SUNPAL 2025 V3.0

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PV MODULE

PRODUCT BROCHURE

MAKING MORE POWER

Contents

DEVELOPMENT HISTORY

Company milestones

Start-up

Driven by the vision of making clean and reliable solar energy accessible worldwide, Sunpal was founded in 2008 by its CEO Juray in Hefei, China.

In the same year, Sunpal established its first solar energy factory and implemented rigorous quality management system that was certified to ISO 9001, ISO14001 and OHSAS18001.

2008~2009

Solidified the foundation

Initially, Sunpal focused on the research and development of solar modules and solar system solutions.

In 2010, Sunpal established a comprehensive solar solution department that provides customers with access to everything they need for a seamless solar power experience.

2010~2013

2014~2019

Industrial adjustment

Sunpal's global installation capacity of solar modules reached 5GW for residential, commercial and industrial applications by the end of 2019.

Sunpal's ever-growing distribution network, which now covers more than 80 countries worldwide. We pay more attention to the regions with high solar energy potential and a strong demand for sustainable solutions.

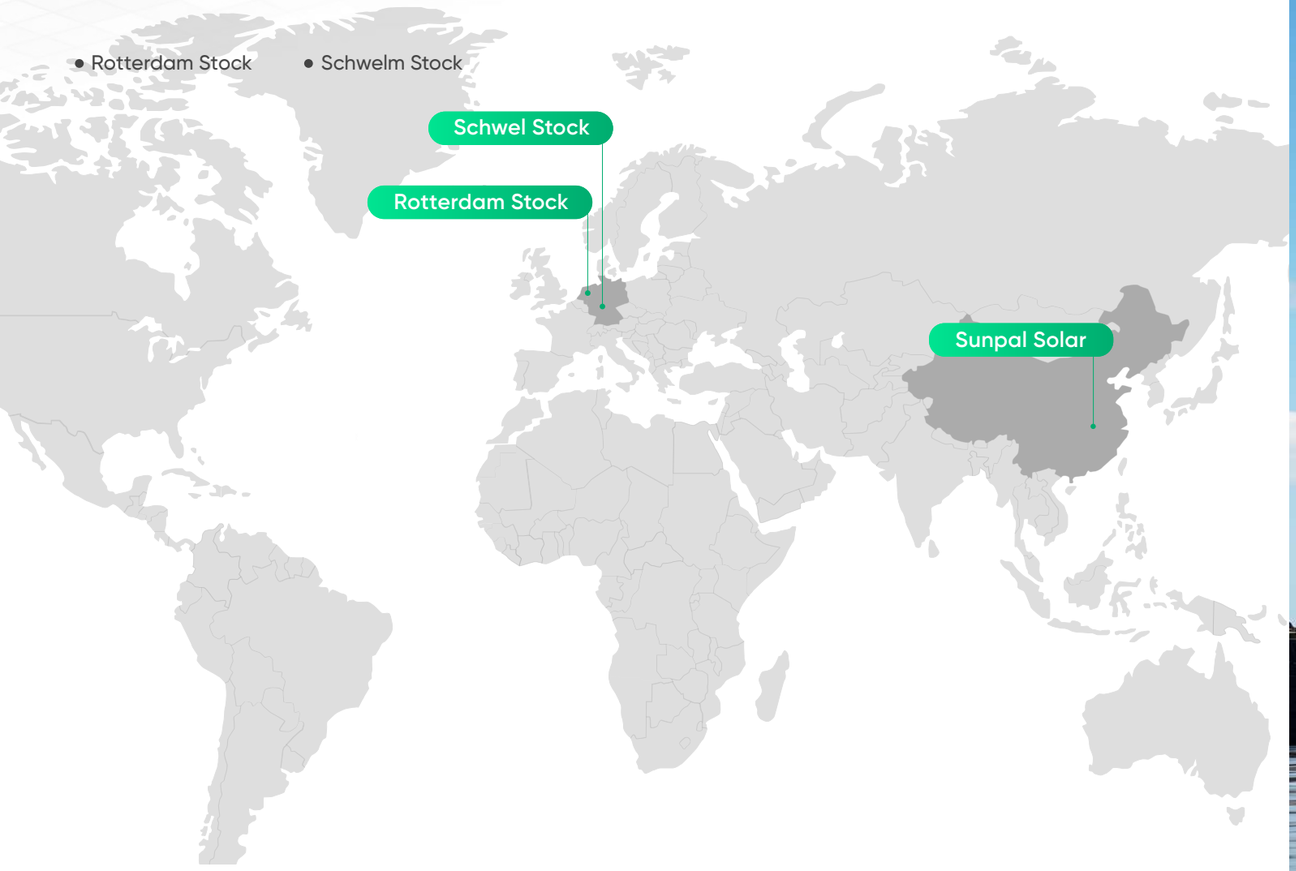
2020~Nowadays

Industrial upgrade

In 2020, Sunpal building a state-of-the-art factory with a production line for high-efficiency 210 mm solar modules (HiMAX6 & BiMAX6). All modules receive TUV/CE/CSA certifications for safety and reliability.

With an annual production capacity of 12 GW, Sunpal has established itself as a major player in the clean energy sector. And now Sunpal has further cemented its position at the forefront of solar technology by achieving mass production of the new generation of TOPCON and HJT PV modules.

Sunpal Power Co., Ltd.



SUNPAL OVERSEAS WAREHOUSE

Our Warehouse

Topcon 430W/440W
Bifacial All Black Solar Panel

Fast Delivery With 20% Deposit Reserve

OFFICIAL BRAND
PV PRODUCTS DISTRIBUTOR

Your Trusted Partner for Renewable Energy Solutions

CORPORATE CULTURE

About Sunpal

• Our Mission

We are committed to responsible solar system solutions for a better future and adhere to the highest ethical standards in our operations and supply chain. We value responsible sourcing, efficient manufacturing and end-of-life recycling to minimize our environmental footprint.

• Our Vision

We support our global customers with highly efficient solar products, individual advice on system design and financinga options. By investing in the continuous improvement of our employees, we foster a culture of innovation and excellence to create a sustainable future for all.

• Our Core Values

Customer-Centric

Respond to our customers beyond expectations and promote customer satisfaction; provide customers with exceptional, efficient and reliable services; build trust and act responsibly towards customers.

Pragmatism

Encourage our employees to explore new ideas with practical solutions; keep a long-term vision for the decision-making process; be flexible to adjust our course based on the evolving customer needs and data-driven insights.

People-Oriented

Cultivate a vibrant and collaborative work environment; empower our employees to take ownership; foster a culture of innovation that fuels our collective growth and shared success with our customers.

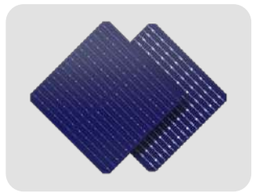
TECHNICAL CERTIFICATE

Tested and certificated for all major safety approvals

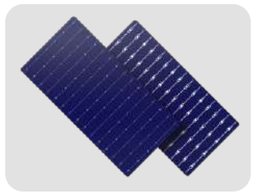
HIGH EFFICIENCY

PV Module Series

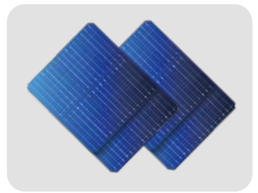
The Future of Solar: N-Type Innovation



Topcon



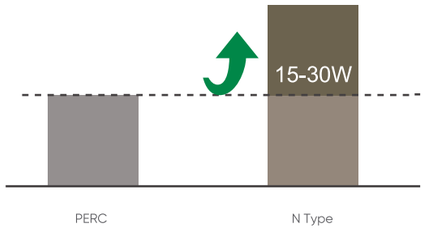
HJT



Rectangle

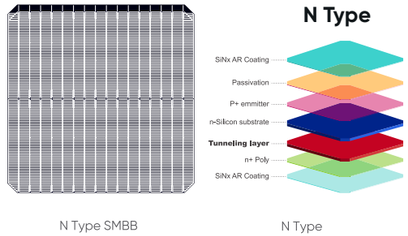
HALF-CELL N TYPE PV SERIES

Sunpal High Efficiency N-Type PV Module | Advantages



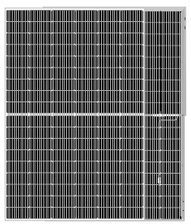
Higher Power

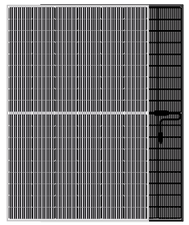
- For the same module type, the power of N-type modules is 15-30W higher than that of P-type modules



SMBB Technology

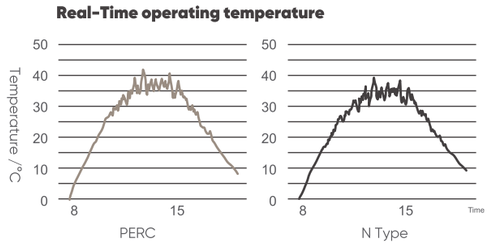
- Reduce the current transmission distance, reduce grid line shielding, and improve optical utilization
- SMBB technology combined with round wire ribbon can increase the utilization rate of incident light by 70%, and increase the power by 1-1.5%


PERC 60%Bifaciality


N Type(↗ 25%)85%Bifaciality

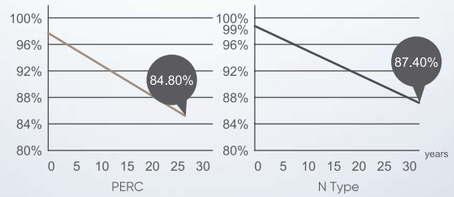
85%Bifaciality

- For the same module type, the double-sided rate of N-type modules is 25% higher than that of P-type modules



Lower Temperature Coefficient

- The temperature coefficient of P-type PV module is -0.35%/
- °C N-type module optimized temperature coefficient to
- -0.29%/°C Power generation is particularly prominent in high temperature environments



Better Power Guarantee

- N-type modules decay 1% in the first year (P-type 2%)
- Power warranty for 30 years (Double Glass)
- After 30 years, the output power is not lower than 87.4% of the initial power (Double Glass)

30 Power Warranty

≤ 1%

First year degradation

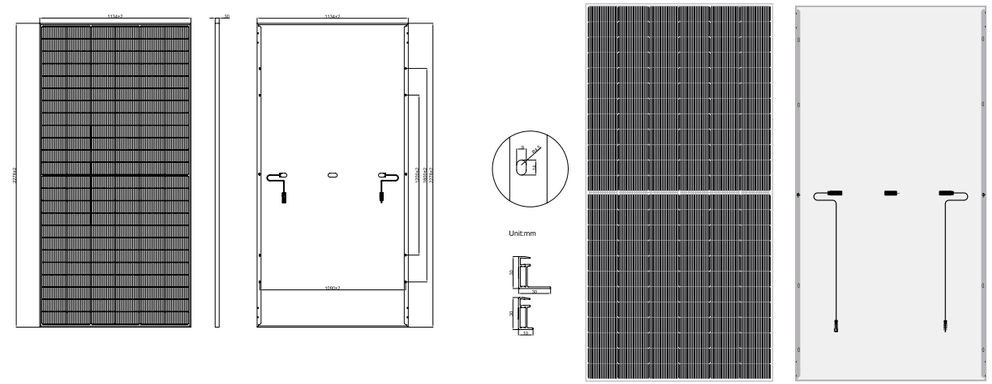
-0.4%

Linear degradation

Sunpal

HiMAX 5N 580~590 Watts

182mm 16BB 144Cells N Type Mono Half Cell PV Module



All Dimensions in mm
The above drawing is a graphical representation of the product.

Transparent backsheet is available.
Bifacial Solar PV Modules can be customized

Electrical Characteristics(STC/NOCT)

Module Type	SP580M-72H		SP585M-72H		SP590M-72H	
Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power-Pmax(W)	580	436	585	440	590	444
Open Circuit Voltage - Voc(V)	51.47	48.89	51.67	49.08	51.87	49.27
Short- Circuit Current - Isc(A)	14.37	11.21	14.43	11.26	14.49	11.31
Voltage at Pmax -Vmp(V)	42.60	39.86	42.76	39.97	42.92	40.08
Current at Pmax - Imp(A)	13.62	10.94	13.69	11.01	13.75	11.08
Module Efficiency -nm(%)	22.45	/	22.64		22.84	/
Power Tolerance(W)	(0，+4.99W)					
Maximum System Voltage(V)	1500Vdc (IEC/UL)					
Maximum Series Fuse Rating(A)	25A					

*STC :Irradiance 1000W/m²,Cell Temperature25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3% *Power binning up to:+3%

Mechanical Specifications

External Dimensions	2278x1134x30mm
Weight	27.5kg
Solar Cells	N-Type 16BB 18 mm(2x72pcs)
Front Glass	AR Coated 3.2mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

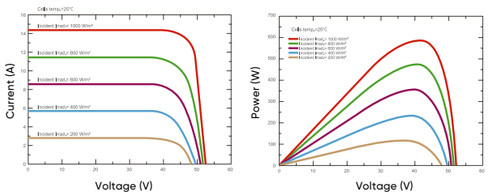
Packing configuration

Pallet Dimensions	2320x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	20 Pallets	19 Pallets	28 Pallets
Pieces per Container	740 Pcs	684 Pcs	1008 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Current-Voltage & Power-Voltage Curves(SP590M-72H)



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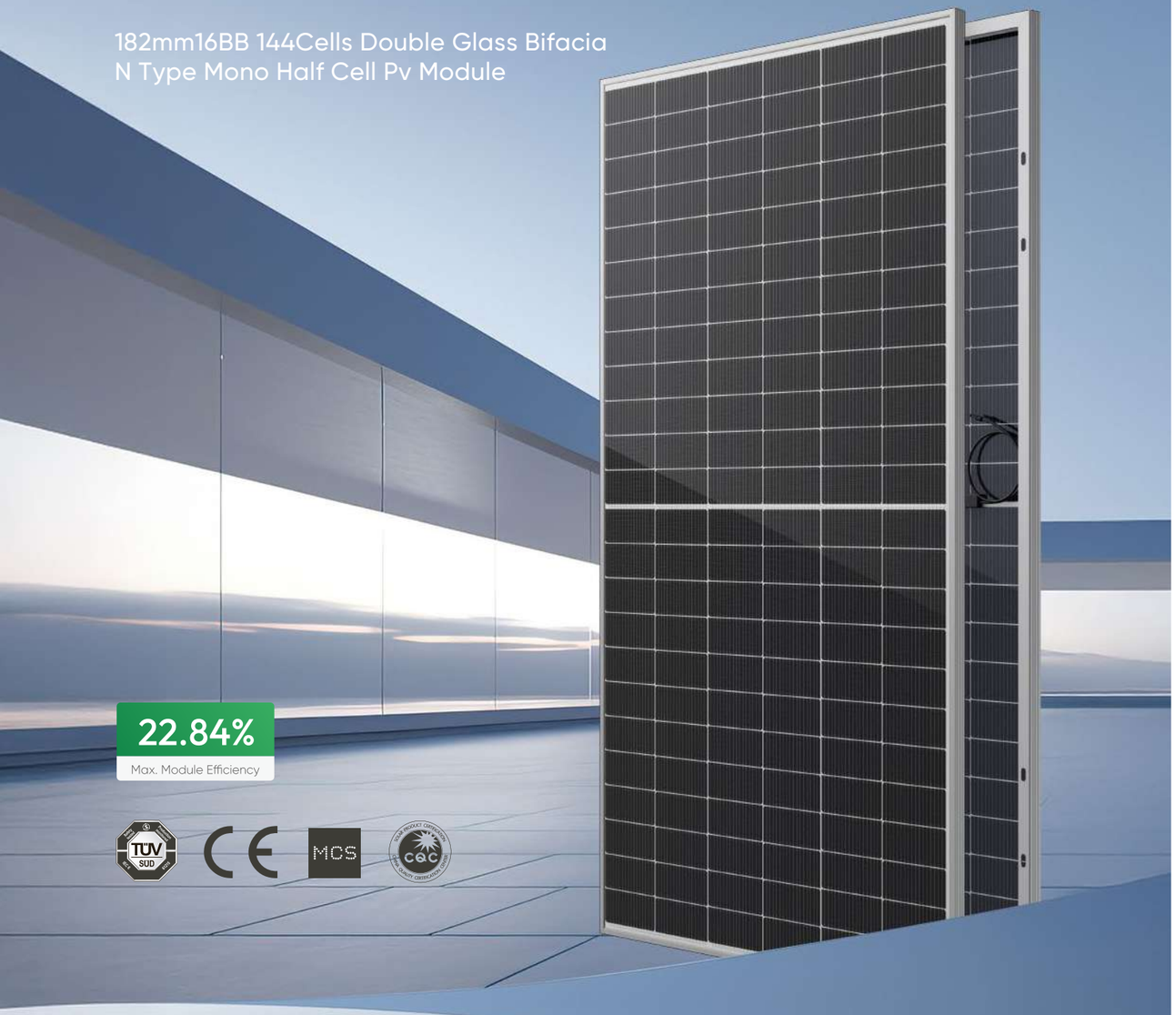
BiMAX 5N

580~590W

182mm16BB 144Cells Double Glass Bifacia
N Type Mono Half Cell Pv Module



22.84%
Max. Module Efficiency

Sunpal **N Type** Linear Warranty

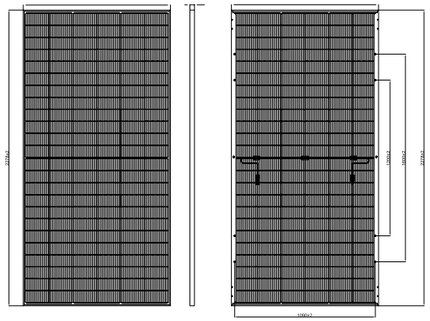
25 Years Materials Warranty

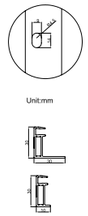
30 Years Power Warranty

Sunpal

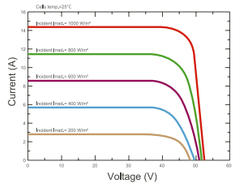
BiMAX 5N 580~590 Watts

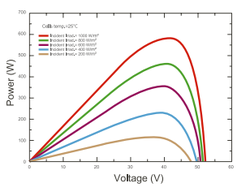
182mm 16BB 144Cells Double Glass Bifacial
N Type Mono Half Cell Pv Module





Current-Voltage & Power-Voltage Curves(SP590M-72H)





All Dimensions in mm
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Electrical Characteristics(STC/NOCT)

Module Type	SP580M-72H		SP585M-72H		SP590M-72H	
Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power-Pmax(W)	580	436	585	440	590	444
Open Circuit Voltage - Voc(V)	51.47	48.89	51.67	49.08	51.87	49.27
Short- Circuit Current - Isc(A)	14.37	11.21	14.43	11.26	14.49	11.31
Voltage at Pmax -Vmp(V)	42.60	39.86	42.76	39.97	42.92	40.08
Current at Pmax - Imp(A)	13.62	10.94	13.69	11.01	13.75	11.08
Module Efficiency -nm(%)	22.45	/	22.64		22.84	/
Power Tolerance(W)	(0，+4.99W)					
Maximum System Voltage(V)	1500Vdc (IEC/UL)					
Maximum Series Fuse Rating(A)	25A					

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

External Dimensions	2278x1134x30mm
Weight	31kg
Solar Cells	N-Type 16BB 18 mm(2x72pcs)
Front Glass	AR Coated 2+2mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

Bifacial Output Rear Side Power Gain

*Take SP585M-72H as an example.

