

Tier1

BloombergNEF



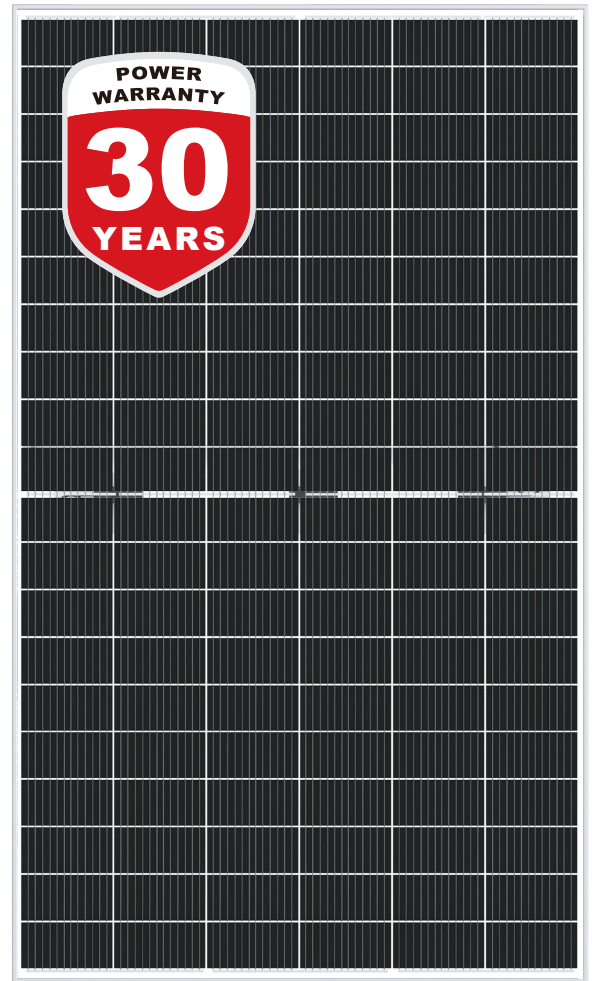
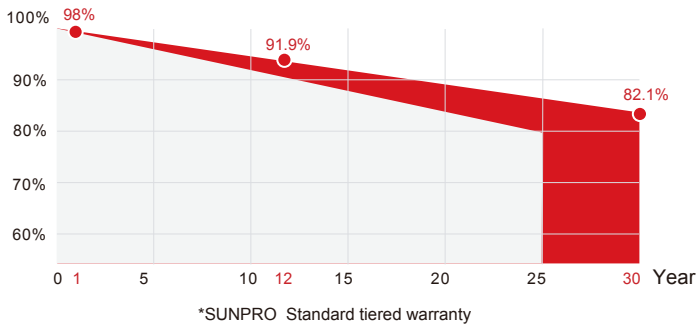
# M12 HIEFF TWIN MONO

## SPDGxxx-120M12 590~615W

- Bifacial Transparent
- Double glass
- Silver frame
- Black frame

15 Yr quality guarantee | 30 Yr power warranty

■ SUNPRO Standard (Additional value from 30-year warranty)  
 ■ Industry Standard



### WARRANTY & GUARANTEE

Linear output power guarantee  
 12 years: 91.9% power output  
 30 years: 82.1% power output

### WITHSTAND STRONG

Snow load 5400Pa  
 Wind load 2400Pa

### TWO-SIDED BENEFITS

High efficiency solar cells.  
 Effective working area of both sides >75%, with significant power increase. Capture more sunlight and turn it into electricity

### R&D AND PRODUCTION

Advanced production line. The leading solar cell cutting process and multi busbar design with SUNPRO Technology.

### HIGH EFFICIENCY

Efficiency can reach 21.73%. Excellent low light performance. Higher power output under the conditions of haze, overcast, etc.

## Electrical parameters at standard test conditions (STC:AM=1.5, 1000W/m<sup>2</sup>, Cells Temperature 25°C)

Typical type	590W	595W	600W	605W	610W	615W
Max power(Pmax)	590	595	600	605	610	615
Max power voltage(Vmp)	34	34.2	34.4	34.6	34.8	35.1
Max power current(Imp)	17.35	17.4	17.45	17.49	17.53	17.57
Open circuit voltage(Voc)	41.1	41.3	41.5	41.7	41.9	42.1
Short circuit current(Isc)	18.42	18.47	18.52	18.57	18.62	18.67
Module Efficiency(%)	20.85	21.02	21.2	21.38	21.55	21.73
Max system voltage	DC 1500V(TÜV,UL)					
Maximum Series Fuse Rating	35A(TÜV) / 40A(UL)					

