp/A)	14.47	15.13	15.74	16.39	17.05

### Mechanical Parameters

Cell Type	182×91mm N-Type
Number of Cells	108cells (2×54)
Dimensions	1722×1134×30mm
Weight	23.5KG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated, MC4 Compatible
Cable	4 mm <sup>2</sup> , 300 mm standard

### Temperature Coefficient

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Isc	0.045%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Pmax	-0.29%/°C

### Application Parameters

Operational Temperature(°C)	-40°C~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	25A
Wind/ Snow Load	2400Pa/5400Pa
Packaging Configuration	36PCS/PLT, 936PCS/40HQ



**570-590W**

## 182 144 Cells N-Type Mono-Bifacial Module 570-590 Watt

Maximum output power

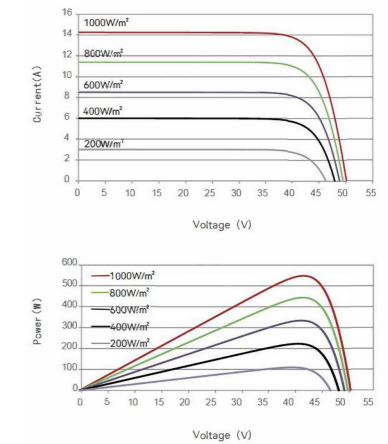
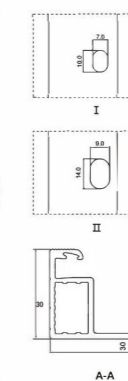
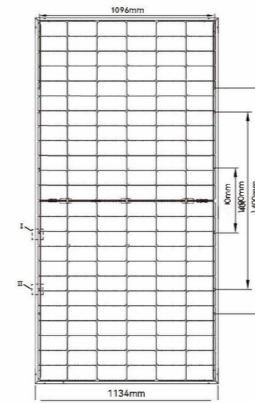
**590W**

Maximum efficiency

**22.79%**

Power tolerance

**0~+3%**



I-V curve

P-V curve

### Electrical Parameters (STC\*)

Maximum Power(W)	570	575	580	585	590
Maximum Power Voltage(V)	41.54	41.67	41.80	41.93	42.06
Maximum Power Current(A)	13.72	13.80	13.88	13.95	14.03
Open Circuit Voltage(V)	50.04	50.17	50.30	50.43	50.56
Short Circuit Current(A)	14.39	14.47	14.55	14.62	14.70
Module Efficiency(%)	22.07	22.26	22.45	22.65	22.84
Power tolerance	0~+3%				

\*Irradiance 1000W/m<sup>2</sup>, Module Temperature 25°C, Air Mass 1.5

### Electrical Parameters (NOCT\*)

Maximum Power(W)	424.7	428.4	432.1	435.8	439.6
Maximum Power Voltage(V)	38.44	38.56	38.68	38.80	38.93
Maximum Power Current(A)	11.05	11.11	11.17	11.23	11.29
Open Circuit Voltage(V)	46.90	47.02	47.15	47.27	47.39
Short Circuit Current(A)	11.59	11.65	11.71	11.77	11.83

\*Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

### Backside Power Gain ( For 580W )

Backside Power Gain(%)	10%	15%	20%	25%	30%
Maximum Power(Pmax/W)	638.0	667.0	696.0	725.0	754.0
Open Circuit Voltage(Voc/V)	52.00	52.00	52.10	52.10	52.10
Short Circuit Current(Isc/A)	15.81	16.53	17.24	17.96	18.68
Maximum Power Voltage(Vmp/V)	42.69	42.69	42.70	42.70	42.70
Maximum Power Current(Imp/A)	14.94	15.62	16.30	16.98	17.66

### Mechanical Parameters

Cell Type	182×91mm N-Type
Number of Cells	144cells (2×72)
Dimensions	2278×1134×30mm
Weight	30KG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated, MC4 Compatible
Output cable	4 mm <sup>2</sup> , 300 mm standard

### Temperature Coefficient

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Isc	0.045%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Pmax	-0.29%/°C

### Application Parameters

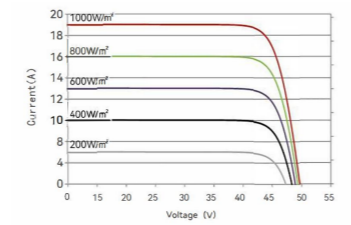
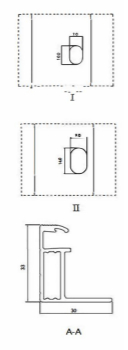
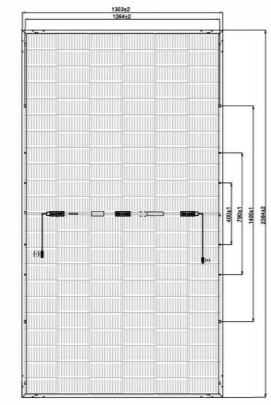
Operational Temperature(°C)	-40°C~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	30A
Wind/ Snow Load	2400Pa/5400Pa
Packaging Configuration	36PCS/PLT, 720PCS/40HQ