Power Gain	5%	15%	25%
Maximum Power- Pmax(W)	614	673	731
Open Circuit Voltage - Voc(V)	51.67	51.67	51.67
Short- Circuit Current - Isc(A)	14.81	16.23	17.63
Voltage at Pmax -Vmp(V)	42.76	42.76	42.76
Current at Pmax -Imp(A)	14.36	15.74	17.10

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Packing configuration

Pallet Dimensions	2320x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	20 Pallets	17 Pallets	26 Pallets
Pieces per Container	740 Pcs	612 Pcs	936 Pcs

Specifications are subject to change without further notification

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HiMAX 6R

610~630W

210x182mm 16BB 132Cells N Type Mono
Half Cell PV Module Series

23.30%
Max. Module Efficiency

Sunpal **N Type** Linear Warranty

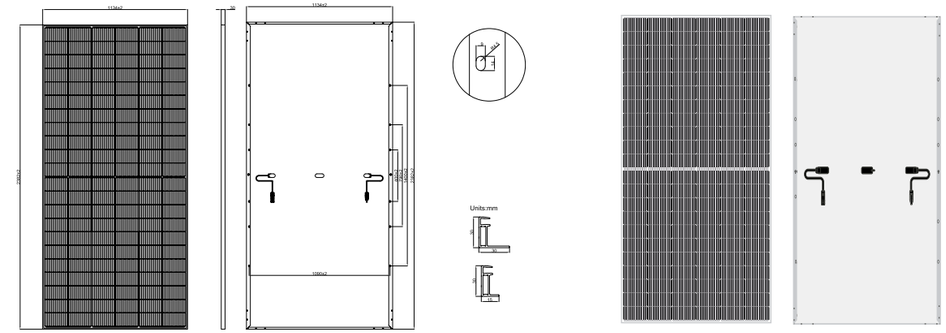
25 Years Materials Warranty

30 Years Power Warranty

Sunpal

HiMAX 6R 610 ~630 Watts

210x182mm 16BB 132Cells
N Type Mono Half Cell PV Module Series



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/NMOT)

Module Type	SP610M-66H		SP615M-66H		SP620M-66H		SP625M-66H		SP630M-66H	
Test Conditions	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power- Pmax(W)	610	460.7	615	464.4	620	468.2	625	471.9	630	475.7
Open Circuit Voltage - Voc(V)	48.70	46.24	48.90	46.43	49.10	46.62	49.30	46.81	49.50	47.00
Short- Circuit Current - Isc(A)	15.95	12.88	16.01	12.93	16.07	12.98	16.13	13.03	16.19	13.08
Voltage at Pmax -Vmp(V)	40.48	37.92	40.62	38.10	40.76	38.25	40.91	38.42	41.04	38.59
Current at Pmax -Imp(A)	15.07	12.15	15.14	12.19	15.21	12.24	15.28	12.28	15.35	12.33
Module Efficiency -nm(%)	22.60	/	22.80	/	23.00	/	23.10	/	23.30	/
Power Tolerance(W)	(0，+5W)									
Maximum System Voltage(V)	1500Vdc (IEC/UL)									
Maximum Series Fuse Rating (A)	30A									

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	2382x1134x30mm
Weight	28.5kg
Solar Cells	N-Type 16BB 18 mm(2x66pcs)
Front Glass	AR Coated 3.2mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

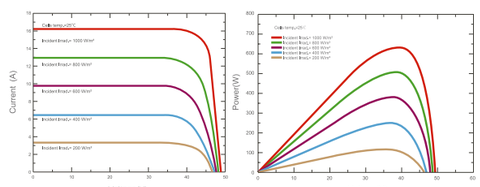
Packing configuration

Pallet Dimensions	1164x1140x2495mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	20 Pallets	19 Pallets	28 Pallets
Pieces per Container	740 Pcs	684 Pcs	1008 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Current-Voltage & Power-Voltage Curves(SP630M-66H)



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BiMAX 6R

610~630W

210x182mm16BB 132Cells Double Glass Bifacial N Type
Mono Half Cell PV Module Series

23.30%
Max. Module Efficiency

23.30%
Max. Module Efficiency

Sunpal **N Type** Linear Warranty

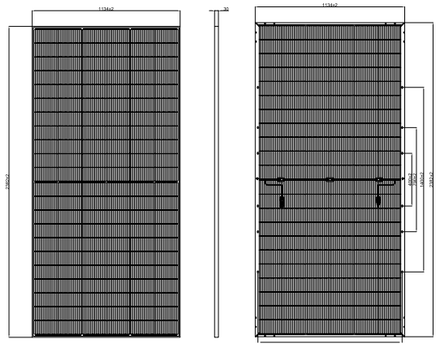
25 Years Materials Warranty

30 Years Power Warranty

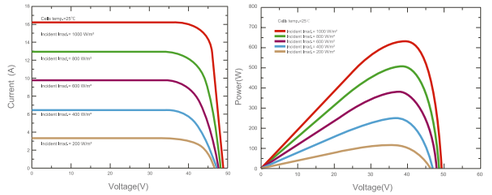
Sunpal

BiMAX 6R 610 ~630 Watts

210x182mm 16BB 132Cells Double Glass Bifacial
N Type Mono Half Cell PV Module Series



Current-Voltage & Power-Voltage Curves(SP630M-66H)



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/NMOT)

Module Type	SP610M-66H		SP615M-66H		SP620M-66H		SP625M-66H		SP630M-66H	
Test Conditions	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power- Pmax(W)	610	460.7	615	464.4	620	468.2	625	471.9	630	475.7
Open Circuit Voltage - Voc(V)	48.70	46.24	48.90	46.43	49.10	46.62	49.30	46.81	49.50	47.00
Short- Circuit Current - Isc(A)	15.95	12.88	16.01	12.93	16.07	12.98	16.13	13.03	16.19	13.08
Voltage at Pmax -Vmp(V)	40.48	37.92	40.62	38.10	40.76	38.25	40.91	38.42	41.04	38.59
Current at Pmax -Imp(A)	15.07	12.15	15.14	12.19	15.21	12.24	15.28	12.28	15.35	12.33
Module Efficiency -nm(%)	22.60	/	22.80	/	23.00	/	23.10	/	23.30	/
Power Tolerance(W)	(0，+5W)									
Maximum System Voltage(V)	1500Vdc (IEC/UL)									
Maximum Series Fuse Rating (A)	30A									

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	2382x1134x30mm
Weight	32.4kg
Solar Cells	N-Type 16BB 182x105mm (2x66pcs)
Front Glass	AR Coated 2+2mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

Bifacial Output Rear Side Power Gain

*Take SP630M-66H as an example.

Power Gain	5%	10%	20%
Maximum Power- Pmax(W)	661.5	693.0	756.0
Open Circuit Voltage - Voc(V)	49.50	49.50	49.50
Short- Circuit Current - Isc(A)	16.81	17.60	19.20
Voltage at Pmax -Vmp(V)	41.04	41.04	41.04
Current at Pmax -Imp(A)	16.12	16.89	18.42

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Packing configuration

Pallet Dimensions	2320x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	20 Pallets	17 Pallets	26 Pallets
Pieces per Container	740 Pcs	612 Pcs	936 Pcs

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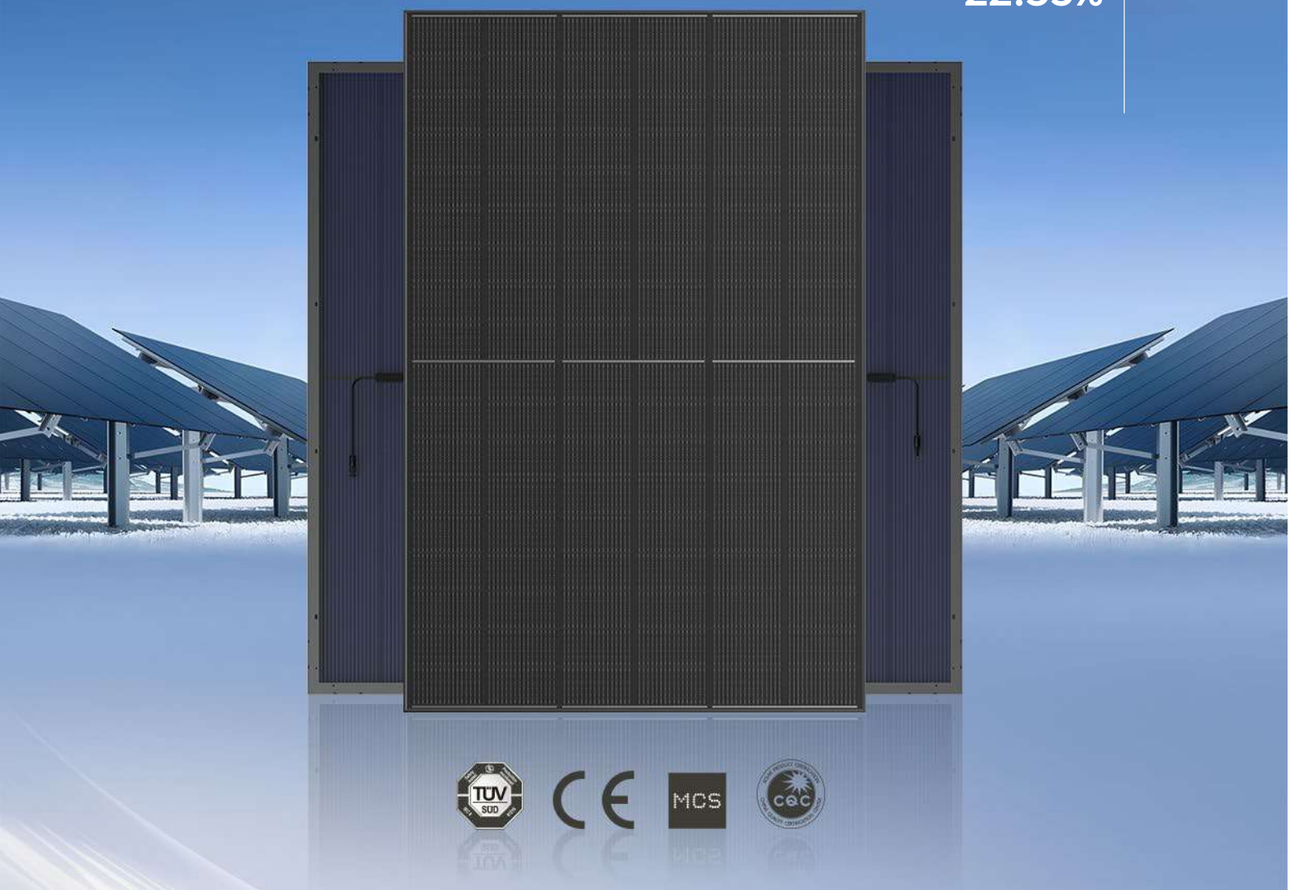
SUNPAL-EN-2025V3.0

BiMAX 5N

410~440W

182mm 16BB 108Cells All Black Double Glass Bifacial
N Type Mono Half Cell PV Module Series

Max. Module Efficiency
22.53%



Sunpal **N Type** Linear Warranty

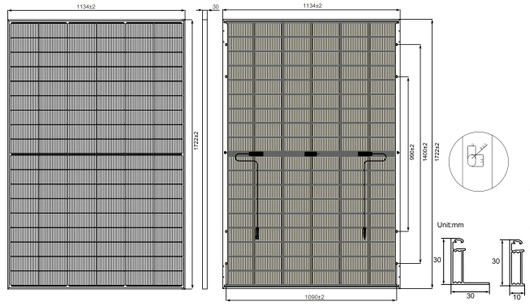
25 Years Materials Warranty

30 Years Power Warranty

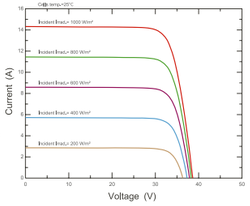
Sunpal

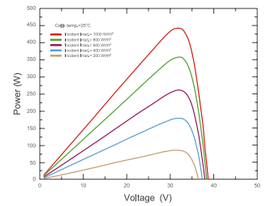
BiMAX 5N 410 ~440 Watts

210x182mm 16BB 132Cells Double Glass Bifacial
N Type Mono Half Cell PV Module Series



Current-Voltage & Power-Voltage Curves(SP440M-54H)





All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/NMOT)

Module Type	SP410M-54H		SP415M-54H		SP420M-54H		SP425M-54H		SP430M-54H		SP435M-54H		SP440M-54H	
Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power- Pmax(W)	410	313.7	415	317.3	420	321.1	425	325.0	430	328.7	435	332.4	440	336.3
Open Circuit Voltage - Voc(V)	38.20	36.30	38.33	36.40	38.46	36.50	38.59	36.60	38.72	36.80	38.85	36.90	38.98	37.10
Short- Circuit Current - Isc(A)	13.49	10.97	13.60	11.05	13.71	11.13	13.81	11.22	13.91	11.28	14.33	11.36	14.41	11.44
Voltage at Pmax -Vmp(V)	31.60	29.60	31.79	29.71	31.97	29.90	32.15	30.01	32.34	30.19	32.52	30.30	32.70	30.41
Current at Pmax -Imp(A)	12.98	10.60	13.06	10.68	13.14	10.74	13.22	10.83	13.30	10.89	13.38	10.97	13.46	11.06
Module Efficiency -nm(%)	21.00	/	21.30	/	21.50	/	21.80	/	22.00	/	22.27	/	22.53	/
Power Tolerance(W)	(0，+4.99W)													
Maximum System Voltage(V)	1500Vdc (IEC/UL)													
Maximum Series Fuse Rating (A)	30A													

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	2382x1134x30mm
Weight	21kg
Solar Cells	N-Type 16BB 182mm (2x54pcs)
Front Glass	AR Coated 1.6+1.6mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm² ,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

Bifacial Output Rear Side Power Gain

*Take SP420M-54H as an example.

