



POWERNATION

Solar & Electricity 2024

www.powernation.eco

POWERNATION

Solar & Electricity

2024



01

Values

Supporting the UN Goals for sustainable development.

02

Mission

Accessible solar power not only helps save on energy bills, but it promotes energy independence and positively impacts the environment .

03

Automation & Quality

Synonymous with quality, we engineer our modules under the rigid controls and automation processes to ensure the highest quality standards.

04

Products

Sustainable products aiming to enable everyone to benefit from affordable clean energy. Our safe, lightweight solar setup is simple and easy for anyone to install and use.

05

Market Overveiw

Global Market Outlook for Solar Power
2023-2027

Values

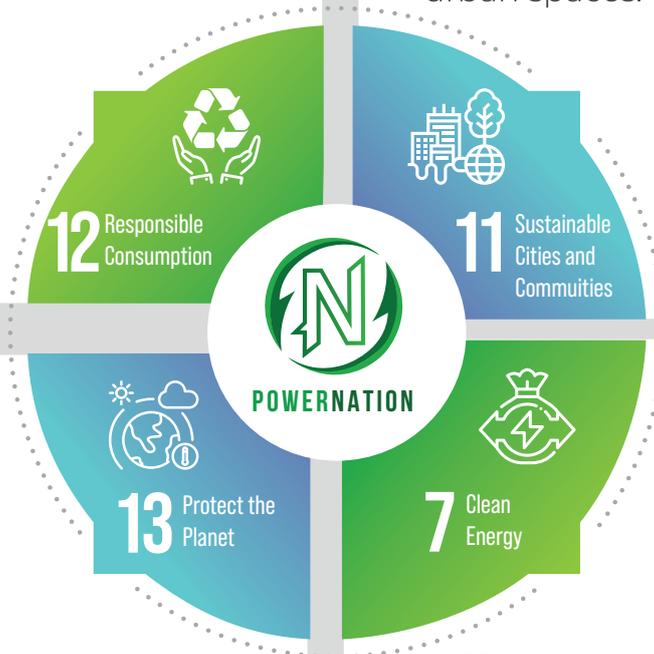


Responsible Production and consumption

Achieving economic growth and sustainable development requires that we urgently reduce our ecological footprint by changing the way we produce and consume goods and resources.

Sustainable cities and communities

More than half of us live in cities. By 2050, two-thirds of all humanity — 6.5 billion people — will be urban. Sustainable development cannot be achieved without significantly transforming the way we build and manage our urban spaces.