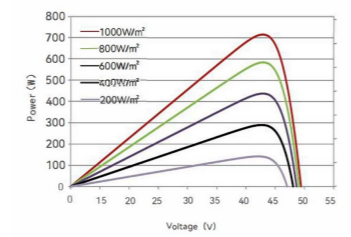
**690-720W**

## 210 132 Cells N-Type Mono-Bifacial Module 690-720 Watt

- Maximum output power **720W**
- Maximum efficiency **23.18%**
- Power tolerance **0~+3%**



I-V curve



P-V curve

### Electrical Parameters (STC\*)

Maximum Power(W)	690	695	700	705	710	715	720
Maximum Power Voltage(V)	40.1	40.3	40.5	40.7	40.9	41.1	41.3
Maximum Power Current(A)	17.21	17.25	17.28	17.32	17.36	17.4	17.43
Open Circuit Voltage(V)	48.2	48.4	48.6	48.8	49	49.2	49.4
Short Circuit Current(A)	18.24	18.28	18.32	18.36	18.4	18.44	18.49
Module Efficiency(%)	22.21	22.37	22.53	22.7	22.86	23.02	23.18
Power tolerance	0~+3%						

\* Irradiance 1000W/m<sup>2</sup>, Module Temperature 25°C, Air Mass 1.5

### Electrical Parameters (NOCT\*)

Maximum Power(W)	514.1	517.8	521.5	525.2	529	532.7	536.4
Maximum Power Voltage(V)	37.11	37.3	37.48	37.67	37.85	38.04	38.22
Maximum Power Current(A)	13.85	13.88	13.91	13.94	13.97	14	14.03
Open Circuit Voltage(V)	45.18	45.37	45.56	45.74	45.93	46.12	46.31
Short Circuit Current(A)	14.68	14.72	14.75	14.78	14.81	14.84	14.88

\* Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

### Backside Power Gain ( For 710W )

Backside Power Gain(%)	10%	15%	20%	25%	30%
Maximum Power(Pmax/W)	781	816.5	852	887.5	923
Open Circuit Voltage(Voc/V)	49.5	49.5	49.5	49.7	49.7
Short Circuit Current(Isc/A)	20.24	21.16	22.08	23.0	23.92
Maximum Power Voltage(Vmp/V)	41.4	41.4	41.4	41.6	41.6
Maximum Power Current(Imp/A)	18.86	19.72	20.58	21.33	22.19

### Mechanical Parameters

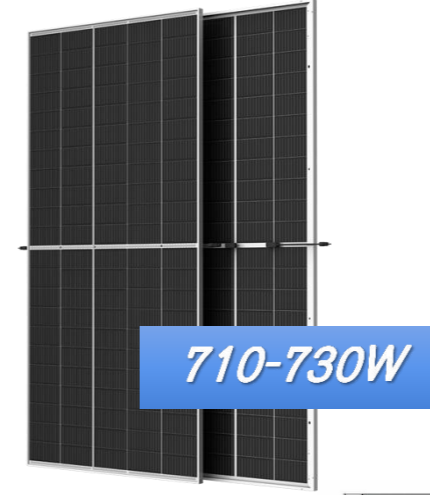
Cell Type	210x105mm N-Type
Number of Cells	132cells (2x66)
Dimensions	2384x1303x33mm
Weight	37KG
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated, MC4 Compatible
Cable	4 mm <sup>2</sup> , 300 mm standard

### Temperature Coefficient

Nominal Operating Cell Temperature (NOCT)	45±2°C
Temperature Coefficient of Isc	0.045%/°C
Temperature Coefficient of Voc	-0.25%/°C
Temperature Coefficient of Pmax	-0.29%/°C