Power Gain	5%	10%	20%
Maximum Power- Pmax(W)	441.0	483.0	525.0
Open Circuit Voltage - Voc(V)	38.46	38.46	38.46
Short- Circuit Current - Isc(A)	14.42	15.79	17.16
Voltage at Pmax -Vmp(V)	31.97	31.97	31.97
Current at Pmax -Imp(A)	13.79	15.11	16.42

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Packing configuration

Pallet Dimensions	2320x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	26 Pallets	24 Pallets	36 Pallets
Pieces per Container	962 Pcs	864Pcs	1296 Pcs

Specifications are subject to change without further notification

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SUNPAL-EN-2025V3.0

BiMAX 6R

210x182mm16BB 96Cells All Black Double Glass Bifacial
N Type Mono Half Cell PV Module Series

450~470W

- SMBB Technology
  Half Cut N Type Cell
- Fire Class A
- High Energy
  Performance
- Strengthened
  Mechanical Load
- 100% Inspection
  30years Guarantee
- Advanced Bifacial
  Efficiency

Sunpal **N Type** Linear Warranty

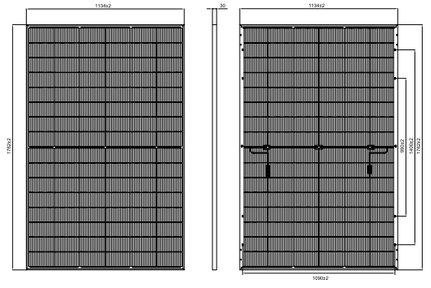
25 Years Materials Warranty

30 Years Power Warranty

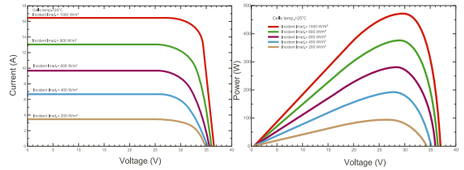
Sunpal

BiMAX 6R 450 ~470 Watts

210x182mm 16BB 96Cells Double Glass Bifacial
N Type Mono Half Cell PV Module Series



Current-Voltage & Power-Voltage Curves(SP470M-48H)



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/NMOT)

Module Type	SP450M-48H		SP455M-48H		SP460M-48H		SP465M-48H		SP470M-48H	
Test Conditions	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power- Pmax(W)	450	339.8	455	343.5	460	347.4	465	351.2	470	355.0
Open Circuit Voltage - Voc(V)	35.64	33.92	35.80	34.11	35.97	34.30	36.14	34.49	36.31	34.68
Short- Circuit Current - Isc(A)	16.06	12.91	16.14	12.96	16.23	13.01	16.32	13.06	16.40	13.11
Voltage at Pmax -Vmp(V)	29.63	27.83	29.76	27.99	29.89	28.15	30.03	28.31	30.16	28.47
Current at Pmax -Imp(A)	15.19	12.21	15.29	12.27	15.39	12.34	15.49	12.40	15.58	12.47
Module Efficiency -nm(%)	22.52	/	22.77	/	23.02	/	23.27	/	23.52	/
Power Tolerance(W)	(0，+5W)									
Maximum System Voltage(V)	1500Vdc (IEC/UL)									
Maximum Series Fuse Rating (A)	30A									

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	1762x1134x30mm
Weight	21.5kg
Solar Cells	N-Type 16BB 182x105mm (2x48pcs)
Front Glass	AR Coated 1.6+1.6mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

Bifacial Output Rear Side Power Gain

*Take SP470M-48H as an example.

Power Gain	5%	10%	20%
Maximum Power- Pmax(W)	493.5	517.0	564.0
Open Circuit Voltage - Voc(V)	36.31	36.31	36.31
Short- Circuit Current - Isc(A)	17.22	18.04	19.68
Voltage at Pmax -Vmp(V)	30.16	30.16	30.16
Current at Pmax -Imp(A)	16.36	17.14	18.70

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Packing configuration

Pallet Dimensions	1790x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	26 Pallets	24 Pallets	36 Pallets
Pieces per Container	962 Pcs	864 Pcs	1296 Pcs

Specifications are subject to change without further notification

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SUNPAL-EN-2025V3.0

BiMAX 6R

500~525W

210x182mm 16BB 108Cells Double Glass Bifacial
N Type Mono Half Cell PV Module Series

23.17%
Max. Module Efficiency

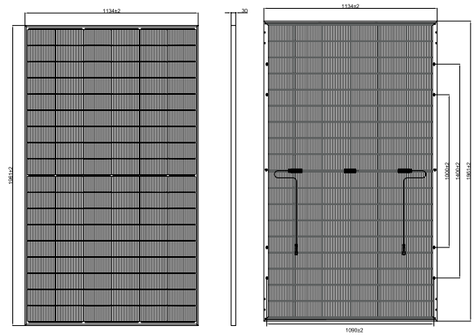
Sunpal **N Type** Linear Warranty

25 Years Materials Warranty

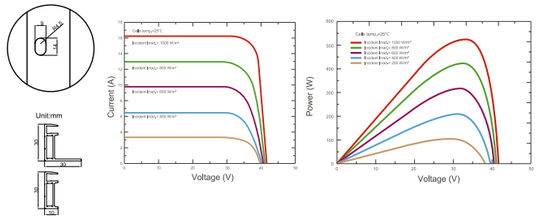
30 Years Power Warranty

Sunpal

BiMAX 6R 500 ~525 Watts
210x182mm 16BB 108Cells Double Glass Bifacial
N Type Mono Half Cell PV Module Series



Current-Voltage & Power-Voltage Curves(SP525M-54H)



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/NMOT)

Module Type	SP500M-54H		SP505M-54H		SP510M-54H		SP515M-54H		SP520M-54H		SP525M-54H	
Test Conditions	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power- Pmax(W)	500	377.5	505	381.3	510	385.1	515	388.9	520	392.7	525	396.5
Open Circuit Voltage - Voc(V)	39.90	37.84	40.09	38.00	40.28	38.16	40.47	38.32	40.66	38.48	40.85	38.64
Short- Circuit Current - Isc(A)	15.93	12.89	16.00	12.95	16.05	13.01	16.10	13.07	16.15	13.13	16.20	13.19
Voltage at Pmax -Vmp(V)	33.18	31.02	33.33	31.15	33.48	31.28	33.63	31.41	33.78	31.54	33.93	31.67
Current at Pmax -Imp(A)	15.07	12.17	15.15	12.24	15.23	12.31	15.31	12.38	15.39	12.45	15.47	12.52
Module Efficiency -nm(%)	22.48	/	22.71	/	22.93	/	23.16	/	23.38	/	23.61	/
Power Tolerance(W)	(0，+5W)											
Maximum System Voltage(V)	1500Vdc (IEC/UL)											
Maximum Series Fuse Rating (A)	30A											

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NMOT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	1961x1134x30mm
Weight	23.9kg
Solar Cells	N-Type 16BB 182x105mm (2x54pcs)
Front Glass	AR Coated 1.6+1.6mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

Bifacial Output Rear Side Power Gain

*Take SP525M-54H as an example.

Power Gain	5%	10%	20%
Maximum Power- Pmax(W)	551.3	577.5	630.0
Open Circuit Voltage - Voc(V)	40.85	40.85	40.85
Short- Circuit Current - Isc(A)	16.97	17.77	19.38
Voltage at Pmax -Vmp(V)	33.93	33.93	33.93
Current at Pmax -Imp(A)	16.25	17.02	18.57

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Packing configuration

Pallet Dimensions	1980x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	24 Pallets	22 Pallets	33 Pallets
Pieces per Container	888 Pcs	792 Pcs	1188 Pcs

Specifications are subject to change without further notification

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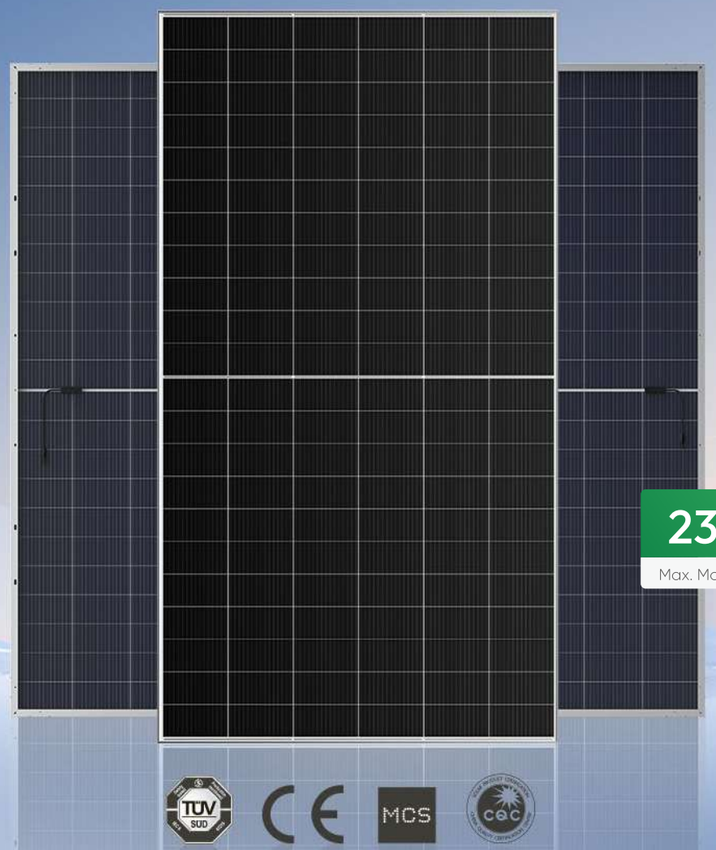
SUNPAL-EN-2025V3.0

BiMAX 6N

700~730W

210mm 132Cells Double Glass Bifacial
Mono PV Module Series



23.50%
Max. Module Efficiency

SMBB Technology
Half Cut N Type Cell

Strengthened
Mechanical Load

Fire Class A

High Energy
Performance

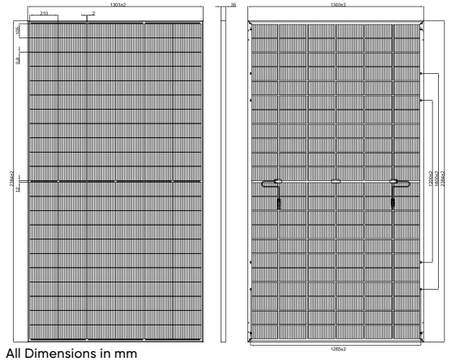
100% Inspection
30years Guarantee

Anti PID

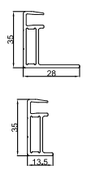
Sunpal

BiMAX 6N 700 ~730 Watts

210mm 132Cells Double Glass Bifacial Mono PV Module



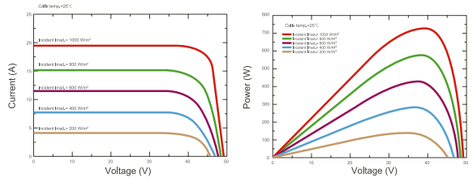
Unit: mm



All Dimensions in mm

The above drawing is a graphical representation of the product,

Current-Voltage & Power-Voltage Curves(SP730M-66H)



Electrical Characteristics(STC/NMOT)

Module Type	SP700M-66H		SP705M-66H		SP710M-66H		SP715M-66H		SP720M-66H		SP725M-66H		SP730M-66H	
Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power- Pmax(W)	700	529	705	533	710	537	715	541	720	545	725	549	730	553
Open Circuit Voltage - Voc(V)	47.90	45.40	48.10	45.50	48.30	45.70	48.50	45.90	48.70	46.10	48.90	46.30	49.10	46.50
Short- Circuit Current - Isc(A)	18.49	14.91	18.54	14.95	18.59	14.99	18.64	15.03	18.69	15.07	18.74	15.11	18.79	15.15
Voltage at Pmax -Vmp(V)	40.00	37.80	40.20	38.00	40.40	38.20	40.60	38.40	40.80	38.60	41.00	38.80	41.20	39.00
Current at Pmax -Imp(A)	17.51	14.00	17.54	14.03	17.58	14.06	17.62	14.09	17.65	14.12	17.69	14.15	17.72	14.18
Module Efficiency -nm(%)	22.5	/	22.7	/	22.9	/	23.0	/	23.2	/	23.3	/	23.5	/
Power Tolerance(W)	(0，+4.99W)													
Maximum System Voltage(V)	1500Vdc (IEC/UL)													
Maximum Series Fuse Rating (A)	35A													

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	2384x1303x35mm
Weight	37.8kg
Solar Cells	Mono crystalline 210mm (2x66pcs)
Front Glass	AR Coated 2+2 mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm² ,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

Bifacial Output Rear Side Power Gain

*Take SP715M-66H as an example.

Power Gain	5%	10%	25%
Maximum Power- Pmax(W)	750.8	786.5	893.8
Open Circuit Voltage - Voc(V)	48.50	48.50	48.50
Short- Circuit Current - Isc(A)	19.57	20.50	23.30
Voltage at Pmax -Vmp(V)	40.60	40.60	40.60
Current at Pmax -Imp(A)	18.50	19.38	22.03

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Packing configuration

Pallet Dimensions	1320x1125x2495mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	31 Pcs	31 Pcs	31 Pcs
Pallets per Container	18 Pallets	16 Pallets	24 Pallets
Pieces per Container	558 Pcs	496 Pcs	744 Pcs

Specifications are subject to change without further notification

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SUNPAL-EN-2025V3.0

HiMAX 5N

430W

182mm 16BB 108Cells
N Type Mono Half Cell PV Module

22.10%
Max. Module Efficiency

- Lighter weight
- Safer
- Higher strength
- Stronger weather resistance
- Higher efficiency
- Easier to install

Sunpal **N Type** Linear Warranty

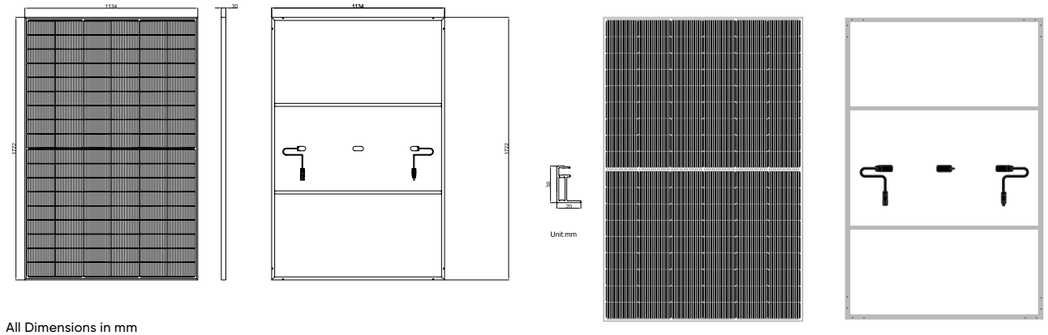
25 Years Materials Warranty

30 Years Power Warranty

Sunpal

HiMAX 5N 430 Watts

182mm 16BB 108Cells
N Type Mono Half Cell PV Module



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/NOCT)

Module Type	SP430M-54H	
Test Conditions	STC	NOCT
Maximum Power- Pmax(W)	430	329
Open Circuit Voltage - Voc(V)	38.72	36.80
Short- Circuit Current - Isc(A)	14.25	11.49
Voltage at Pmax -Vmp(V)	32.33	30.20
Current at Pmax -Imp(A)	13.30	10.89
Module Efficiency -nm(%)	22.10	/
Power Tolerance(W)	(0，+5W)	
Maximum System Voltage(V)	1500Vdc (IEC/UL)	
Maximum Series Fuse Rating (A)	25A	

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*NOCT : Irradiance 800W/m²,Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s
*Measurement tolerance: ±3%　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	1722x1134x30mm
Weight	10.3kg
Solar Cells	N-Type 16BB 182mm (2x54pcs)
Front Glass	1.1mm reinforced tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm (-), length can be customized
Connector	MC4 Compatible

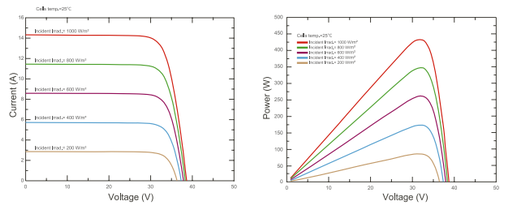
Packing configuration

Ways of Transport	Pieces per Container	Pieces per Pallet
40'HQ	962	37
13m	1036	37
17m	1776	37

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Current-Voltage & Power-Voltage Curves(SP430M-54H)



Specifications are subject to change without further notification

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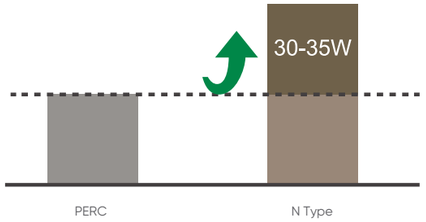
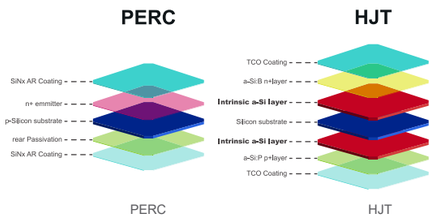
HALF-CELL HJT PV SERIES

Sunpal High Efficiency N-Type PV Module | Advantages



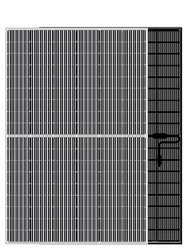
Higher Power

- For the same module type, the power of HJT modules is 30-35W higher than that of PERC modules

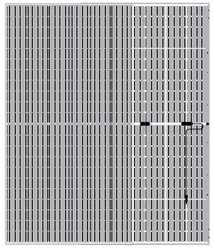


No PID, LID

- With no B-O bond and TCO film, LiD and PID effect can be eliminated, which means less power loss and longer service life



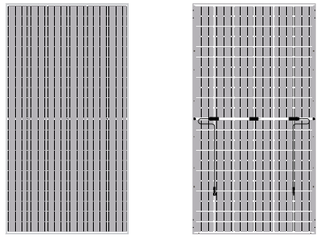
PERC 60%Bifaciality



HJT(↗ 35%)95%Bifaciality

＞95% Bifaciality

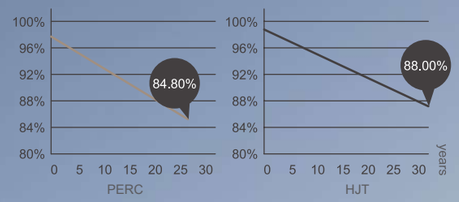
- By virtue of the cell's natural bifacial structure, bifacial solar modules can generate power from both sides, which brings more energy yield

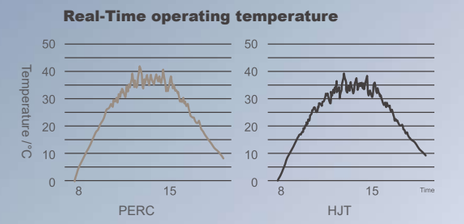


210MM 700W

Superior Power

- The maximum power output of Sunpal HJT solar modules has reached 700W, which can effectively reduce the LCOE and bring more investment returns to customers