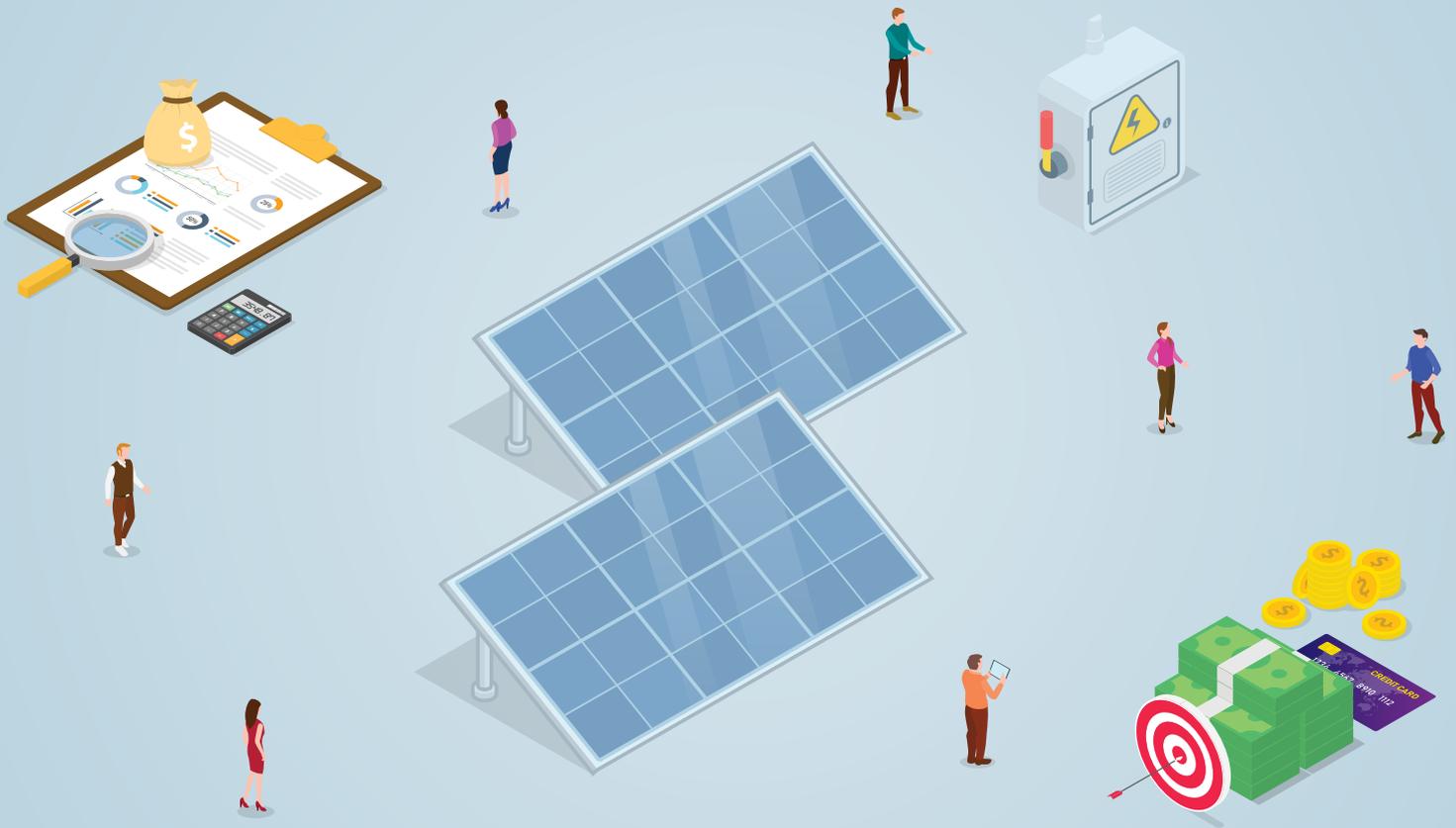
Climate action

There is no country that is not experiencing the drastic effects of climate change. Greenhouse gas emissions are more than 50 percent higher than in 1990. Global warming is causing long-lasting changes to our climate system, which threatens irreversible consequences if we do not act.

Affordable and clean energy

Investing in solar, improving energy productivity, and ensuring energy for all is vital.

Expanding infrastructure and upgrading technology to provide clean and more efficient energy in all countries will encourage growth and help the environment



Mission

“To deliver collaborative customer-centric solar solutions that advance the world's transition to sustainable energy.”



PowerNation

Created to give everyone equal access to renewable energy.



100%

Ecologically sustainable growth while addressing energy security challenge.



\$€£¥

Save the planet by going solar.



POWERNATION

Timeline

2023

Market

Market Coverage,
priority Europe and
US



2022

Production

Production and
sales of "environmen-
tally-friendly,
outdoor solar
panels" perfectly
fittings Energizer
Powerstations



2021

Prototype

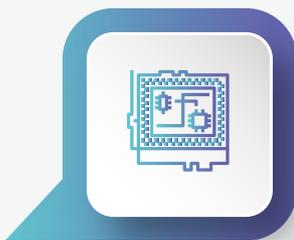
- Prototype test before
Mass Production
- Moulding



2020

ID Design

- Circuit board
design
- Structural
assessment and
design
- Prototype and
structural design