### Application Parameters

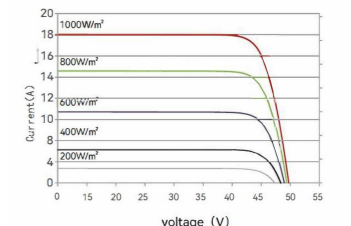
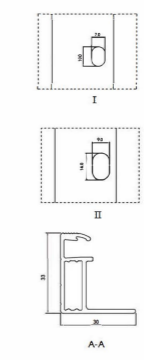
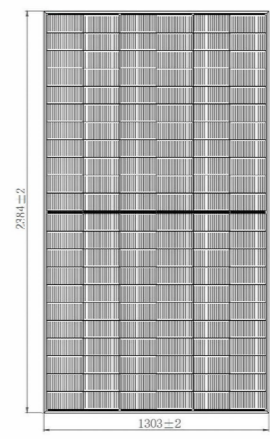
Operational Temperature(°C)	-40°C~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	35A
Wind/ Snow Load	2400Pa/5400Pa
Packaging Configuration	33PCS/PLT, 594PCS/40HQ



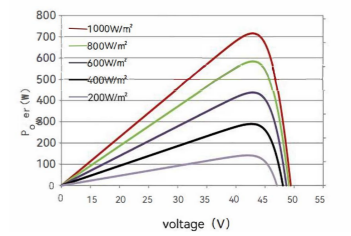
**710-730W**

## 210 132 Cells N-Type HJT Bifacial Module 710-730 Watt

- Maximum output power **730W**
- Maximum efficiency **23.5%**
- Power tolerance **0~+3%**



I-V curve



P-V curve

### Electrical Parameters (STC\*)

Maximum Power(W)	710	715	720	725	730
Maximum Power Voltage(V)	41.93	42.00	42.07	42.14	42.21
Maximum Power Current(A)	16.95	17.05	17.15	17.25	17.35
Open Circuit Voltage(V)	50.01	50.09	50.17	50.25	50.33
Short Circuit Current(A)	18.00	18.10	18.20	18.30	18.40
Module Efficiency(%)	22.86	23.02	23.18	23.34	23.50
Power tolerance(%)	0 ~ +3				

\*STOC (Standard Test Condition): Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25 C, Air Mass 1.5

### Mechanical Parameters

Cell Type	HJT 210x105mm
Number of Cells	132cells(2x66)
Dimensions	2384x1303x33mm
Weight	38.3kg
Frame	Silver, anodized aluminium alloy
J-Box	IP68 Rated, MC4 Compatible
Cable	4 mm <sup>2</sup> , 300 mm standard

### Backside Power Gain ( For 710W )

Backside Power Gain(%)	5%	10%	15%	20%	25%
Maximum Power(Pmax/W)	746	781	815	850	886
Open Circuit Voltage(Voc/V)	50.71	50.71	50.81	50.81	50.81
Short Circuit Current(Isc/A)	18.11	18.98	19.84	20.70	21.56
Maximum Power Voltage(Vmp/V)	43.46	43.46	43.36	43.36	43.36
Maximum Power Current(Imp/A)	17.16	17.97	18.79	19.61	20.43