Leading Warranty

- All Sunpal HJT solar modules have 15-year product warranty and 30-year linear performance warranty, the power will remain above 88% during the service life

Lower temperature coefficient

- The temperature coefficient of P-type PV module is -0.35%/℃
- HJT module optimized temperature coefficient to -0.26%/℃
- Power generation is particularly prominent in high temperature environments

BiMAX 6N

700~730W

210mm 132Cells Double Glass Bifacial HJT
Mono Half Cell PV Module Series

23.50%
Max. Module Efficiency

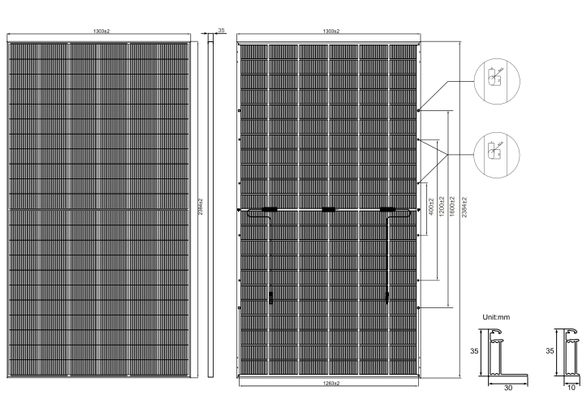
Sunpal **N Type** Linear Warranty

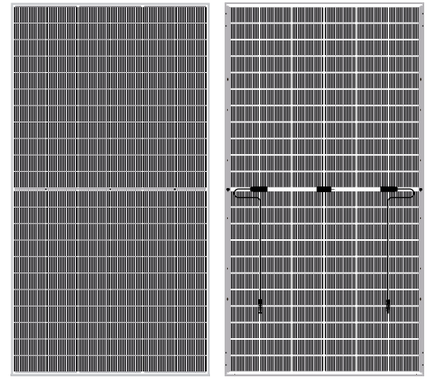
25 Years Materials Warranty **30 Years** Power Warranty

Sunpal

BiMAX 6N 700~730 Watts

210mm132Cells Double Glass Bifacial
HJT Mono Half Cell PV Module





All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/BSTC)

Module Type	SP700M-66H		SP705M-66H		SP710M-66H		SP715M-66H		SP720M-66H		SP725M-66H		SP730M-66H	
Test Conditions	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC
Maximum Power- Pmax(W)	700	770	705	775	710	780	715	785	720	790	725	795	730	800
Open Circuit Voltage - Voc(V)	50.13	50.13	50.29	50.29	50.44	50.44	50.59	50.59	50.74	50.74	50.88	50.88	51.03	51.03
Short- Circuit Current - Isc(A)	17.43	19.17	17.49	19.22	17.55	19.28	17.61	19.33	17.67	19.39	17.73	19.44	17.79	19.50
Voltage at Pmax -Vmp(V)	42.10	42.10	42.25	42.25	42.39	42.39	42.54	42.54	42.68	42.68	42.83	42.83	42.97	42.97
Current at Pmax -Imp(A)	16.63	18.29	16.69	18.35	16.75	18.41	16.81	18.46	16.87	18.51	16.93	18.57	16.99	18.62
Module Efficiency -nm(%)	22.53	/	22.70	/	22.86	/	23.02	/	23.18	/	23.34	/	23.50	/
Power Tolerance(W)	(0，+4.99W)													
Maximum System Voltage(V)	1500Vdc (IEC/UL)													
Maximum Series Fuse Rating (A)	35A													

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*BSTC : Front side irradiation 1000W/m², back side reflection irradiation 135W/m, AM=1.5, Ambient Temperature 25°C
*Measurement tolerance: ±3%　　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	2384x1303x35mm
Weight	38.7kg
Solar Cells	HJT 210mm(2x66pcs)
Front Glass	AR Coated 2+2 mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

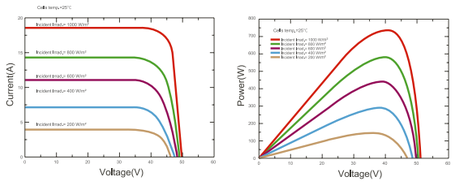
Packing configuration

Pallet Dimensions	1320x1125x2495mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	31 Pcs	31 Pcs	31 Pcs
Pallets per Container	18 Pallets	16 Pallets	24 Pallets
Pieces per Container	558 Pcs	496 Pcs	744 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.260%/°C
Voc Temperature Coefficient	-0.240%/°C
Isc Temperature Coefficient	+0.040%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	44±2°C

Current-Voltage & Power-Voltage Curves(SP730M-66H)



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BiMAX 6R

440~460W

210x182mm 18BB 96Cells All Black Double Glass Bifacial
HJT Mono Half Cell PV Module Series

- SMBB HJT Half Cut Cell
- Anti PID
- Excellent Low-light Performance
- Strengthened Mechanical Load
- 100% Inspection Guarantee Reliability
- Advanced Bifacial Efficiency

Sunpal **N Type** Linear Warranty

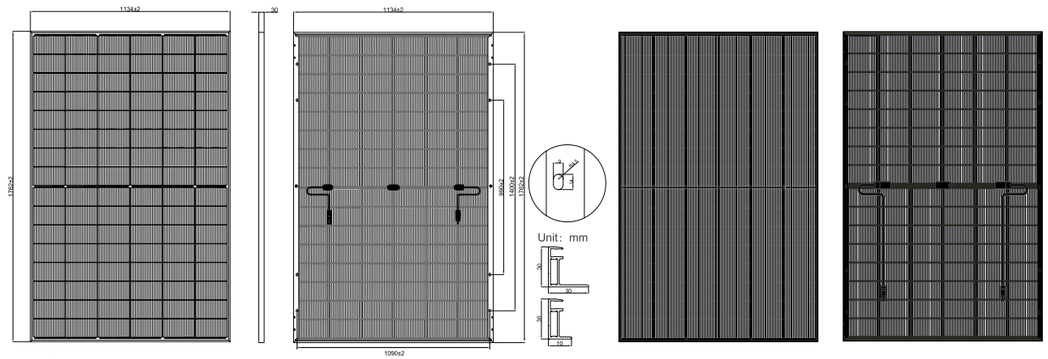
25 Years Materials Warranty

30 Years Power Warranty

Sunpal

BiMAX 6R 440~460 Watts

210x182mm 18BB 96Cells All Black Double Glass Bifacial
HJT Mono Half Cell PV Module Series



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/BSTC)

Module Type	SP440M-48H		SP445M-48H		SP450M-48H		SP455M-48H		SP460M-48H	
Test Conditions	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC
Maximum Power- Pmax(W)	440	490	445	495	450	500	455	505	460	510
Open Circuit Voltage - Voc(V)	36.68	36.68	36.95	36.95	37.22	37.22	37.47	37.47	37.72	37.72
Short- Circuit Current - Isc(A)	15.26	17.01	15.30	17.05	15.36	17.12	15.41	17.17	15.45	17.22
Voltage at Pmax -Vmp(V)	30.43	30.43	30.66	30.66	30.88	30.88	31.10	31.10	31.30	31.30
Current at Pmax -Imp(A)	14.47	16.11	14.53	16.15	14.60	16.19	14.66	16.24	14.72	16.30
Module Efficiency -nm(%)	22.02	/	22.27	/	22.52	/	22.77	/	23.02	/
Power Tolerance(W)	(0,+4.99W)									
Maximum System Voltage(V)	1500Vdc (IEC/UL)									
Maximum Series Fuse Rating (A)	30A									

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*BSTC : Front side irradiation 1000W/m², back side reflection iradiation 135W/m², AM=1.5, Ambient Temperature 25°C.
*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

External Dimensions	1762x1134x30mm
Weight	21.5kg
Solar Cells	HJT 182x105mm(2x48pcs)
Front Glass	AR Coated 1.6+1.6mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

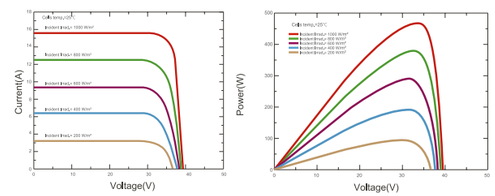
Packing configuration

Pallet Dimensions	1790x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	26 Pallets	24 Pallets	36 Pallets
Pieces per Container	962 Pcs	864 Pcs	1296 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.260%/°C
Voc Temperature Coefficient	-0.240%/°C
Isc Temperature Coefficient	+0.040%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	44±2°C

Current-Voltage & Power-Voltage Curves(SP460M-48H)



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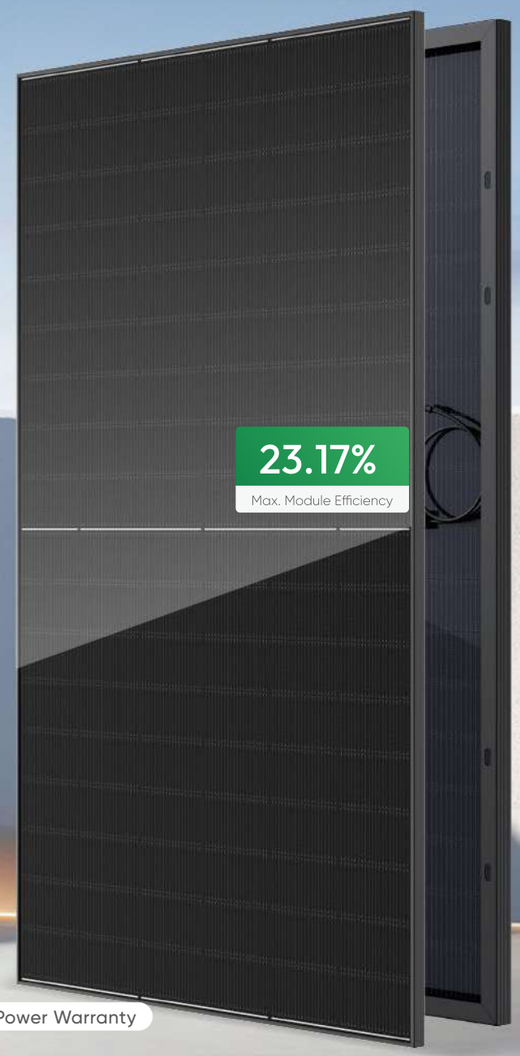
BiMAX 6R

500~515W

210x182mm 18BB 108Cells All Black Double Glass Bifacial
HJT Mono Half Cell PV Module Series

- SMBB HJT Half Cut Cell
- Anti PID
- Excellent Low-light Performance
- Strengthened Mechanical Load
- 100% Inspection Guarantee Reliability
- Advanced Bifacial Efficiency



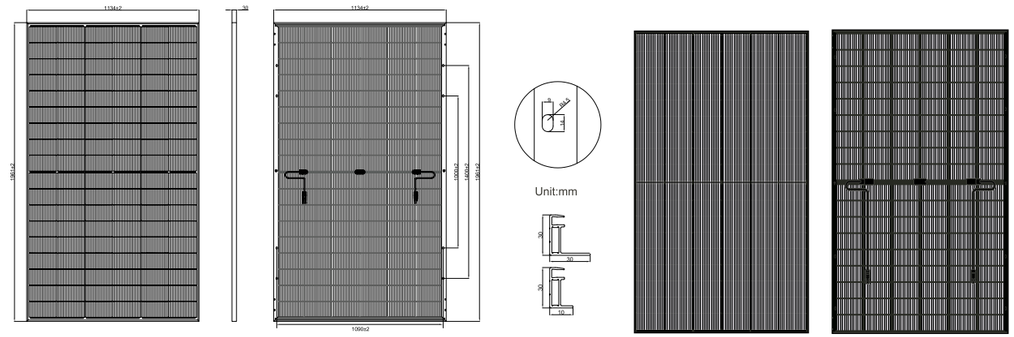
Sunpal **N Type** Linear Warranty

25 Years Materials Warranty **30 Years** Power Warranty

Sunpal

BiMAX 6R 500~515 Watts

210x182mm 18BB 108Cells All Black Double Glass Bifacial
HJT Mono Half Cell PV Module Series



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC/BSTC)

Module Type	SP500M-54H		SP505M-54H		SP510M-54H		SP515M-54H	
Test Conditions	STC	BSTC	STC	BSTC	STC	BSTC	STC	BSTC
Maximum Power- Pmax(W)	500	560	505	565	510	570	515	575
Open Circuit Voltage - Voc(V)	41.67	41.67	41.82	41.82	41.97	41.97	42.12	42.12
Short- Circuit Current - Isc(A)	15.42	17.19	15.47	17.25	15.52	17.30	15.57	17.36
Voltage at Pmax -Vmp(V)	34.36	34.36	34.49	34.49	34.61	34.61	34.74	34.74
Current at Pmax -Imp(A)	14.56	16.30	14.65	16.39	14.74	16.47	14.83	16.56
Module Efficiency -nm(%)	22.50	/	22.72	/	22.95	/	23.17	/
Power Tolerance(W)	(0,+4.99W)							
Maximum System Voltage(V)	1500Vdc (IEC/UL)							
Maximum Series Fuse Rating (A)	30A							

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*BSTC : Front side irradiation 1000W/m², back side reflection irradiation 135W/m², AM=1.5, Ambient Temperature 25°C.
*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

External Dimensions	1961x1134x30mm
Weight	23.9kg
Solar Cells	HJT 182x105mm(2x54pcs)
Front Glass	AR Coated 1.6+1.6mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max.2400Pa

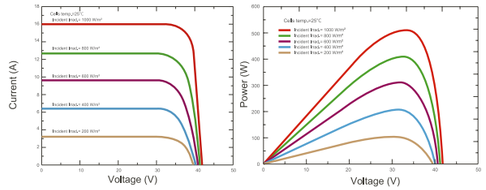
Packing configuration

Pallet Dimensions	1790x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	24 Pallets	22 Pallets	33 Pallets
Pieces per Container	888 Pcs	792 Pcs	1188 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.260%/°C
Voc Temperature Coefficient	-0.240%/°C
Isc Temperature Coefficient	+0.040%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	44±2°C

Current-Voltage & Power-Voltage Curves(SP515M-54H)



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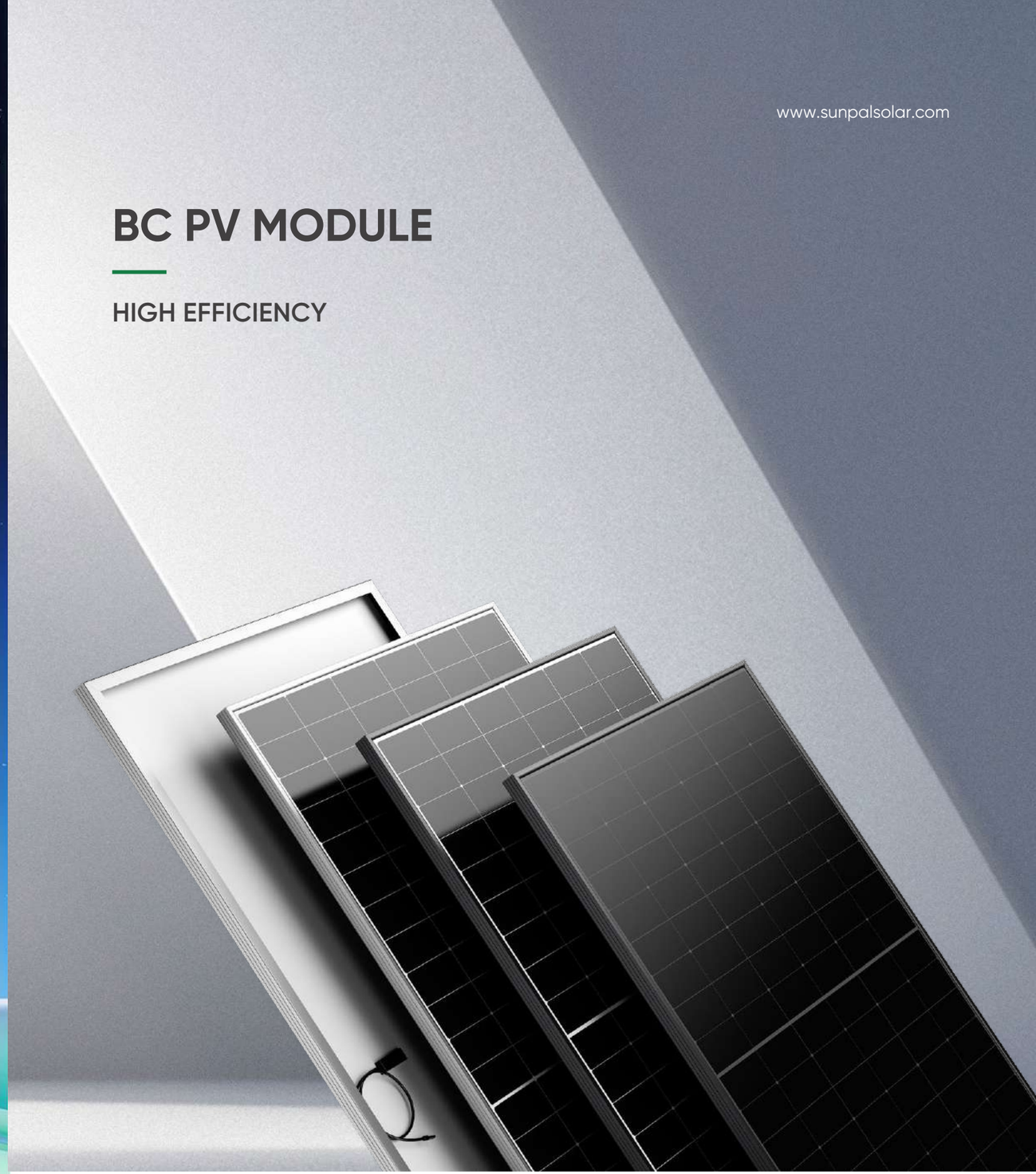
HIGH EFFICIENCY