2019

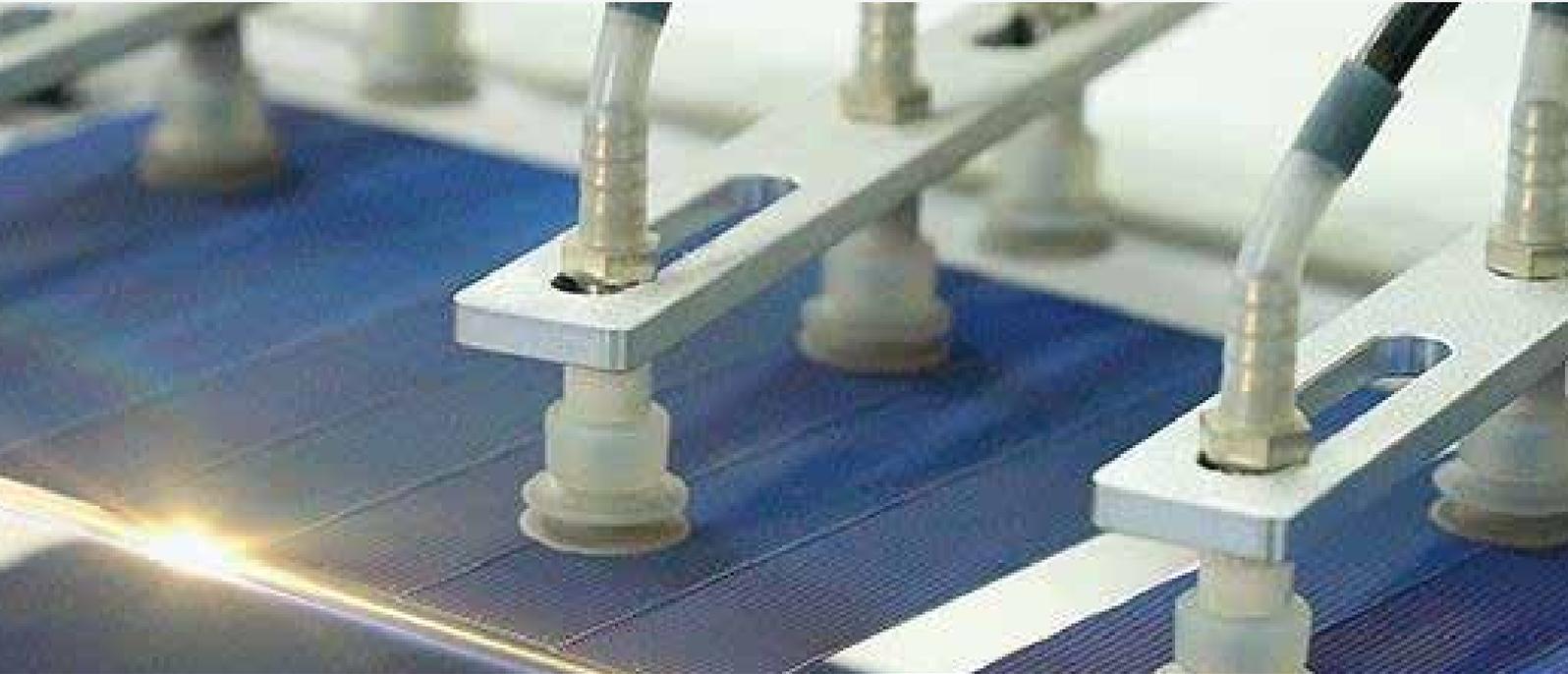
Market Research

R&D Brainstorming,
professional and strong
R & D team investing in
product design,
research and develop-
ment, performance,
applications.



POWERNATION

Automation & Quality



Solar Panels based on Professional Production



Production Equipment

30 advanced production equipment, including laser cutting machine, series welding machine, laminating machine, anti-aging and environmental resistance testing equipment.