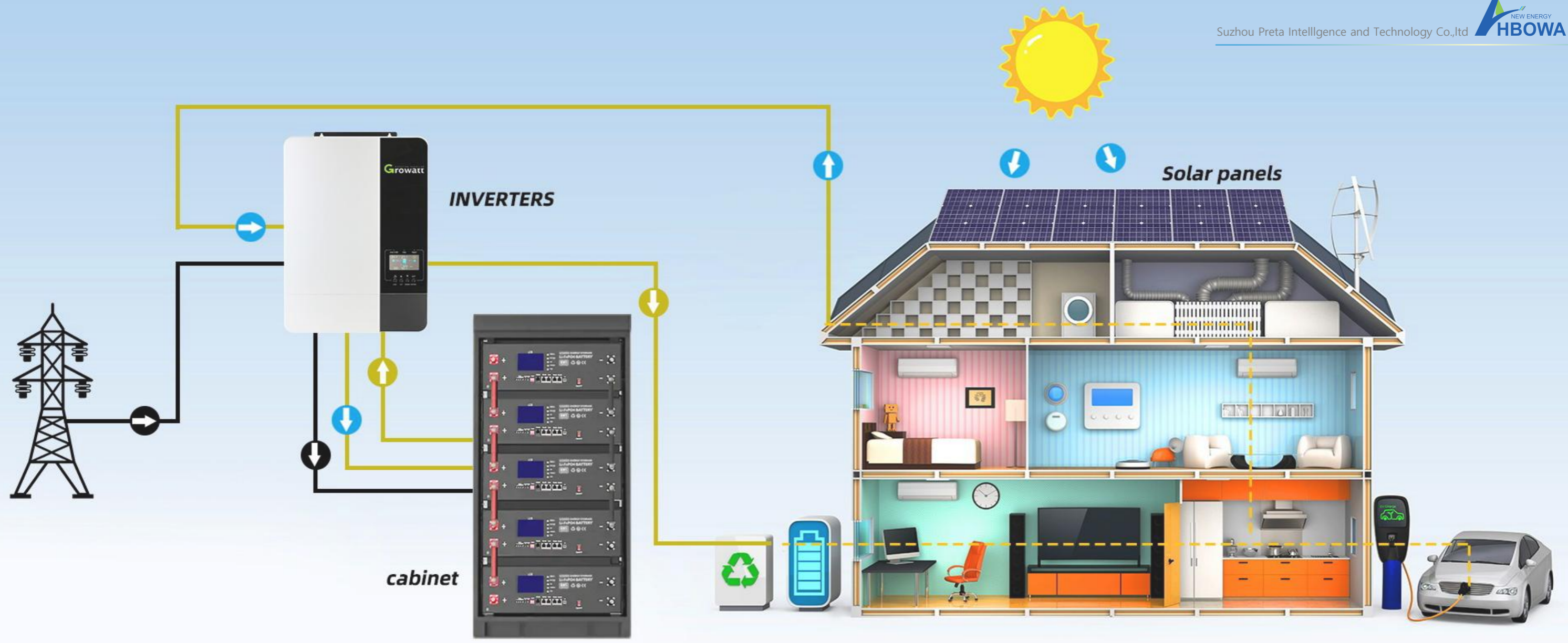
### Temperature Coefficient

Temperature Coefficient of Isc	-0.24%/°C
Temperature Coefficient of Voc	-0.22%/°C
Temperature Coefficient of Pmax	+0.047%/°C

### Application Parameters

Operational Temperature(°C)	-40~+85°C
Maximum System Voltage	1500V DC
Max Series Fuse Rating	35A
Wind/ Snow Load	2400Pa/5400Pa
Packaging Configuration	33PCS/PLT, 594PCS/40HQ





Solar energy is energy derived from sunlight. Whether you realise it or not, the sun already powers our planet, providing the necessary energy to keep the Earth's eco-system alive and thriving. The amount of sunlight that reaches the earth's atmosphere is enough to power all our needs.

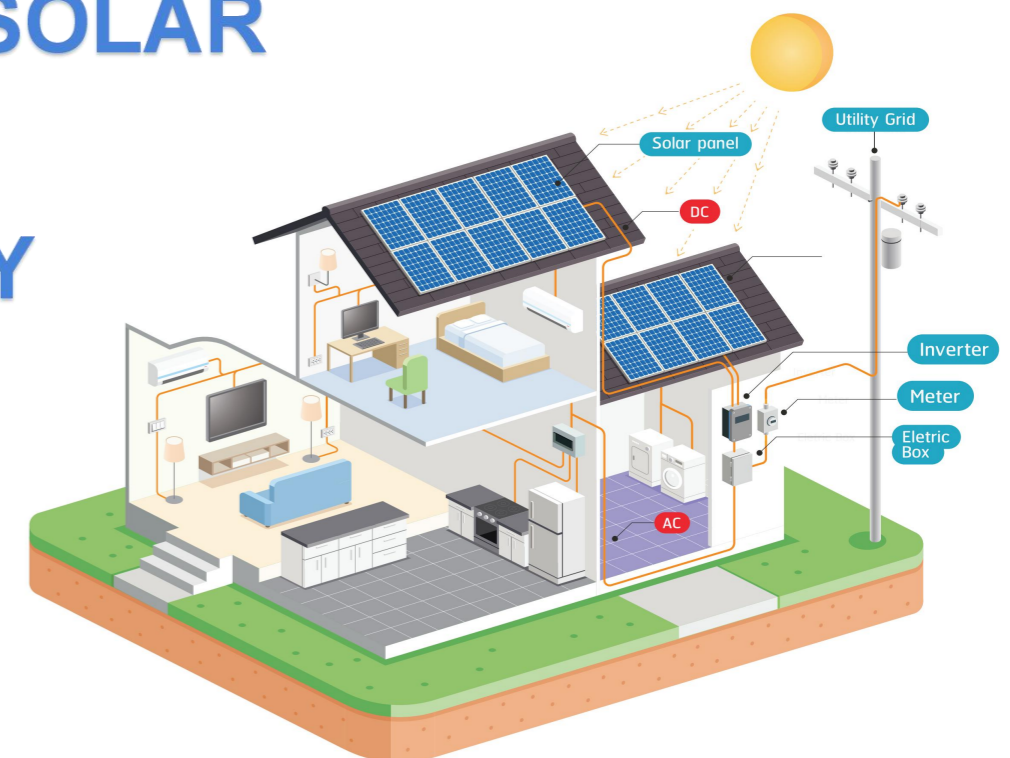
According to the US Department of Energy, 173000 terawatts of solar energy strike the earth continuously, which is more than 10000 times the world's total energy use. The sun is a free, sustainable, clean resource we can utilise in place of conventional electricity to power our day-to-day lives. Solar energy can be used to provide heat, light, and other electricity-dependent needs in residential and commercial buildings.