BC PV MODULE

BC PV Modules create a Full black aesthetic

BC PV MODULE

HIGH EFFICIENCY



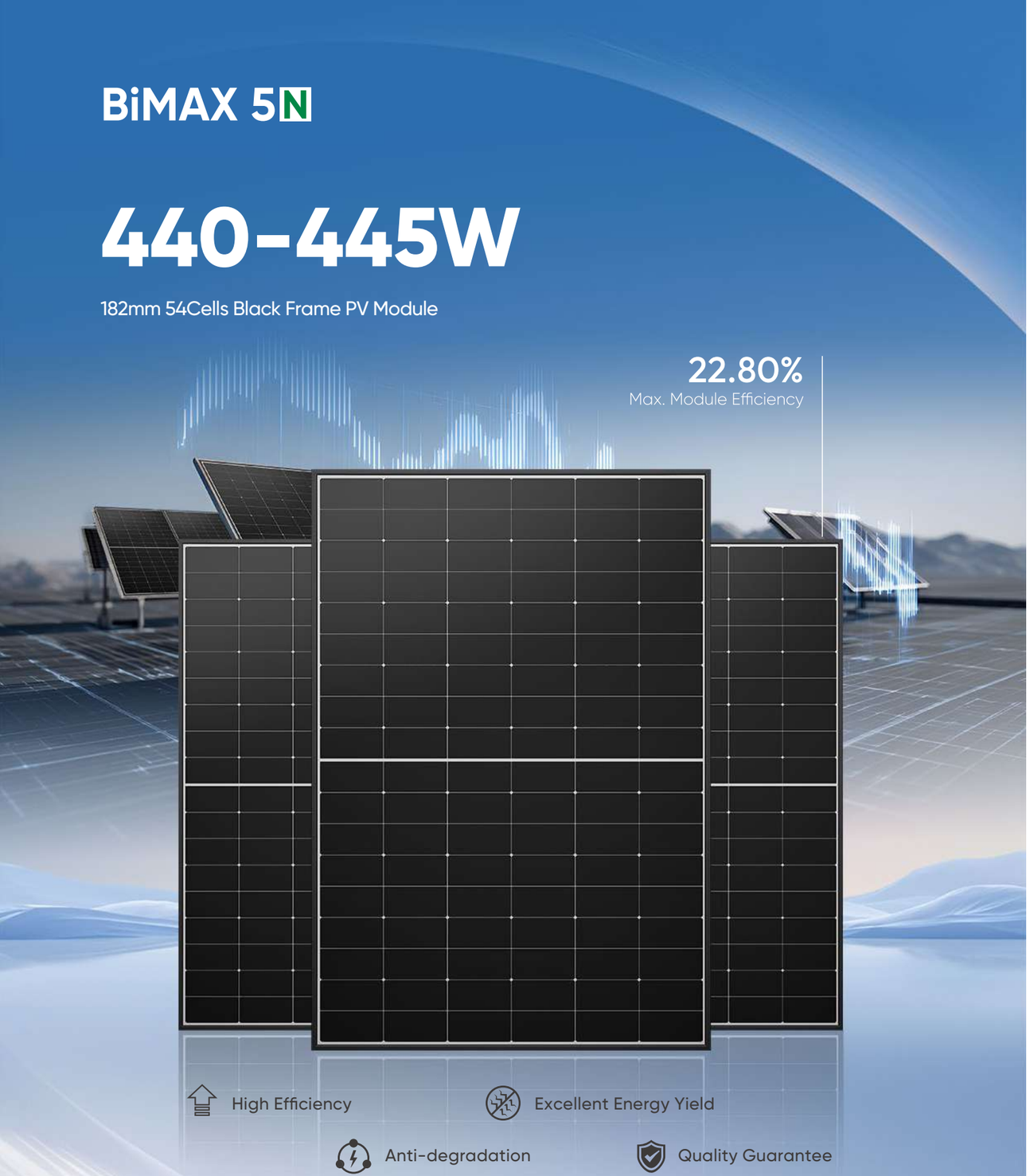
- No Busbar on the front to block light, capturing light with maximum efficiency
- Higher power, higher efficiency

BiMAX 5N

440-445W

182mm 54Cells Black Frame PV Module

22.80%
Max. Module Efficiency



High Efficiency

Excellent Energy Yield

Anti-degradation

Quality Guarantee

Sunpal **N Type** Linear Warranty

25 Years Materials Warranty

30 Years Power Warranty

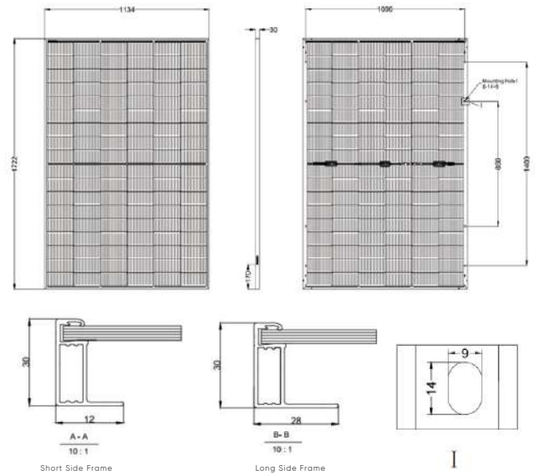
Sunpal

BiMAX 5N 440-445 Watts
182mm 54Cells Black Frame PV Module

Mechanical Parameters

Cell Type	N-Type TOPCon
No. of cells	108 (2×54)
Output Cables	TüV 1×4mm ²
	(+)300mm,(-)200mm in length or customized length
Glass	Front: 1.6mm, AR-coating, semi-tempered
	Rear: 1.6mm, semi-tempered
Frame	Anodized aluminum alloy frame
Weight	19.7 kg (43.43 lbs)
Dimension	1722×1134×30mm
Packaging	36 pcs per pallet
	216 pcs per 20' HC, 936 pcs per 40' HC
Protection Class	Class II
Fire Rating	IEC Class C

Engineering Drawings



* Length:±2mm Width:±2mm Height:±1mm Row Pitch:±2mm

Electrical Characteristics (STC & NOCT & BNPI)

Module Type	SP440M-54HBC			SP445M-54HBC		
Testing Condition	STC	NOCT	BNPI	STC	NOCT	BNPI
Maximum Power (Pmax/W)	440	332	485	445	336	490
Open-circuit Voltage (Voc/V)	38.87	36.81	38.90	39.06	36.98	39.09
Short-circuit Current (Isc/A)	14.37	11.59	15.82	14.44	11.65	15.88
Maximum Power Voltage (Vmp/V)	32.26	30.52	32.30	32.45	30.69	32.48
Maximum Power Current (Imp/A)	13.65	10.88	15.02	13.73	10.95	15.10
Module Efficiency (%)	22.5			22.8		

Note: 1、STC: Irradiance 1000W/M², Cell Temperature25℃, AM=1.5 2、NOCT: Irradiance 800W/M², Ambient Temperature 20℃, AM=1.5, Wind Speed 1M/S 3、BNPI: Irradiance of front 1000W/M², rear 135W/M²

Different Rearside Power Gain (Reference to 440W)

Rearside Power Gain	5%	10%	20%
Maximum Power at STC (Pmax)	462.0	484.0	528.0
Open-circuit Voltage (Voc/V)	38.9	38.9	38.9
Short-circuit Current (Isc/A)	15.1	15.8	17.2
Maximum Power Voltage (Vmp/V)	32.3	32.3	32.3
Maximum Power Current (Imp/A)	14.3	15.0	16.4
Module Efficiency (%)	23.7	24.8	27.0

Working Parameters

Operating Temperature	-40°C~ +85°C
Power Tolerance	0~ +5W
Maximum System Voltage	1500V(IEC)
NOCT	45±2°C
Maximum Series Fuse Rating	30A
Pmax and Voc and Isc Tolerance	±3%
Junction Box	IP68

Temperature Ratings (STC)

Temperature coefficient of Isc	+ 0.045%/°C
Temperature coefficient of Voc	- 0.25%/°C
Temperature coefficient of Pmax	- 0.29%/°C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25mm hailstone at 23m/s

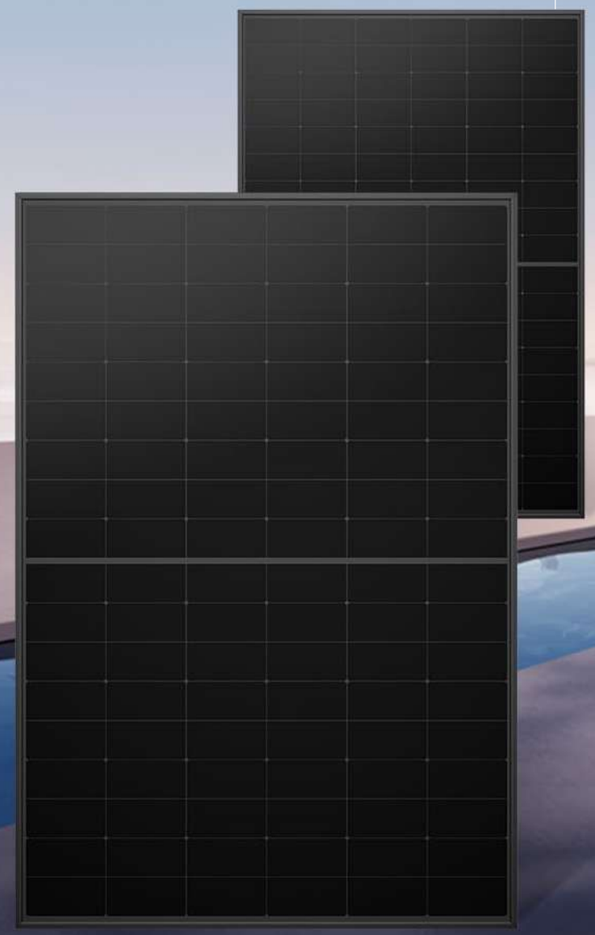
BiMAX 5N

470-500W

GBC Module with Dual Glass All Black

24.50%
Max. Module Efficiency

- Superior Temperature coefficient
- Excellent Micro-crack Resistance
- Higher Generated Energy
- High Temperature Restriction
- Higher Reliability
- Partial Shading Optimisation
- Lower BOS
- Extraordinary Aesthetic Design



Sunpal **N Type** Linear Warranty

25 Years Materials Warranty

30 Years Power Warranty

Sunpal

BiMAX 5N 470-500 Watts

GBC Module with Dual Glass All Black

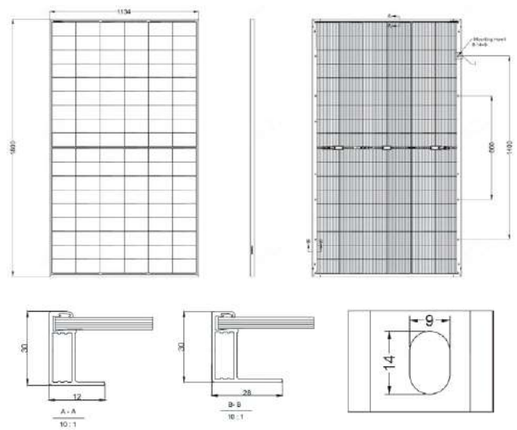
- Operating Temperature -40°C ~ +85°C
- Power Tolerance 0~+3%
- Junction Box IP68
- NOCT 45±2°C
- Maximum Series Fuse Rating 25A
- Bifacial Factor 70±5%
- Maximum System Voltage 1500V(IEC)

Mechanical Parameters

Cell Type	GBC
No. of cells	108（6×18）
Glass	Dual glass, 1.6 + 1.6mm coated semi tempered glass
Frame	Black anodized aluminum
Output Cables	TüV 1×4mm ，(+)300mm, (-)200mm or Customized Length
Weight	20.8 kg (45.86 lbs)
Dimension	1800×1134×30mm
Connector	MC4 Compatible/MC4-Evo2
Packaging	37 pcs per pallet 222 pcs per 20' GP 888 pcs per 40' HC
Protection Class	Class II
Fire Rating	IEC Class A

Engineering Drawings

Front Side Back



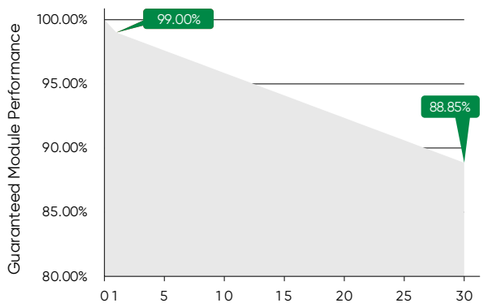
* L:±2mm W:±2mm Unit:mm

Electrical Characteristics (STC Test)

Module Type	SP470M-54HBC		SP475M-54HBC		SP480M-54HBC		SP485M-54HBC		SP490M-54HBC		SP495M-54HBC		SP500M-54HBC	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	470	357	475	361	480	364	485	368	490	372	495	375	500	379
Open-circuit Voltage (Voc/V)	40.50	38.42	40.63	38.55	40.76	38.67	40.89	38.80	41.02	38.92	41.15	39.04	41.28	39.16
Maximum Power Voltage (Vmp/V)	33.64	31.92	33.74	32.01	33.84	31.11	33.94	32.20	34.04	32.30	34.14	32.40	34.24	32.49
Short-circuit Current (Isc/A)	14.82	11.97	14.89	12.03	14.96	12.09	15.03	12.15	15.10	12.21	15.17	12.26	15.24	12.32
Maximum Power Current (Imp/A)	13.98	11.17	14.09	11.27	14.19	11.35	14.30	11.44	14.40	11.51	14.50	11.59	14.60	11.67
Module Efficiency (%)	23.0		23.3		23.5		23.8		24.0		24.3		24.5	

1、STC: Irradiance 1000W/M², Cell Temperature25°C, AM=1.5

2、NOCT: Irradiance 800W/M², Ambient Temperature 20°C，AM=1.5, Wind Speed 1M/S



Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.05%/°C
Temperature Coefficient of Voc	-0.22%/°C
Temperature Coefficient of Pmax	-0.26%/°C

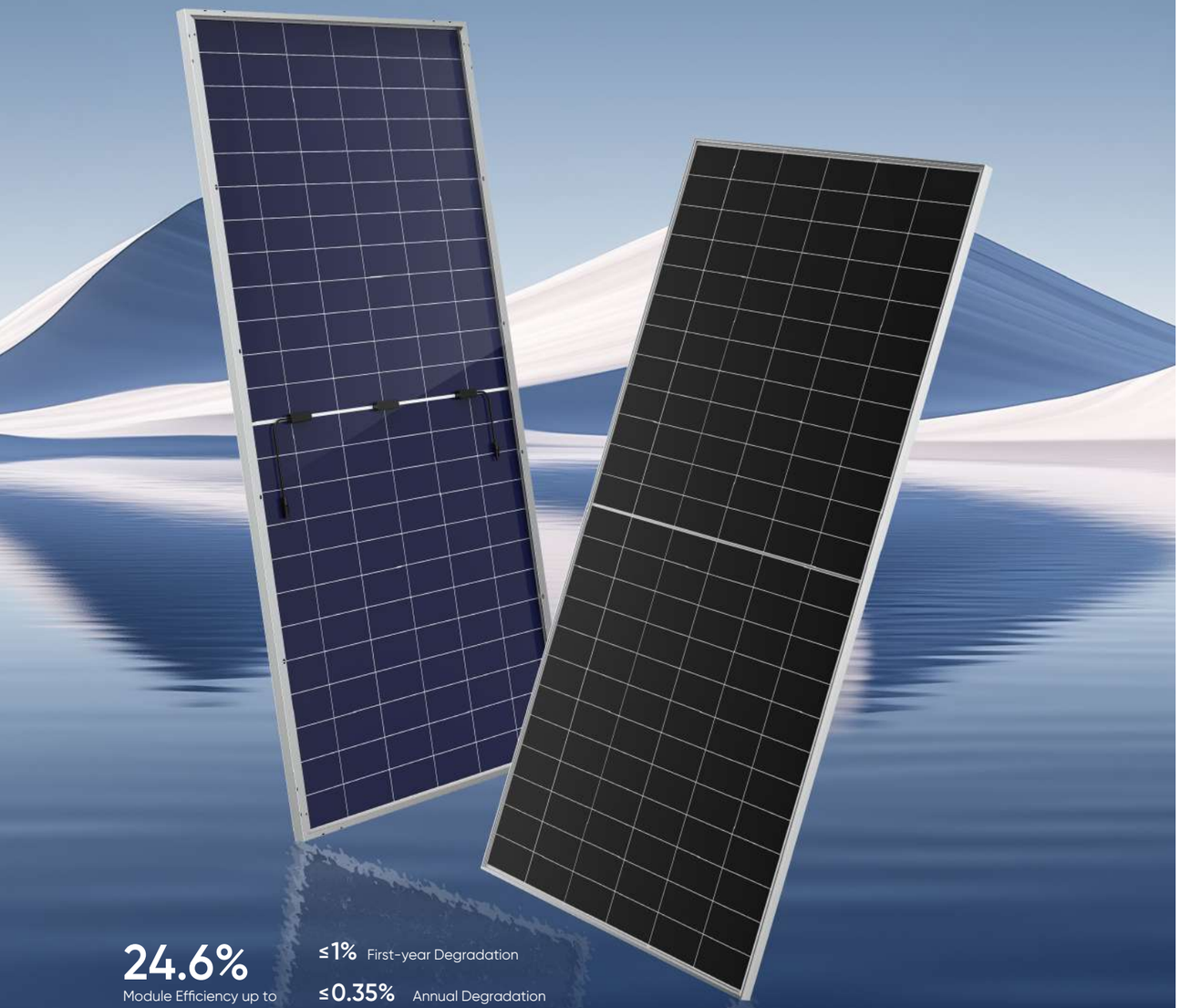
Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25 mm diameter hail at 23 m/s