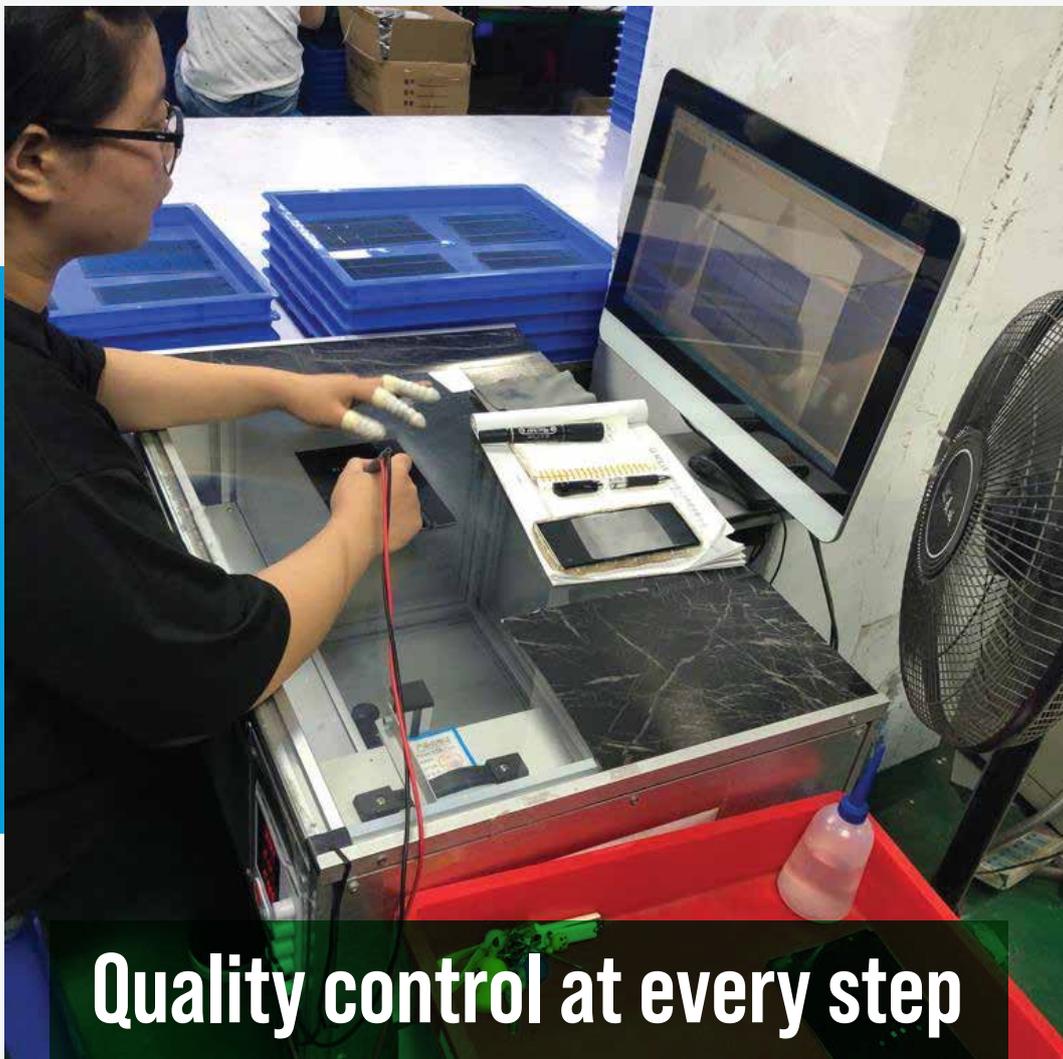
Automation lines

10 automated production lines.



Certifications

CE, ROHS, FCC, to ensure the safety and reliability for global customers



Quality control at every step

Automation & Quality

Quality

No compromises in quality. Providing the best in class solution for quality, durability to price ratio.

Industry Standards

Meeting international industry standards including CE and ROHS and environmental resistance testing equipment, EL, IV ensures Quality first.

Commitment

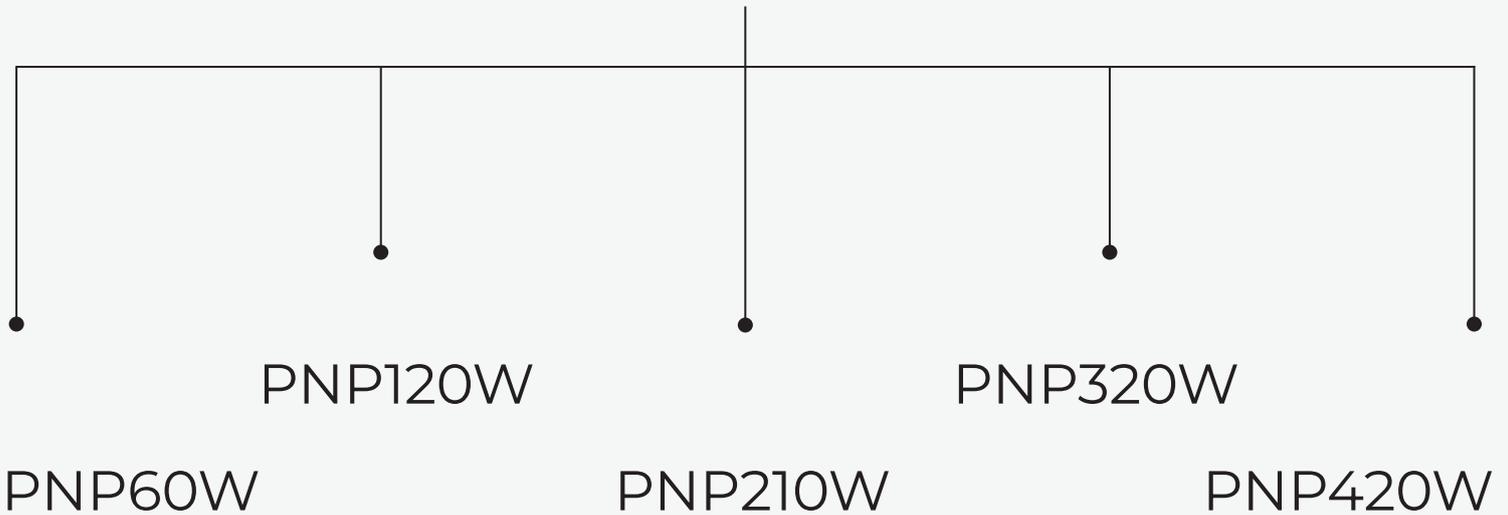
Each single cell is checked at multiply points in the process, beginning, first consolidation, lamination, production and final product testing.