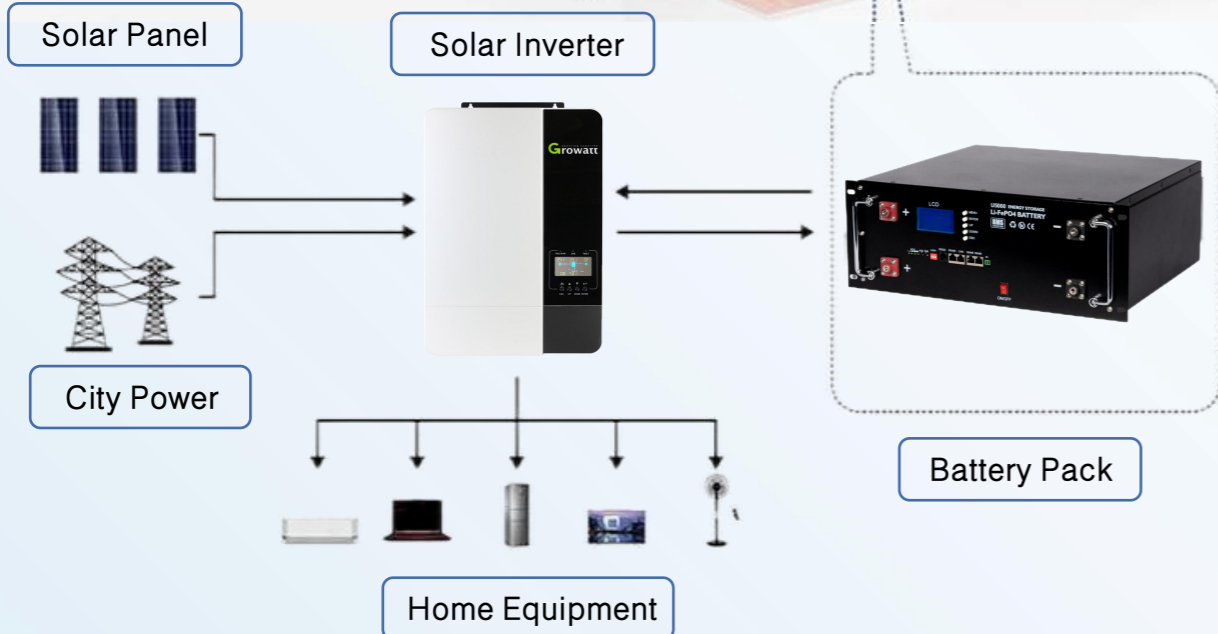
Solar panels are made of highly excitable, conductive materials. When the sun's rays hit the solar panels, the reaction creates direct current (DC) electricity. Do they work even on overcast days? Absolutely, since the sun's rays can still penetrate clouds and reach solar panels.

Since most homes and businesses use alternating current (AC) electricity, your solar-generated DC energy will pass through an inverter to become AC electricity. This energy can be rationed into load for everyday essential appliance use, the rest stored into a battery, reverted back into a grid - entirely dependent on your choice and solar power system goals.