BiMAX 5N

635-665W

GBC Module with Dual Glass



24.6%
Module Efficiency up to

≤1% First-year Degradation

≤0.35% Annual Degradation

Sunpal

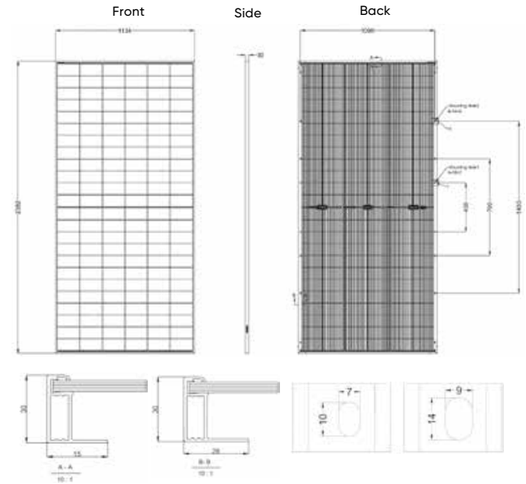
BiMAX 5N 635-665 Watts
GBC Module with Dual Glass

- Operating Temperature -40°C ~ +85°C
- Power Tolerance 0~+3%
- Junction Box IP68
- NOCT 45±2°C
- Maximum Series Fuse Rating 30A
- Bifacial Factor 70±5%
- Maximum System Voltage 1500V(IEC)

Mechanical Parameters

Cell Type	GBC
No. of cells	144（6×24）
Glass	Dual glass, 2.0+2.0mm Heat Strengthened Glass
Frame	Anodized aluminum
Output Cables	TüV 1×4mm, (+)300mm, (-)200mm or Customized Length
Weight	33.5kg (73.85lbs)
Dimension	2382×1134×30mm
Connector	MC4 Compatible/MC4-Evo2
Packaging	37 pcs per pallet 148 pcs per 20' GP, 740 pcs per 40' HC
Protection Class	Class II
Fire Rating	IEC Class C

Engineering Drawings

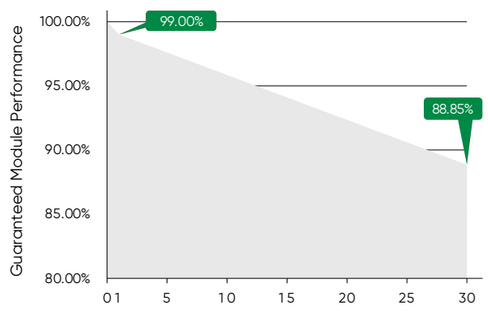


* L:±2mm W:±2mm Unit:mm

Electrical Characteristics (STC Test)

Module Type	SP635M-72HBC		SP640M-72HBC		SP645M-72HBC		SP650M-72HBC		SP655M-72HBC		SP660M-72HBC		SP665M-72HBC	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax/W)	635	481	640	485	645	489	650	493	655	496	660	500	665	504
Open-circuit Voltage (Voc/V)	53.70	50.95	53.80	51.04	53.90	51.14	54.00	51.23	54.10	51.33	54.20	51.42	54.30	51.51
Maximum Power Voltage (Vmp/V)	45.00	42.69	45.10	42.79	45.20	42.88	45.30	42.98	45.40	43.07	45.50	43.17	45.60	43.27
Short-circuit Current (Isc/A)	14.88	12.02	14.94	12.07	15.00	12.12	15.06	12.17	15.12	12.22	15.18	12.27	15.24	12.32
Maximum Power Current (Imp/A)	14.12	11.29	14.20	11.35	14.27	11.41	14.35	11.48	14.43	11.54	14.51	11.60	14.59	11.66
Module Efficiency (%)	23.5		23.7		23.9		24.1		24.2		24.4		24.6	

1、STC: Irradiance 1000W/M², Cell Temperature25℃, AM=1.5　　2、NOCT: Irradiance 800W/M², Ambient Temperature 20℃, AM=1.5, Wind Speed 1M/S



Temperature Ratings (STC)

Temperature Coefficient of Isc	+0.05%/°C
Temperature Coefficient of Voc	-0.22%/°C
Temperature Coefficient of Pmax	-0.26%/°C

Mechanical Loading

Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Hailstone Test	25 mm diameter hail at 23 m/s

CUSTOMIZED SERIES

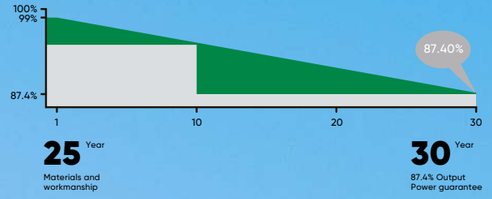
N-Type Customized

N Type	Pmax	Voc	Isc	Vmp	Imp	Eff	Dimension	Weight
SP50M-36	50	21.24	2.85	18.48	2.71	20.10	650*395*25mm	2.70kg
SP60M-36	60	20.88	3.53	18.15	3.31	19.86	765*395*25mm	3.28kg
SP70M-36	70	20.91	4.08	17.94	3.90	20.50	865*395*25mm	3.71kg
SP80M-33	80	19.15	5.21	16.1	4.97	19.01	550*765*25mm	4.57kg
SP90M-36	90	21.89	5.13	19.04	4.73	18.98	620*765*25mm	5.15kg
SP100M-30	100	22.30	5.44	19.2	5.21	21.08	620*765*25mm	5.15kg
SP110M-33	110	19.35	6.81	16.5	6.67	20.40	705*765*25mm	5.86kg
SP120M-36	120	21.96	6.62	19.07	6.29	19.61	800*765*25mm	6.65kg
SP130M-36	130	22.37	7.12	19.42	6.69	21.24	800*765*25mm	6.65kg
SP140M-33	140	21.89	7.85	18.4	7.61	20.22	905*765*25mm	7.52kg
SP150M-36	150	22.30	8.16	19.2	7.81	21.67	905*765*25mm	7.52kg
SP160M-72	160	38.86	5.2	32.76	4.88	19.83	1055*765*30mm	8.27kg
SP170M-72	170	39.20	5.4	33.43	5.09	21.06	1055*765*30mm	8.27kg
SP180M-39	180	41.82	5.47	35.46	5.08	20.92	1125*765*30mm	8.85kg
SP190M-39	190	42.12	5.63	36.6	5.19	22.08	1125*765*30mm	8.85kg
SP200M-39	200	44.61	5.57	38.4	5.21	21.79	1200*765*30mm	9.4kg
SP210M-42	210	45.12	5.71	39.45	5.32	22.88	1200*765*30mm	9.4kg
SP220M-68	220	39.14	6.97	34.1	6.45	21.07	1365*765*30mm	10.76kg
SP230M-72	230	39.48	7.22	34.44	6.68	22.03	1365*765*30mm	10.76kg
SP240M-72	240	41.76	7.06	36.3	6.61	21.56	1455*765*30mm	11.5kg
SP250M-72	250	42.24	7.31	36.66	6.82	22.46	1455*765*30mm	11.5kg
SP260M-72	260	38.86	8.35	33.38	7.79	21.93	1550*765*30mm	12.28kg
SP270M-72	270	39.76	8.47	34.14	7.91	22.77	1550*765*30mm	12.28kg
SP280M-72	280	41.88	8.1	36.21	7.73	22.12	1655*765*30mm	13.15kg
SP290M-60	290	42.18	8.33	36.52	7.94	22.91	1655*765*30mm	13.15kg
SP300M-60	300	45.47	8.14	38.92	7.71	21.6	1230*1134*30mm	14.54kg
SP310M-60	310	46.01	8.31	39.47	7.85	22.32	1230*1134*30mm	14.54kg
SP320M-68	320	49.32	8.18	41.54	7.70	21.22	1340*1134*30mm	15.88kg
SP330M-68	330	49.75	8.35	41.9	7.88	21.88	1340*1134*30mm	15.88kg
SP340M-68	340	50.15	8.52	42.26	8.05	22.54	1340*1134*30mm	15.88kg
SP350M-72	350	50.65	8.69	42.62	8.21	23.21	1340*1134*30mm	15.88kg

120W Perovskite / 60W Crystalline Silicon

182mm Perovskite Crystaline Silicon
Stacked PV Modules

Sunpal Linear Warranty



25 Year
Materials and workmanship

30 Year
87.4% Output Power guarantee

New technology route
Perovskite + N-type crystalline silicon technology

Stronger weather resistance
3.2mm TCO glass + 3.2mm tempered glass

Higher system efficiency
Dual technology superposition to reduce energy transmission loss

Higher power generation
Perovskite and crystalline silicon synergistic power generation to maximize performance

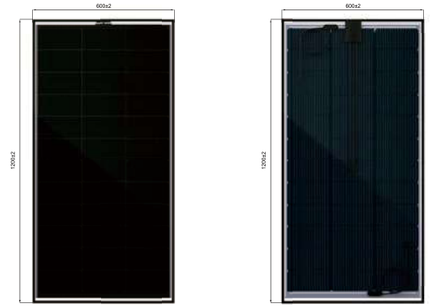
Better low-light performance
Perovskite has excellent low-light performance and longer power generation time

Wide application
Large-format can also be produced to adapt to multiple application scenarios

Sunpal

120W Perovskite / 60W Crystalline Silicon

182mm Perovskite Crystaline Silicon
Stacked PV Modules



Electrical Characteristics(STC)

Module Type	Perovskite	Crystalline Silicon
Test Conditions	STC	STC
Maximum Power- Pmax(W)	120	60.6
Open Circuit Voltage - Voc(V)	86.8	24.5
Short- Circuit Current - Isc(A)	1.74	3.06
Maximum Voltage at Pmax -Vmp(V)	71	21.8
Maximum Current at Pmax -Imp(A)	1.69	2.78
Module Efficiency -nm(%)	16.7	8.4
Intergrated Efficiency -nm(%)	25	
Maximum System Voltage(V)	1500Vdc (IEC/UL)	
Maximum Series Fuse Rating(A)	2.5A	20A

*STC :Irradiance 1000W/m^2,Cell Temperature 25°C, Air Mass 1.5
*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

Cell Type	Perovskite	Crystalline Silicon
External Dimensions	1200(+2)x600(2)x7.2(1)mm	
Weight	14+0.5kg	
No. of Cells	80	36(3*12)
Glass	3.2mm TCO glass + 3.2mm tempered glass	
Junction Box	Monoblock junction box IP68	Split junction box P68
Output Cables	2.5mm^2, 800mm (+),800mm (-)	4.0mm^2, 900mm (+),900mm (-), length can be customized
Connector	MC4 Compatible	
Encapaulation Material	TPO+Sealing PIB	

Mechanical Specifications

Cell Type	Perovskite	Crystalline Silicon
Pmax Temperature Coefficient	-0.004%/°C	-0.250%/°C
Voc Temperature Coefficient	-0.002%/C	-0.290%/C
Isc Temperature Coefficient	+0.000%/C	+0.045%/C
Operating Temperature Range	-40~+85°C	-40~+85°C
Nominal Operating Cell Temperature	42±2°C	42±2°C

Specifications are subject to change without further notification

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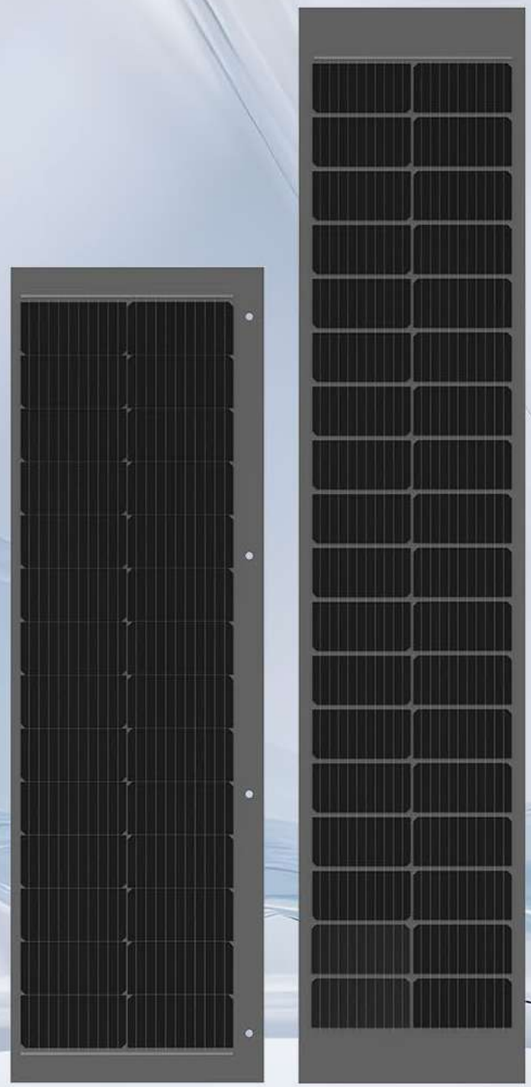
Solar Tile Series

BIPV BAPV

BIPV Series

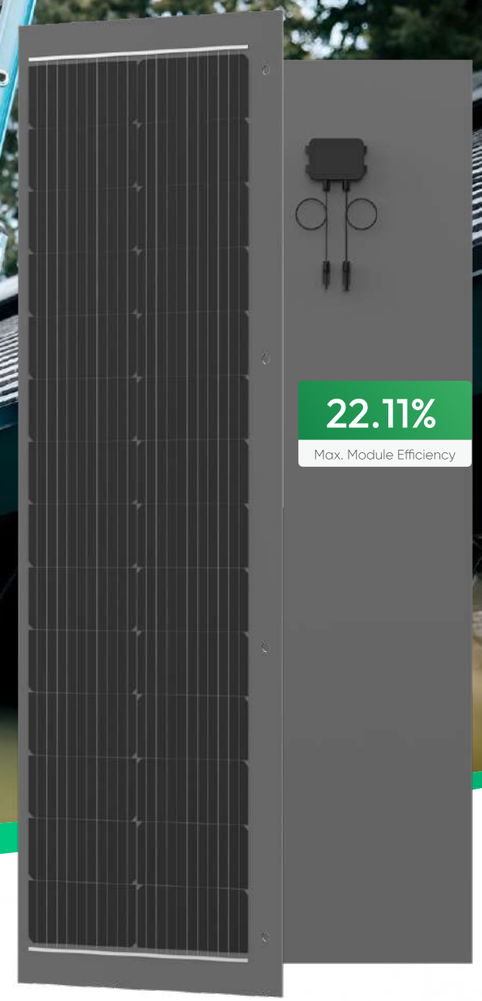


BiMAX 5N

110W

182mm 28 Cells All Black 110W
N Type Solar Tile Series

- Half Cut
  N Type Solar Cells
- Lower summer indoor
  Temperatures by 5-8°C
- Resists 35mm hail
  Withstands 12-grade winds
- Reduce energy consumption
  By 10%
- 25-year waterproof and
  Rooftop safety guarantee
- Modular design with standardized
  prefabricated construction



Sunpal **N Type** Linear Warranty

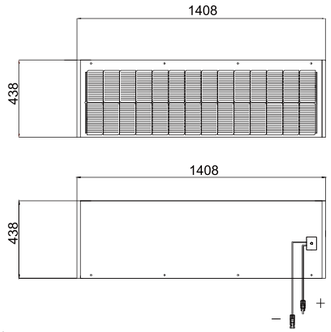
25 Years Materials Warranty

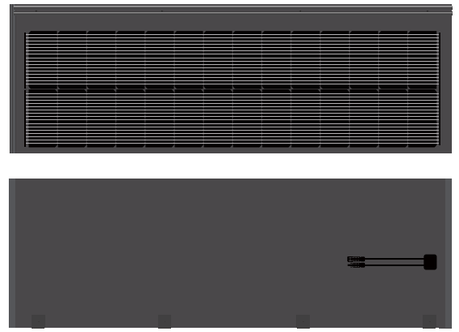
30 Years Power Warranty

Sunpal

BiMAX 5N 110 Watts

182mm 28 Cells All Black 110W
N Type Solar Tile Series





All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC)

Module Type	SP110M-28
Test Conditions	STC
Maximum Power- Pmax(W)	110
Open Circuit Voltage - Voc(V)	20.02
Short- Circuit Current - Isc(A)	6.58
Voltage at Pmax -Vmp(V)	17.30
Current at Pmax -Imp(A)	6.36
Module Efficiency -nm(%)	15.40
Power Tolerance(W)	(0，+4.99W)
Maximum System Voltage(V)	1500Vdc (IEC/UL)
Maximum Series Fuse Rating (A)	10A

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*Measurement tolerance: ±3%　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	1408x438x6.2mm
Weight	8.5kg
Solar Cells	Mono crystalline 16BB 182mm
Glass	AR Coated 3.2+2mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm', 900mm(+),900mm(-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max.5400Pa, Rear Side Max. 2400Pa
Fire Protection Grade	A
Windproof Grade	15
Anti Hail Level	35mm