Supply Chain

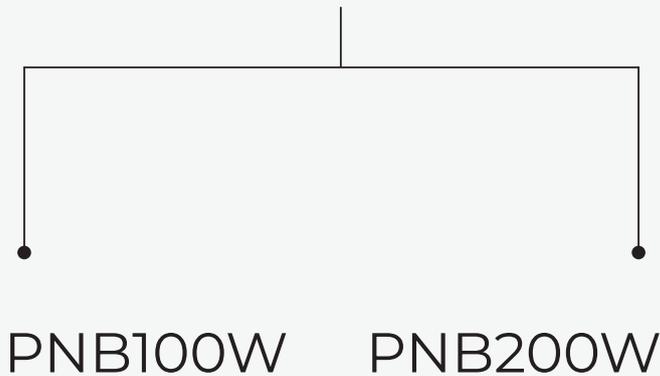
Established and mature supply chain guarantees quality at each order.

PRODUCTS – Solar Panels

Portable Solar Panels



Balcony Solar Panels



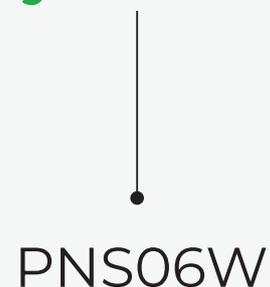
Flexible Solar Panels



CE Solar Panels



Security Solar Panels





Portable Solar Panels

Waterproof, Carbon fiber material, Ultra Light, Multi-interface high efficiency energy conversion, achieving 23+%



Smooth Surface



Flex Freely



ETFT Protective Coating



23.4% efficient conversion rate



Waterproof IP67



Ultra-thin compact, and lightweight weighting 1.7 kg



Ideal for all Powerstations Potable or Fixed Solution

Easy to Carry

Ideal for outdoor living, Camping and RV adventures Patented Solution.



Eyelet

Eyelet, made of copper with rust proof and easy to mount.



Adjustable

Adjustable freely thanks to kickstand to aim 90° angle between sunlight and solar panel to increase 20%-30% power.



Storage

Equipped with a storage pocket for accessories pack



Model	PNP60W	PNP120W	PNP210W	PNP320W	PNP420W
Power	60W	120W	210W	320W	420W
SOLAR PANEL COMPONENT					
Solar Cells	0.18mm, 182-10BB				
EVA	0.45mm	0.45mm	0.45mm	0.45mm	0.45mm
ETFE	0.02mm Dull Polish Surface				
Folds	2	4	4	4	4
Efficiency	23.4%	23.4%	23.4%	23.4%	23.4%
PERFORMANCE					
Output Power (@STC)	60.0W ± 5%	120W ± 5%	210.0W ± 5%	320.0W ± 5%	320.0W ± 5%
Standard Voltage (@STC)	19.44V ± 5%	19.44V ± 5%	19.44V ± 5%	37.12V ±5%	37.12V ±5%
Standard Current (@STC)	3.086A ± 5%	6.18A ± 5%	10.802A ± 5%	8.539A ±5%	8.539A ±5%
OUTPUT - CONNECTION					
USB-A	5V/3.0A&9V/2.5A&12V*2V	5V/3.0A&9V/2.5A&12V*2V			
USB-C PD	45W(20V*2.25A)	45W(20V*2.25A)			
DC5521	19.44V (Yes)	19.44V (Yes)			
PRODUCT					
IP RATING	IP67	IP67	IP67	IP67	IP67
Lamination	multiple layers hot pressed				
Unfolded - mm	110.0x470mm	110.0x610mm	222.0x610mm	233.8x794mm	233.8x930mm
Folded - mm	480x470x31mm	590x610x31mm	597x610x42mm	627x794x42mm	590x930x50mm
Gross Weight (with packaging)	2.5KG	4.4kg	6.1kg	9.77kg	9.8kg
Net Weight	1.7KG	3.6KG	5.3KG	8.97KG	
Handle Color	Red	Red	Red	Red	Red
Handle system	Magnetic	Magnetic	Magnetic	Magnetic	Magnetic
Surface Material	Matt ETFE				
Handle Material	PC(Anti Aging)				
Bracket	Duabale Twill (higer elasticity)				
Fabric	5D Watperroof Fabric	5D Watperroof Fabric	5D Watperroof Fabric	5D Watperroof Fabric	5D Watperroof Fabric
Eyelets	Copper kind				