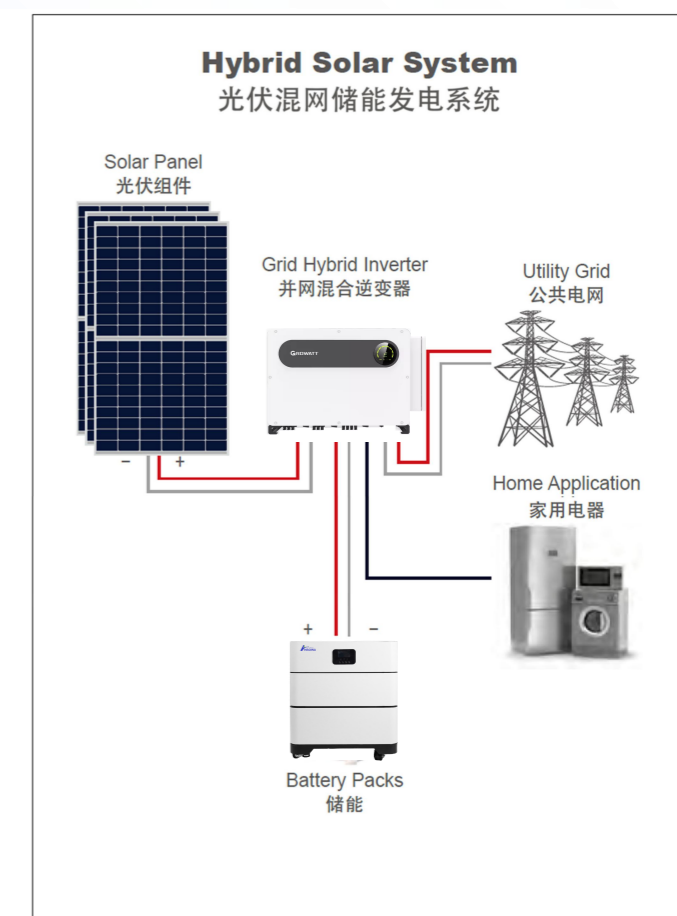
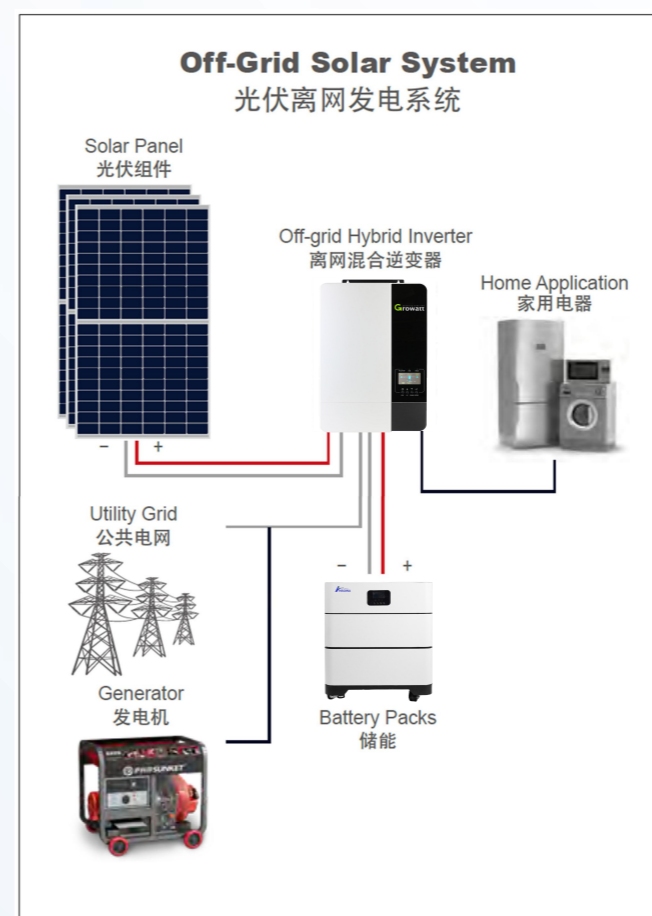
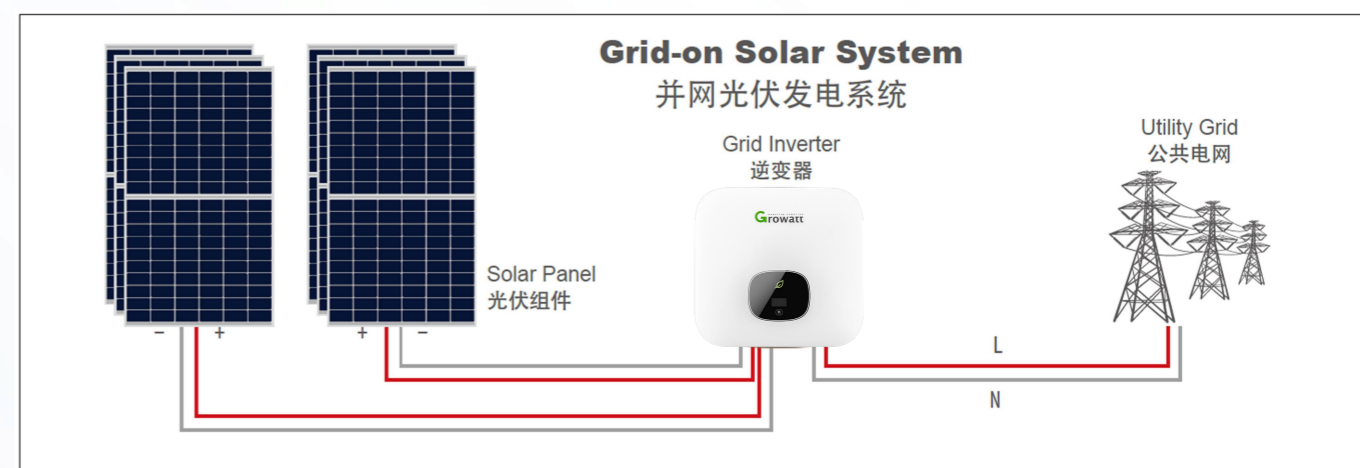
Solar panels enable humanity to maximise solar energy - a free, clean, energy resource. This is a major step in lowering carbon footprint and eventually achieving net-zero. V-TAC's new Energy catalogue aims to promote clean energy access with energy supplies at the best prices, and contributing to economic growth by pushing for energy savings.