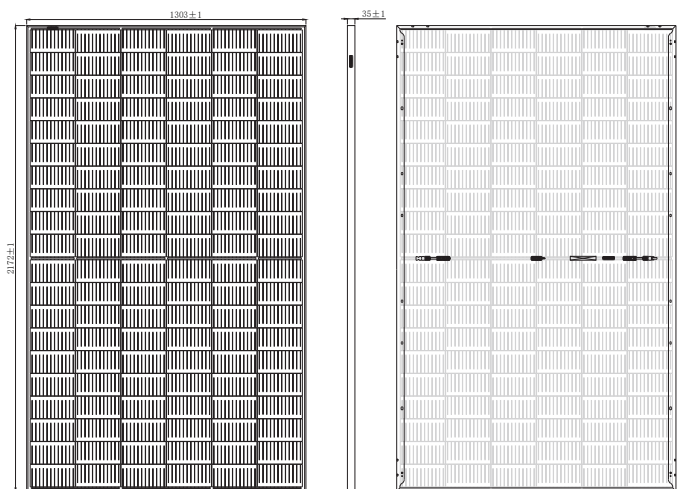
### Electrical parameters at NMOT test conditions (Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s)

Typical type	590W	595W	600W	605W	610W	615W
Max power(Pmax)	441	445	449	453	457	461
Max power voltage(Vmp)	31.7	31.8	32.1	32.2	32.4	32.6
Max power current(Imp)	13.92	13.97	14.02	14.06	14.10	14.14
Open circuit voltage(Voc)	38.6	38.8	39	39.2	39.4	39.6
Short circuit current(Isc)	14.82	14.86	14.90	14.94	14.98	15.02

### Electrical Characteristics with 15% Rear Side Power Gain

Front power Pmax/W	590W	595W	600W	605W	610W	615W
Total power Pmax/W	678.5	684.25	690	695.75	701.5	707.25
Vmp/V(Total)	34	34.2	34.4	34.6	34.8	35.01
Imp/A(Total)	19.96	20.01	20.06	20.11	20.16	20.2
Voc/V(Total)	41.1	41.3	41.5	41.7	41.9	42.1
Isc/A(Total)	21.18	21.24	21.3	21.35	21.41	21.49

## DIMENSIONS AND STRUCTURE



## Mechanical Data

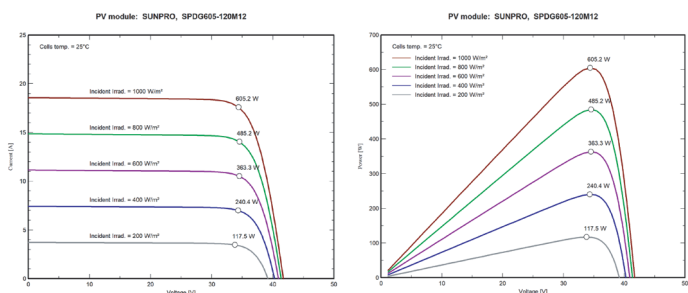
Dimensions	2172x1303x35mm
Weight	35.9 kg
Glass	(F) 2.0mm ultra clear embossed semi-tempered coated glass (B) 2.0mm semi-tempered glass
Output cables	4mm <sup>2</sup> , symmetrical lengths 1300mm
Connectors	MC4 compatible IP68
Cell type	Mono-Crystalline PERC, 210mm x 105mm
Number of cells	120 cells ( Half-Cell )

### Temperature Characteristics

### Packing Configuration

Temp.Coeff.of Isc(TK Isc)	0.05%/°C	Container	40'HQ
Temp.Coeff.of Voc(TK Voc)	-0.27%/°C	Pieces per pallet	31
Temp.Coeff.of Pmax(TK Pmax)	-0.34%/°C	Pallets per container	18
Operating temperature	-40~+85°C	Pieces per container	558
Normal operating cell temperature	44±2°C		

## I-V CHARACTERISTICS AT DIFFERENT IRRADIATION



## Tests, Certifications and Warranties

Standard tests	IEC 61215, IEC 61730, IEC 61701, IEC 62716, PPP 58042
System certs	ISO 9001, ISO14001, ISO45001
Certifications	TÜV, CE, UL, WEEE
Extreme wind and snow loads testing	Withstand extreme wind(2400 Pascal) and snow loads(5400 Pascal)
Power tolerance	0~+5W
Junction box	IP 68
Warranties	15 years product warranty and 30 years 82.1% of power