Balcony Solar Panels

Waterproof, Carbon fiber material, Ultra-Light, Multi-interface high efficiency energy conversion, achieving 23+%



Waterproof IP68



Universal MC4 Connector



Copper Plating Protection



Bendable Up to 360°



ETFE Protective Coating



Light Weight

Waterproof

Waterproof junction box with Diode (anti-conversed Connection)



Eyelet

Eyelet, made of copper with rust proof and easy to mount



Integrated cables

Beautiful and convenient cable ties and equipped with MC4 connection



Lightweight and Bendable

Carbon fiber, ultrathin, ultralight and flexible



Model	PNB100W	PNB200W
Power	100W	200W
Solar Panel Component	FFC+EVA+Mono Solar cell+Carbon fiber	FFC+EVA+Mono Solar cell+Carbon fiber
Solar Cells	Mono,182MM	Mono,182MM
EVA	0.45MM	0.45MM
ETFE	Fluorine coated on both sides	Fluorine coated on both sides
PANELS		
Efficiency	23.4%	23.4%
PERFORMANCE		
Output Power (@STC)	105.0 W ±5%	200W ±5%
Standard Voltage (@STC)	19.4V ±5%	19.4V/40.3V ±5%
Standard Current (@STC)	5.4A ±5%	10.8A/5.3A ±5%
OUTPUT CONNECTION		
Conjunction Box	2 slip type/1 flat MC4 conjunction box	3 slip type/1 flat MC4 conjunction box
Connector	MC4	MC4
Cable Length	0.5M	1M
PRODUCT		
Unfolded - mm	98.5*59.8*1.85CM	115*97*1.85CM
Gross Weight (with packaging)	3.0KG	5.0kg
Net Weight	2.2KG	4.2KG
Lamination	High temperature pressing	High temperature pressing
IP Rating	IP68	IP68
Bendable	Up to 360°	Up to 360°
Eyelet Quantity	8PCS	16PCS





Flexible Solar Panels

Waterproof, Carbon fiber material, Ultra-Light, Multi-interface high efficiency energy conversion, achieving 23+%



Waterproof IP68



Universal MC4 Connector



Copper Plating Protection



Bendable Up to 360°



ETFE Protective Coating



Light Weight

Waterproof

Waterproof junction box with Diode (anti-conversed Connection)



Waterproof Junction Box with Diode (Anti-Conversed Connection)

Eyelet

Eyelet, made of copper with rust proof and easy to mount



Eyelet with larger Space to Fix (Copper Material Anti-Rust)