## HOW DO SOLAR PANELS ACTUALLY WORK?





- Working for the residential community, remote village and small house and so on.
- Providing stable electricity power by renewable energy from PV.
- When the utility is abnormal, the BSS runs in off-grid/on grid mode and provides stable power for load.




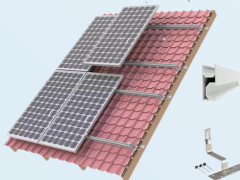


## 太阳能系统

### SOLAR SYSTEM (ON-GRID, OFF-GRID, HYBRID)



#### Main Components

	MPPT Controller Inverter	<ol style="list-style-type: none"> <li>1. Pure sine wave inverter;</li> <li>2. Inverter running without battery;</li> <li>3. Built-in MPPT solar controller;</li> <li>4. Compatible to mains voltage or generator power;</li> <li>5. Auto restart while AC is recovering;</li> <li>6. Overload/ Over temperature/ short circuit protection;</li> </ol>
	Lithium Ion Battery	<ol style="list-style-type: none"> <li>1. High safety level of lifepo4 battery cell;</li> <li>2. Popular battery energy: 4kwh, 5kwh, 6kwh</li> <li>3. Long life cycle time &gt;6000cycles;</li> <li>4. Advanced BMS protection functionality;</li> <li>5. Installation: Floor/Wall mounted;</li> <li>6. Monitor and optimize by smartphone app.</li> </ol>
	Solar Panels	<ol style="list-style-type: none"> <li>1. 25 years Warranty</li> <li>2. Highest conversion efficiency of 23%</li> <li>3. Anti-reflective and anti-soiling surface power loss from dirt and dust</li> </ol>
	PV Panel Mounting Bracket	<ol style="list-style-type: none"> <li>1. Residential Roof(Pitched Roof);</li> <li>2. Commercial Roof(Flat roof&amp;workshop roof)</li> <li>3. Ground Solar Mounting system;</li> <li>4. Vertical wall solar mounting system;</li> <li>5. All aluminum structure solar mounting system;</li> <li>6. Car parking solar mounting system.</li> </ol>

#### PRODUCT SPECIFICATION

5KW/10KW/15 KW /20KW/25KW/30KW Off Grid Hybrid Solar Power System Components List							
Parts	Description	Quantity					
		5KW	10KW	15KW	20KW	25KW	30KW
MPPT Controller Inverter	Model:48V/5000W Input:48VDC AC Output:220V/50Hz, 5000W Max Charge Current:80A	1PC	2PC	3PC	4PC	5PC	6PC
Lifepo4 battery pack	Model:48V 80AH Rated Voltage:51.2V Rated Capacity:80AH Net Weight:45kg DOD depth:100%	1PC	2PC	3PC	4PC	5PC	6PC
PV Panel	Model:PV380P Mono Type Vmp:38V ; Imp:9.19A; Voc:46V; Isc:9.64A; Rate Power:380W; Size:1979*992*40mm Weight:24.0 kg	8 PCS	16 PCS	24 PCS	32 PCS	40 PCS	48 PCS
PV Panel Mounting Bracket	Customized, Anti-erosion Aluminum Alloy for rooftop or ground mounting	1 Set	1 Set	1 Set	1 Set	1 Set	1 Set
Power Distribution Box	Customized,Including leakage circuit breaker, 32A 250V air-switch,16A by-pass switch etc	1 Set	1 Set	1 Set	1 Set	1 Set	1 Set
Cable	Model:PV-1*6mm2 Special high Anti-UV and Wear-Resistant PV cable WorkingTemperature:-40°C-90°C	40 M	80 M	120 PCS	160 PCS	200 PCS	240 PCS
PV Waterproof Connector	Model:MC4 Rated Voltage: 1000V DC Rated Current: 30A IP Rate: IP67	10 Pairs	20 Pairs	30 Pairs	40 Pairs	50 Pairs	60 Pairs

High frequency design, high power density, small size, high efficiency, low no-load loss. Built-in MPPT or PWM solar charge controller optional. Pure sine wave output, any types of loads adaptable. Battery charge and discharge voltage parameters adjustable, suitable for different types of batteries, can prolong the life of the battery and improve system performance. AC charge current 0-60A adjustable, battery capacity configuration more flexible.