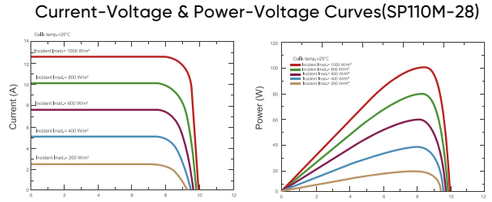
Packing configuration

Wooden box	1520x1130x1120mm
Container	40'HQ
Pieces per Wooden box	56
Box per Container	30
Pieces per Container	1680

Temperature characteristics

Pmax Temperature Coefficient	-0.3904%/C
Voc Temperature Coefficient	-0.286%/C
Isc Temperature Coefficient	+0.0268%/C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Current-Voltage & Power-Voltage Curves(SP110M-28)



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Sunpal **N Type** Linear Warranty

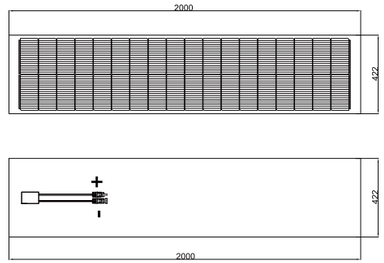
25 Years Materials Warranty

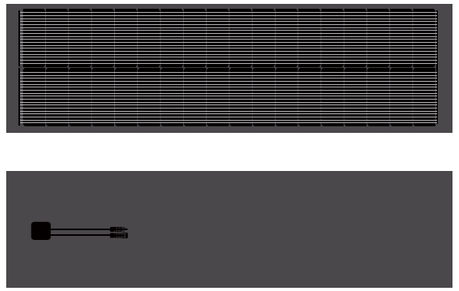
30 Years Power Warranty

Sunpal

HiMAX 5N 135 Watts

182mm 36 Cells All Black 135W
N Type Solar Tile Series





All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC)

Module Type	SP135M-36
Test Conditions	STC
Maximum Power- Pmax(W)	135
Open Circuit Voltage - Voc(V)	25.31
Short- Circuit Current - Isc(A)	6.45
Voltage at Pmax -Vmp(V)	22.03
Current at Pmax -Imp(A)	6.13
Module Efficiency -nm(%)	16.67
Power Tolerance(W)	(0，+4.99W)
Maximum System Voltage(V)	1500Vdc(IEC/UL)
Maximum Series Fuse Rating (A)	10A

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*Measurement tolerance: ±3%　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	Product dimensions:2000x422x25mm Effective dimensions:1875x422x25mm
Weight	9.3+0.2kg
Solar Cells	Mono crystalline 182mm
Glass	AR Coated 3.2mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm,900mm(+),900mm (-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max.5400Pa, Rear Side Max.2400Pa
Fire Protection Grade	15
Windproof Grade	35mm
Anti Hail Level	

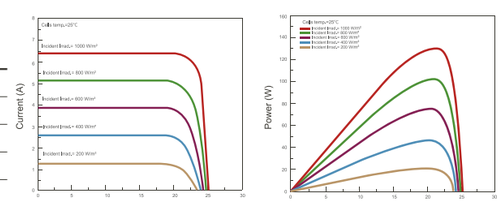
Packing configuration

Wooden box	2010x940x1020mm
Container	40'GP
Pieces per Wooden box	66
Box per Container	24
Pieces per Container	1584

Temperature characteristics

Pmax Temperature Coefficient	-0.3904%/°C
Voc Temperature Coefficient	-0.286%/C
Isc Temperature Coefficient	+0.0268%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45+2°C

Current-Voltage & Power-Voltage Curves
(SP135M-36)



Specifications are subject to change without further notification

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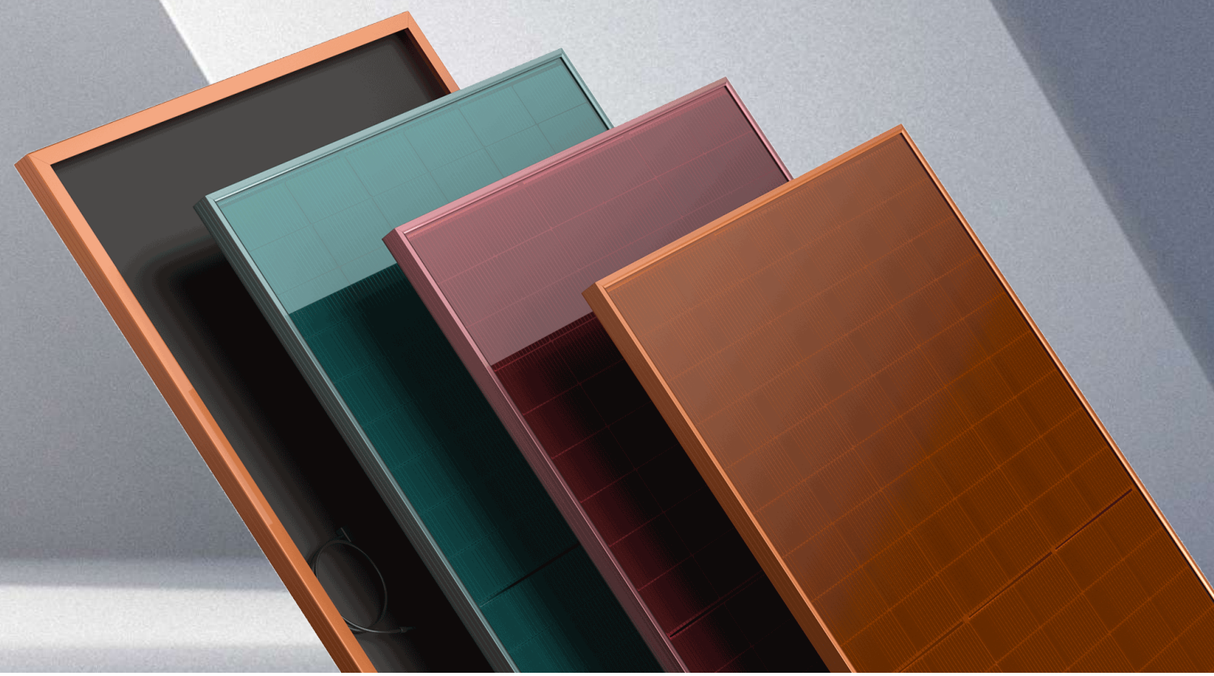
Colored
N Type Series

Colored

N Type Series

A variety of colors can be selected



RAL 8001 RAL 5009 RAL 6033 RAL 7047 RAL 1020 RAL 1014 RAL 4004 RAL 4008

HiMAX 6R

390~400W

210x182mm 96Cells Terracotta
N Type Mono Half Cell PV Module Series

- Terracotta glass and frame
- Suitable for red / orange / terracotta roof buildings
- PV facade with innovative compositions
- SMBB Technology Half Cut N Type Cell
- Anti PID
- Excellent Low-light Performance
- Strengthened Mechanical Load
- 100% Inspection Guarantee Reliability

20.00%
Max. Module Efficiency

Sunpal **N Type** Linear Warranty

25 Years Materials Warranty

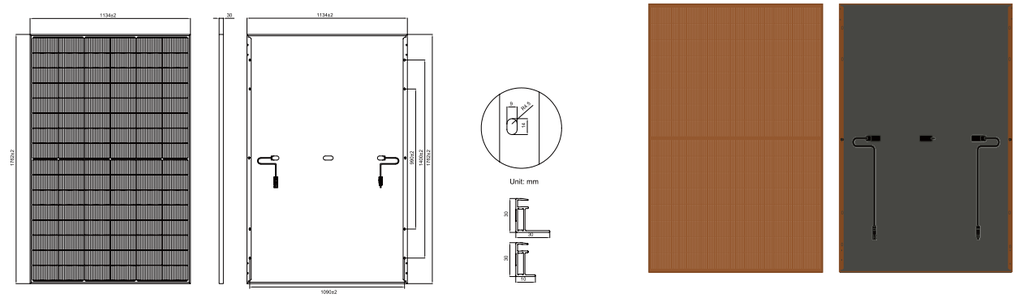
30 Years Power Warranty

RAL8001

Sunpal

HiMAX 6R 390~400 Watts

210x182mm 96Cells Terracotta
N Type Mono Half Cell PV Module Series



All Dimensions in mm
The above drawing is a graphical representation of the product,

Electrical Characteristics(STC)

Module Type	SP390M-48H	SP395M-48H	SP400M-48H
Test Conditions	STC	STC	STC
Maximum Power- Pmax(W)	390	395	400
Open Circuit Voltage - Voc(V)	35.86	36.07	36.28
Short- Circuit Current - Isc(A)	13.65	13.76	13.87
Voltage at Pmax -Vmp(V)	30.86	31.03	31.20
Curent at Pmax -Imp(A)	12.64	12.73	12.82
Module Efficiency -nm(%)	19.50	19.80	20.00
Power Tolerance(W)	(0，+4.99W)		
Maximum System Voltage(V)	1500Vdc (IEC/UL)		
Maximum Series Fuse Rating (A)	25A		

*STC :Irradiance 1000W/m²,Cell Temperature 25°C, Air Mass 1.5
*Measurement tolerance: ±3%　*Power binning up to: +3%

Mechanical Specifications

External Dimensions	1762x1134x30mm
Weight	21.5kg
Solar Cells	N-Type 16BB 182x105mm(2x48pcs)
Front Glass	AR Coated 3.2 mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm²,1200mm(+),1200mm (-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max.5400Pa, Rear Side Max.2400Pa

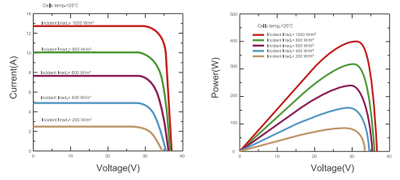
Packing configuration

Pallet Dimensions	1790x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	26 Pallets	24 Pallets	36 Pallets
Pieces per Container	962 Pcs	864 Pcs	1296 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Current-Voltage & Power-Voltage Curves(SP400M-48H)



Specifications are subject to change without further notification

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SUNPAL-EN-2025V3.0

HiMAX 5N

350W

182mm 108Cells Anthracite Grey-colored
N Type Solar PV Module

Sunpal **N Type** Linear Warranty

25 Years Materials Warranty

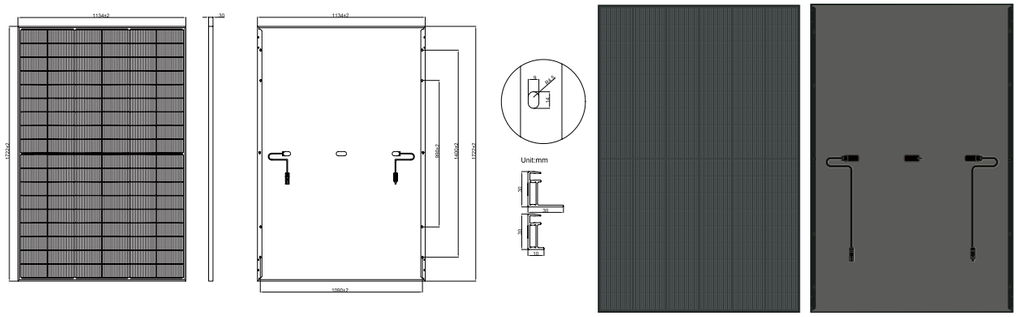
30 Years Power Warranty

RAL7016

Sunpal

HiMAX 5N 350 Watts

182mm 108Cells Anthracite Grey-colored
N Type Solar PV Module



All Dimensions in mm
The above drawing is a graphical representation of the product,

Transparent backsheet is available
Bifacial Solar PV Modules can be customized.

Electrical Characteristics(STC)

Module Type	SP350M-54H
Test Conditions	STC
Maximum Power- Pmax(W)	350
Open Circuit Voltage - Voc(V)	38.70
Short- Circuit Current - Isc(A)	11.32
Voltage at Pmax -Vmp(V)	32.10
Curent at Pmax -Imp(A)	10.90
Module Efficiency -nm(%)	17.92
Power Tolerance(W)	(0,+4.99)
Maximum System Voltage(V)	1500Vde (IEC/UL)
Maximum Series Fuse Rating (A)	25A

*STC :Irradiance 1000W/m^2,Cell Temperature 25°C, Air Mass 1.5
*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

External Dimensions	1722x1134x30mm
Weight	20.5kg
Solar Cells	Mono crystalline 182mm(2x54pcs)
Front Glass	AR Coated 3.2 mm tempered glass
Frame	Anodized aluminum alloy
Junction Box	IP68
Output Cables	4.0mm, 1200mm (+),1200mm (-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max.5400Pa, Rear Side Max.2400Pa

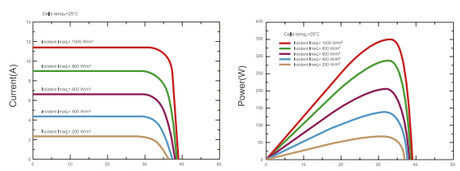
Packing configuration

Pallet Dimensions	1750x1140x1254mm		
Ways of Transport	40'HQ	13.5m Flatbed Truck	17.5m Flatbed Truck
Pieces per Pallet	37 Pcs	36 Pcs	36 Pcs
Pallets per Container	26 Pallets	24 Pallets	36 Pallets
Pieces per Container	962 Pcs	864 Pcs	1296 Pcs

Temperature characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40~+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Current-Voltage & Power-Voltage Curves(SP350M-54H)



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AGRI-PV

160W/320V

- Higher power generation in high temperature
- 45%-70% transmittance
- More than 30-year life span
- Eco-pest control
- Durable and watertight
- Double financial gain

AGRI-PV

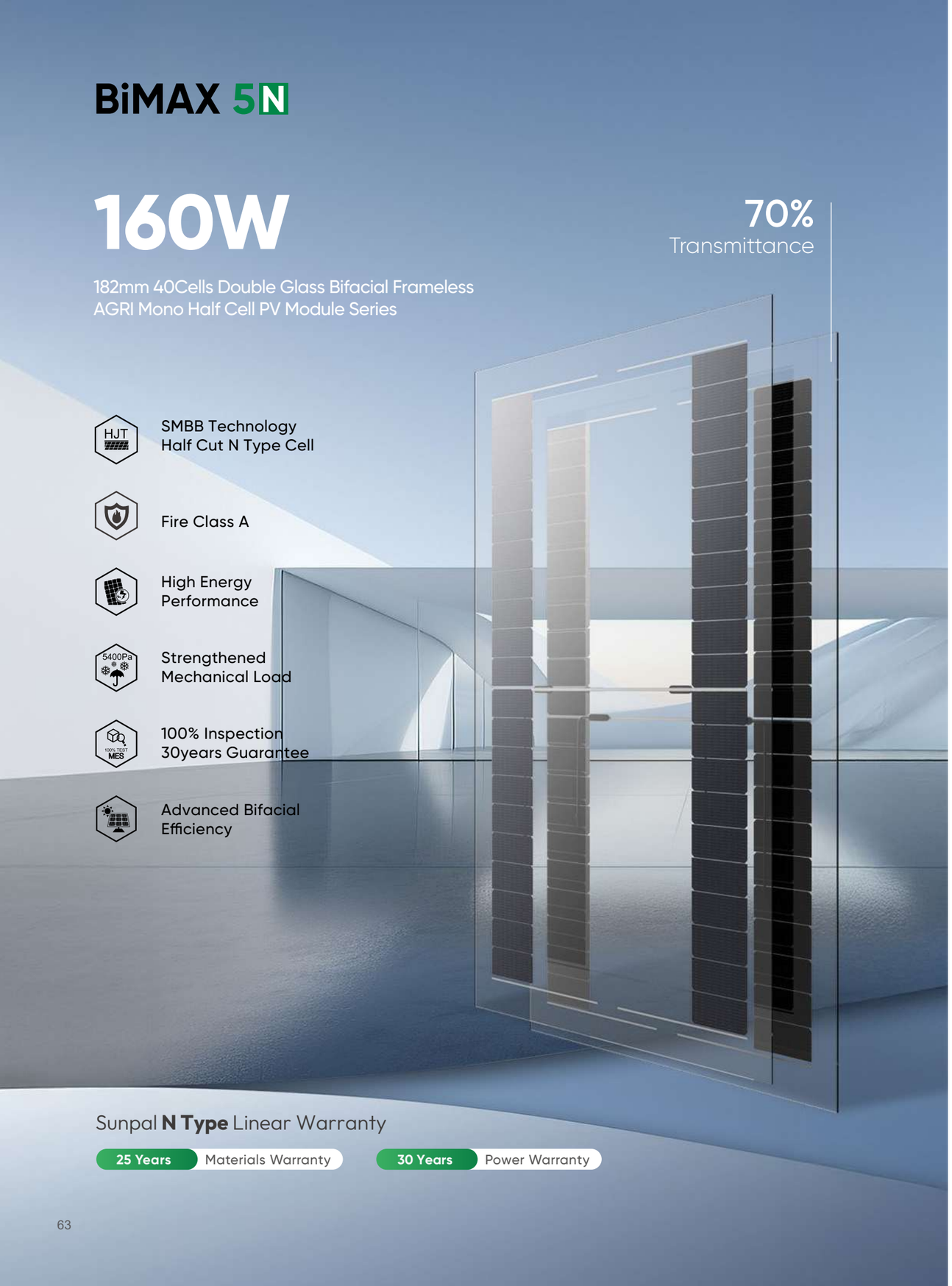
Excellent light transmission performance

BiMAX 5N

160W

182mm 40Cells Double Glass Bifacial Frameless
AGRI Mono Half Cell PV Module Series

70%
Transmittance



- SMBB Technology
  Half Cut N Type Cell
- Fire Class A
- High Energy
  Performance
- Strengthened
  Mechanical Load
- 100% Inspection
  30years Guarantee
- Advanced Bifacial
  Efficiency

Sunpal **N Type** Linear Warranty

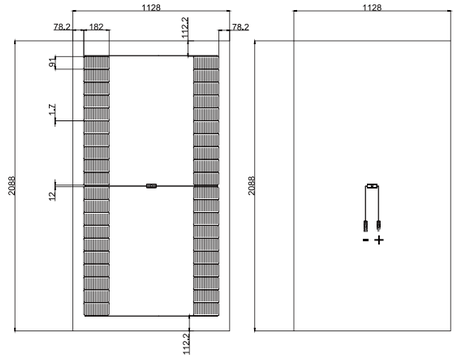
25 Years Materials Warranty

30 Years Power Warranty

Sunpal

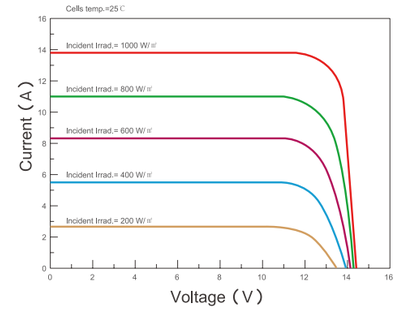
BiMAX 5N 160 Watts

182mm 40Cells Doube Glass Bifacial Frameless
AGRI Mono Half Cell PV Module



All Dimensions in mm
The above drawing is a graphical representation of the product.