Integrated cables

Beautiful and convenient cable ties and equipped with MC4 connection



Beautiful and convenient cable ties

Lightweight and Bendable

Carbon fiber, ultrathin, ultralight and flexible



Model	PNF100W	PNF200W
Power	100W	200W
Solar Panel Component	FFC+EVA+Mono Solar cell+Carbon fiber	FFC+EVA+Mono Solar cell+Carbon fiber
Solar Cells	Mono,182MM	Mono,182MM
EVA	0.45MM	0.45MM
ETFE	Fluorine coated on both sides	Fluorine coated on both sides
PANELS		
Efficiency	23.4%	23.4%
PERFORMANCE		
Output Power (@STC)	105.0 W ±5%	200W ±5%
Standard Voltage (@STC)	19.4V ±5%	19.4V/40.3V ±5%
Standard Current (@STC)	5.4A ±5%	10.8A/5.3A ±5%
OUTPUT CONNECTION		
Conjunction Box	2 slip type/1 flat MC4 conjunction box	3 slip type/1 flat MC4 conjunction box
Connector	MC4	MC4
Cable Length	0.5M	1M
PRODUCT		
Unfolded - mm	98.5*59.8*1.85CM	115*97*1.85CM
Gross Weight (with packaging)	3.0KG	5.0kg
Net Weight	2.2KG	4.2KG
Lamination	High temperature pressing	High temperature pressing
IP Rating	IP68	IP68
Bendable	Up to 360°	Up to 360°
Eyelet Quantity	8PCS	16PCS





CE Solar Panels

Waterproof, Carbon fiber material, Ultra Light, Multi-interface 23+% Energy conversion



Waterproof IP67



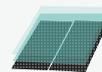
USB-C



USB-A



DC-Out



ETFE Protective Coating



0.5Kg / 1 LB Light Weight

Compact

Light, compact and easy to carry, perfect for the outdoor lifestyle.



Advanced

Technology to match the demands of the market. Qualcomm Quick Charge, Power Delivery and DC Output has you covered.



Function

Charge all your 5V devices while on the go. Waterproof



High Quality

High energy efficiency conversion with more light absorption. High light transmittance material



Adjustable

Match your environment.

Model	PNCE25W
Power	25W
Solar Panel Component	ETFE+IBC solar cell+Carbon Fiber
Solar Cells	IBC
EVA	0.45MM
ETFE	0.02MM
Folds	3
Efficiency	23.4%

PERFORMANCE

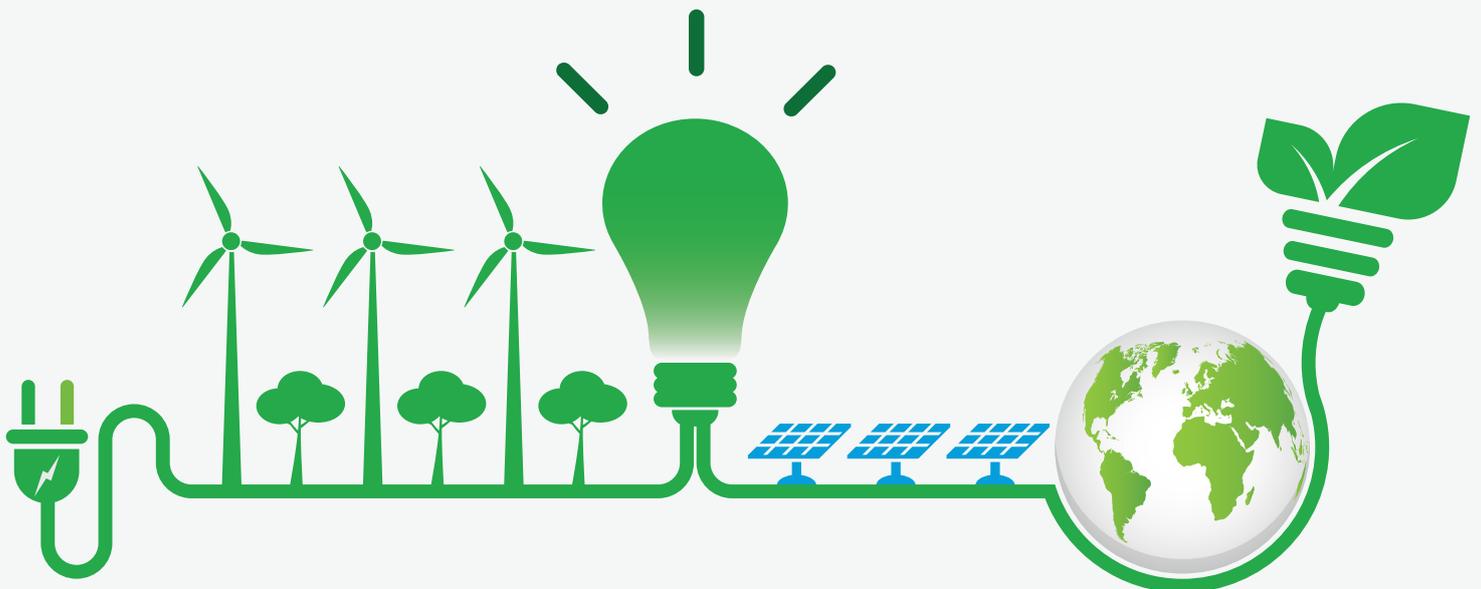
Output Power (@STC)	25W
Standard Voltage (@STC)	DC + USB A + USB C
Standard Current (@STC)	18V & 3.1A & 3A(Total Max)