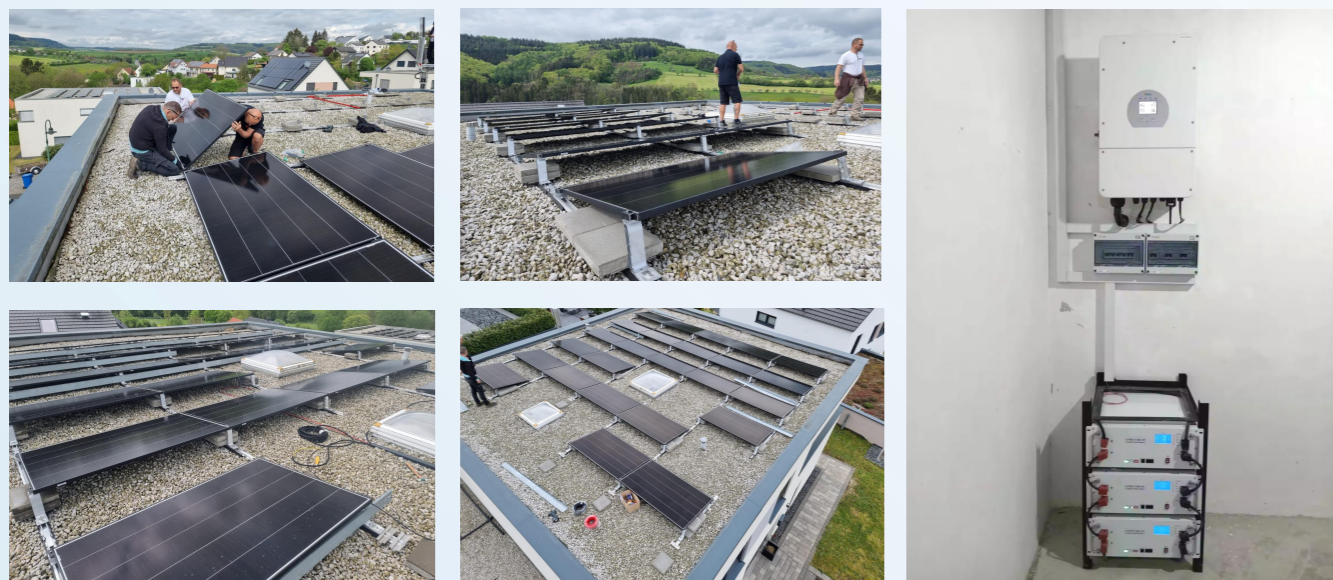
6KW Hybrid solar system in Ireland



10KW Hybrid solar system in Czech Republic



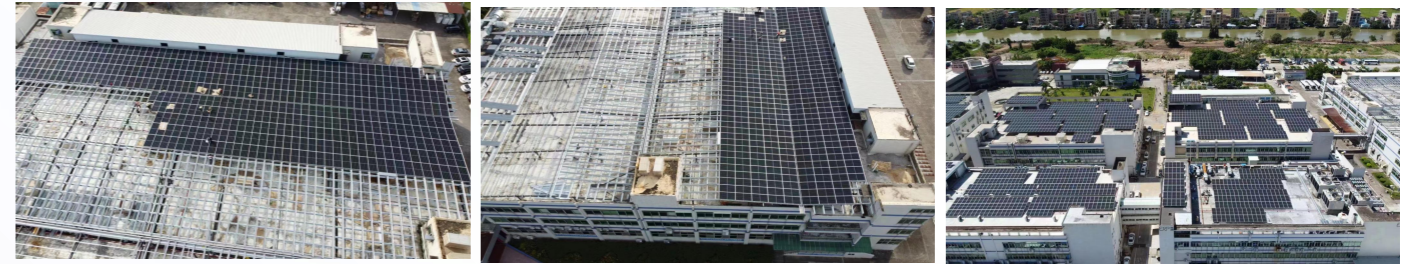
12KW Hybrid solar system in Germany



ENERGY STORAGE PROJECT

At present, carbon emission reduction has become a global consensus. Energy storage, as a key means to stabilize the clean energy power generation and improve the power absorption, has become an indispensable element in the process of China's energy transformation and carbon neutrality.

2.6MW solar system in China



1.2MW solar system in China



15KW Hybrid solar system in Mexico