Current-Voltage & Power-Voltage Curves(SP160M-40)



Electrical Characteristics (STC)

Module Type	SP160M-40
Test Conditions	STC
Maximum Power- Pmax(W)	160
Open Circuit Voltage - Voc(V)	14.06
Short- Circuit Current - Isc(A)	13.77
Voltage at Pmax -Vmp(V)	12.3
Current at Pmax - Imp(A)	13.01
Module Efficiency -ηm(%)	6.7
Power Tolerance(W)	(0,+4.99W)
Maximum System Voltage(V)	1000Vde (IEC/UL)
Maximum Series Fuse Rating (A)	25A

*STC： Irradiance 1000W/m², Cell Temperature 25℃, Air Mass 1.5

*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

External Dimensions	2088*1128*5mm
Weight	27kg
Solar Cells	N-Type 16BB 182mm (2x20pcs)
Glass	2+2 mm tempered glass
Frame	Can be Framed
Junction Box	IP67
Output Cables	4.0mm², 120cm (+), 120cm (-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max. 2400Pa

Packing Configuration

Wooden box Dimensions	2210*1130*1270mm
Container	40'HQ
Pieces per Pallet	32
Pallets per Container	20
Pieces per Container	640

Temperature Characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40～+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Specifications are subject to change without further notification

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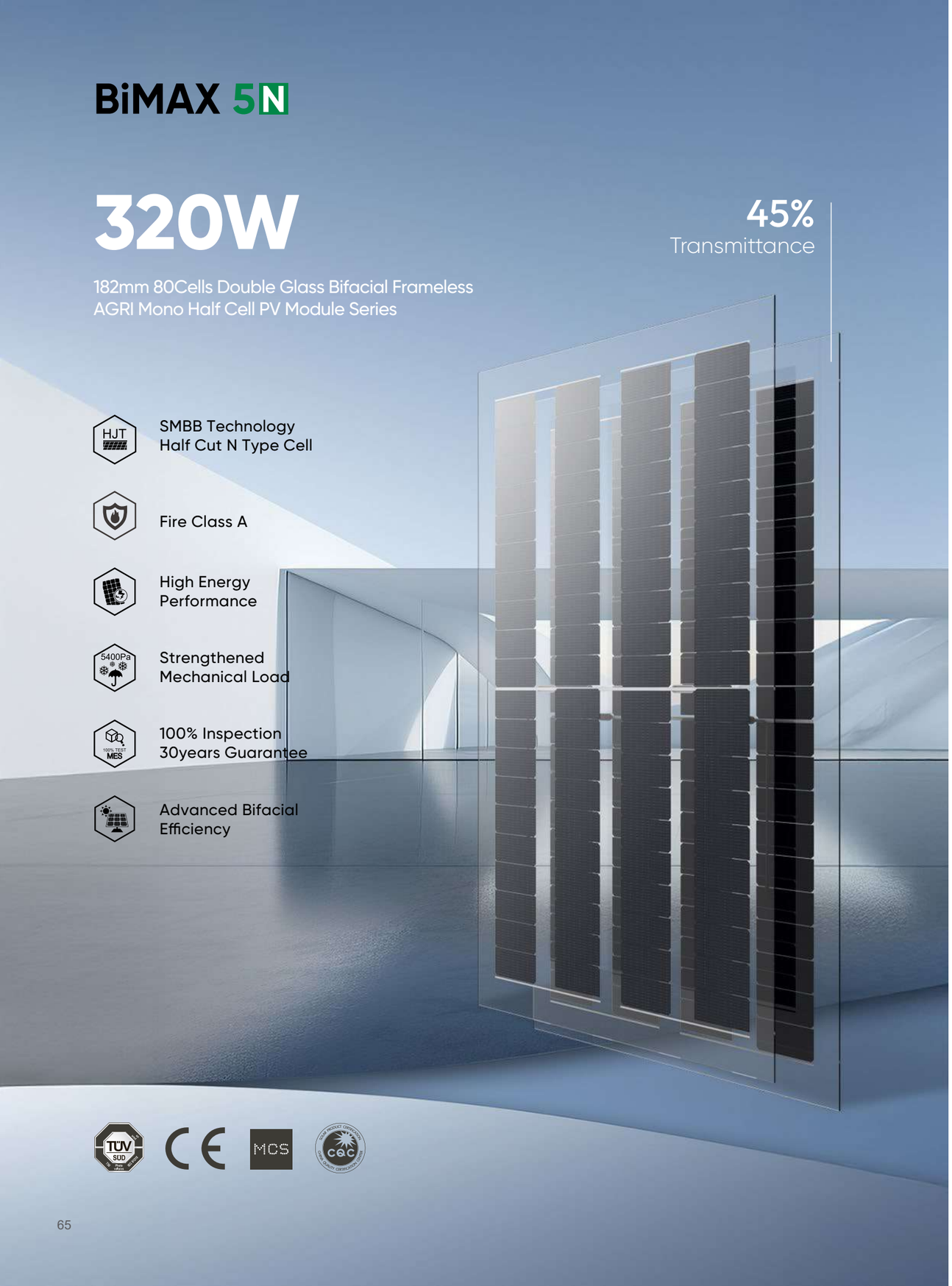
SUNPAL-EN-2025V3.0

BiMAX 5N

320W

45%
Transmittance

182mm 80Cells Double Glass Bifacial Frameless
AGRI Mono Half Cell PV Module Series

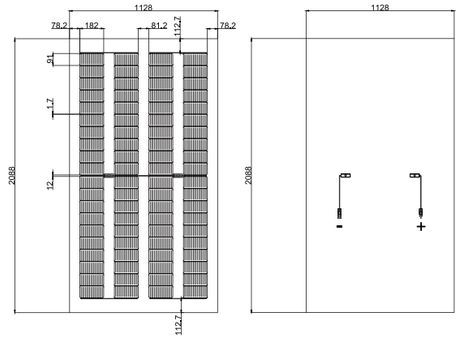


- SMBB Technology
  Half Cut N Type Cell
- Fire Class A
- High Energy
  Performance
- Strengthened
  Mechanical Load
- 100% Inspection
  30years Guarantee
- Advanced Bifacial
  Efficiency

Sunpal

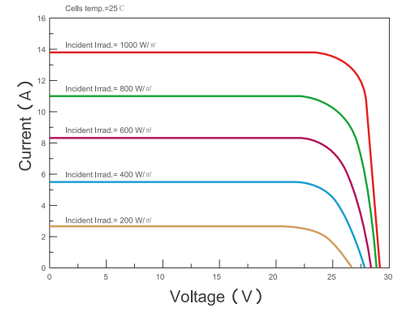
BiMAX 5N 320 Watts

182mm 80Cells Double Glass Bifacial Frameless
AGRI Mono Half Cell PV Module



All Dimensions in mm
The above drawing is a graphical representation of the product.

Current-Voltage & Power-Voltage Curves(SP320M-80)



Electrical Characteristics (STC)

Module Type	SP320M-80
Test Conditions	STC
Maximum Power- Pmax(W)	320
Open Circuit Voltage - Voc(V)	28.12
Short- Circuit Current - Isc(A)	13,77
Voltage at Pmax -Vmp(V)	24.6
Current at Pmax - Imp(A)	13.01
Module Efficiency -ηm(%)	13.58
Power Tolerance(W)	(0,+4.99W)
Maximum System Voltage(V)	1000Vde (IEC/UL)
Maximum Series Fuse Rating (A)	25A

*STC : Irradiance 1000W/m², Cell Temperature 25℃, Air Mass 1.5

*Measurement tolerance: ±3% *Power binning up to: +3%

Mechanical Specifications

External Dimensions	2088*1128*5mm
Weight	27kg
Solar Cells	N-Type 16BB 182mm (2x40pcs)
Glass	2+2 mm tempered glass
Frame	Can be Framed
Junction Box	IP67
Output Cables	4.0mm², 120cm (+), 120cm (-), length can be customized
Connector	MC4 Compatible
Mechanical Load	Front Side Max. 5400Pa, Rear Side Max. 2400Pa

Packing Configuration

Wooden box Dimensions	2210*1130*1270mm
Container	40'HQ
Pieces per Pallet	32
Pallets per Container	20
Pieces per Container	640

Temperature Characteristics

Pmax Temperature Coefficient	-0.290%/°C
Voc Temperature Coefficient	-0.250%/°C
Isc Temperature Coefficient	+0.045%/°C
Operating Temperature Range	-40～+85°C
Nominal Operating Cell Temperature(NOCT)	45±2°C

Specifications are subject to change without further notification

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SUNPAL-EN-2025V3.0

Colored Glaze · Crystal Clear

FACADE

(BIPV)

Crystalline Silicon Photovoltaic Building Materials

Replace traditional glass curtain wall for building facade

Light transmittance customized

Excellent light transmission performance

Customization: Size and shape can be customized

High-efficiency: Highest efficiency cells, more power generation

Energy-saving, clean and environmentally-friendly

Energy-saving: Reduce building energy consumption

Energy generation: Solar power generation for clean energy to support carbon neutral

Environmentally-friendly: No noise, no radiation, no light pollution, non-toxic and harmless

Same life span as building

Construction encapsulant, more than 40 certification, same life as the building

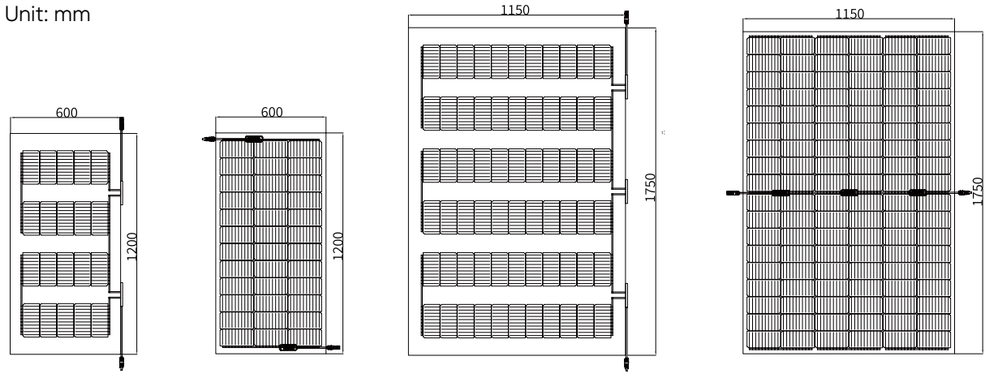
GB/T35684 waterproof test, Class A fireproof, wind resistancel

High quality: High strenght, corrosion resistance, high temperature and humidity resistance

COLORED GLAZE · CRYSTAL CLEAR

DIMENSIONS

Unit: mm



ELECTRICAL PARAMETERS(STC)

Module type	SP73DG-10e 1/2	SP125DG-18e 1/2	SP230DG-33e 1/2	SP380DG-18e 1/2
Power output (P_{max})	73W	125W	230W	380W
Power output tolerances (ΔP_{max})	±5W	±5W	±5W	±5W
Module efficiency (η_m)	10.1%	17.4%	11.4%	18.9%
Voltage at Pmax (V_{mpp})	11.6V	20.9V	38.4V	31.4V
Current at Pmax (I_{mpp})	6.29A	5.98A	5.99A	12.1A
Open-circuit current (V_{oc})	14.1V	25.3V	46.5V	38.0V
Short-circuit current (I_{sc})	6.61A	6.28A	6.29A	12.7A

STC：1000W/m2 irradiance , 25 degree cell temperature, AM1.5g.

CONSTRUCTION MATERIALS

Product type	SP73DG-10e 1/2	SP125DG-18e 1/2	SP230DG-33e 1/2	SP380DG-18e 1/2
Glass (material / thickness)	6mm+6mm (3.2mm Optional)			
Baseplate (material)	PVB			
Junction box (protection degree)	≥IP67			
Cable (length / cross-sectional area)	300mm / 4mm² / Customizable			
Plug connector (type / protection degree)	MC4 / IP67			
Packing	A pallets or wooden box			
Dimensions (L / W / TH)	1200*600mm	1200*600mm	1750*1150mm	1750*1150mm
Dimensions of cell	182*91mm			
Cell layout	4*5 (50%)	3*12 (≈10%)	6*11 (50%)	6*9 (≈10%)
Weight	24kg	24kg	67kg	67kg

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QUALIFICATIONS AND CERTIFICATIONS

IEC 61215, IEC 61730, 3C, ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018.

Colored Glaze · Solar Fence

FACADE

Architectural aesthetics

Excellent light transmission performance: Large spacing, ultra-fine cells

Beauty: Sliced cell use can form different patterns by adjusting the spacing between cells and the width of cells to beautify the building

Customization: Size, shape and transmittance can be customized

Energy-saving, clean and environmentally-friendly

Energy-saving: Reduce building energy consumption

Energy generation: Solar power for clean energy to support carbon neutral

Eco-friendly: No noise, no radiation, no light pollution, non-toxic and harmless

Same life Span as building

Physical performance: Construction encapsulant, more than 40 certifications, same life as the building

GB/T35684 waterproof test, class A fireproof, wind resistance

(BIPV)

Crystalline Silicon Photovoltaic Building Materials

- Ultra-narrow frame design, unobstructed sight
- Hot-spots resistance, can be used to skylight, facade, balcony fences, etc.

COLORED GLAZE · SOLAR FENCE

ELECTRICAL PARAMETERS(STC)

Product type	SP82DG-72b 1/9	SP165DG-150b 1/9
Power output ($\triangle P_{max}$)	82W	165W
Power output tolerances (P_{max})	±5W	±5W
Voltage at Pmax (V_{mpp})	78.8V	163.4V
Current at Pmax (I_{mpp})	1.04A	1.01A
Open-circuit current (V_{oc})	95.3V	197.7V
Short-circuit current (I_{sc})	1.09A	1.06A

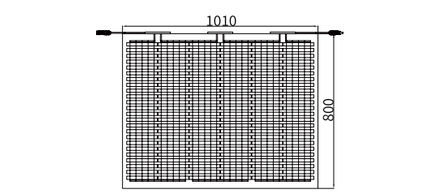
STC：1000W/m2 irradiance , 25 degree cell temperature, AM1.5g.

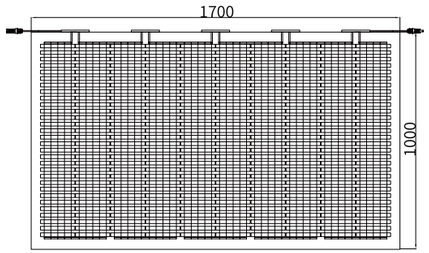
CONSTRUCTION MATERIALS

Product type	SP82DG-72b 1/9	SP165DG-150b 1/9
Dimensions	1010*800mm	1700*1000mm
Glass structure	6mm+6mm	6mm+6mm
Cell layout	6*24	10*30
Weight	27kg	57kg
Transmittance	52%	52%

DIMENSIONS

Unit: mm





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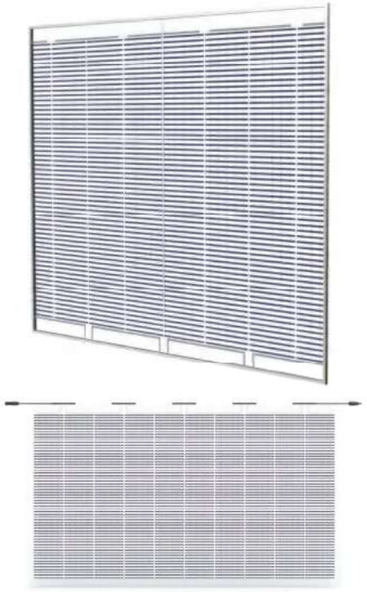
CASE STUDY

PRODUCT DISPLAY



QUALIFICATIONS AND CERTIFICATIONS

IEC 61215, IEC 61730, 3C, ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018.

SUNPAL GLOBAL PROJECTS

MAKING MORE RE POWER

COOPERATIVE PARTNER

Trinasolar	JA SOLAR	JinKO Solar
CanadianSolar	LONGi Solar	TW SOLAR
GCL	risen solar technology	ASTRONERGY