OUTPUT CONNECTION

USB-A	5V/3.0A 9V/3.0A 12V/3.0A
USB-C PD	5V/3.0A 9V/3.0A 12V/3.0A

PRODUCT

IP Rating	IP67
Unfolded - mm	545×273±3MM
Folded - mm	181×273×27±3MM
Lamination	Integrated Lamination
Gross Weight (with packaging)	560G
Net Weight	460G





Security Solar Panels

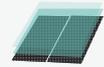
Waterproof, Carbon fiber material, Ultra-Light, Multi-interface high efficiency energy conversion, achieving 23+%



Waterproof IP67



360° Rotation



ETFE Protective Coating



23.4% efficient conversion rate



6W Power



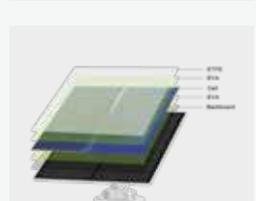
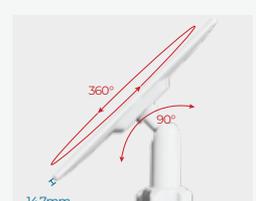
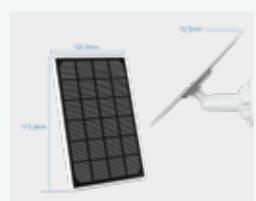
Mount Bracket and Cable Included

Compact
Ideal for outdoor living, Camping, RV adventures.

Adjustable
Match your environment

Function
Easy to mount for all applications.

High Quality
Technology to match the demands of the market.



Model	PNS06W
Power	6W
Solar Panel Component	ETFE+EVA+mono Solar Cell+PCB
Solar Cells	182MM
Efficiency	22%
PERFORMANCE	
Output Power (@STC)	6W ±5%
Standard Voltage (@STC)	6.48V ±5%
Standard Current (@STC)	925mA ±5%
OUTPUT CONNECTION	
Connector	Type C/micro
Length of Cable	3M
PRODUCT	
Unfolded - mm	198.9*173.0*12.5
Net Weight	0.282kg
IP Rating	IP68
Lamination	High Temperature Pressing



MARKET OVERVIEW

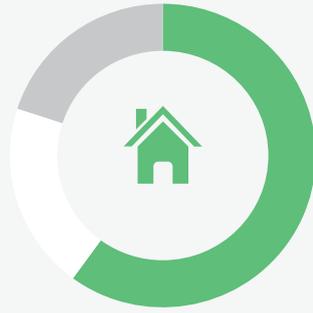


Market Drive

45% growth 2022

Policy support

Solar power now enjoys widespread acceptance as the key tool to achieve local energy security in the midterm.

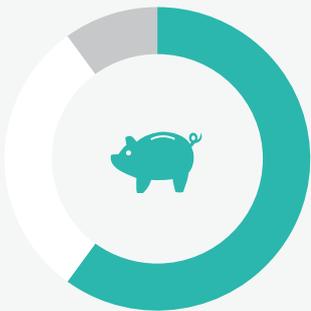


Market Trend

3.5 TW by 2027

Expected Growth

2023 High Scenario foresees 402 GW new solar this year and close to 800 GW in 2027. Having achieved over 1 TW of total solar capacity in 2022, we now see the potential for an annual TW-scale market by 2030

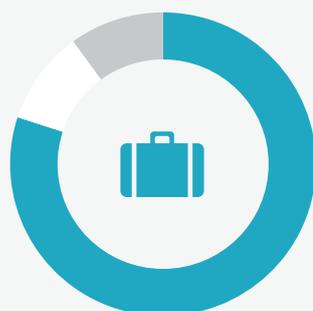


Opportunities

Soaring electricity prices

Fossil Challenge

Solar PV remains significantly cheaper than fossil fuels, and more price will raise for fossil, more people will look to Solar



Addition

Outdoor

Enjoy Trips

More and more outdoor activities are taking space, with Campering, RV, Camping to be part of life nearby needed support for increasing smart devices.



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