

Tier1

BloombergNEF

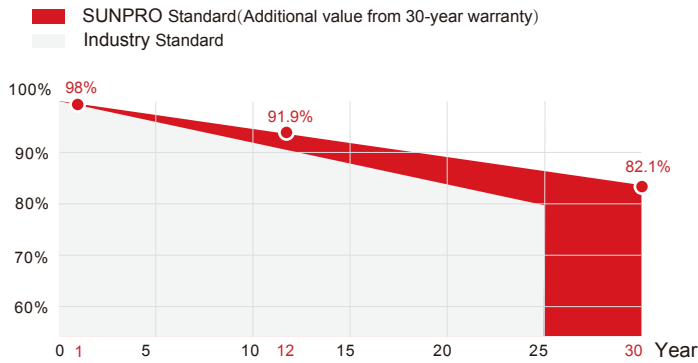


## M12 HI-EFF TWIN MONO

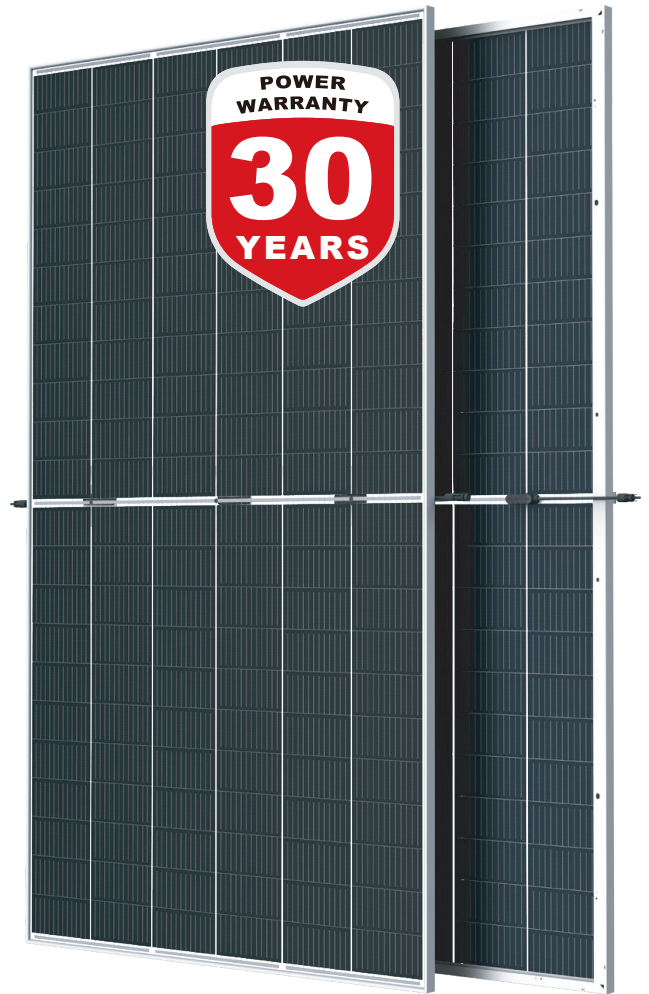
**SPDGxxx-132M12**  
**635~670W**

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

15 Yr quality guarantee | 30 Yr power warranty



\*SUNPRO Standard tiered warranty



### 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 21.57%. 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	635W	640W	645W	650W	655W	660W	665W	670W
Max power(Pmax)	635	640	645	650	655	660	665	670
Max power voltage(Vmp)	36.75	36.97	37.18	37.38	37.58	37.79	38.01	38.22
Max power current(Imp)	17.28	17.31	17.35	17.39	17.43	17.47	17.5	17.53
Open circuit voltage(Voc)	44.64	44.85	45.06	45.27	45.48	45.69	45.91	46.13
Short circuit current(Isc)	18.32	18.36	18.4	18.44	18.48	18.52	18.56	18.60
Module Efficiency(%)	20.44	20.60	20.76	20.92	21.09	21.25	21.41	21.57
Max system voltage	DC 1500V(TÜV)							
Maximum Series Fuse Rating	30A							

### 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	635W	640W	645W	650W	655W	660W	665W	670W
Max power(Pmax)	474	478	482	486	490	494	499	509
Max power voltage(Vmp)	34.30	34.50	34.70	34.90	35.10	35.30	35.50	36.20
Max power current(Imp)	13.83	13.86	13.90	13.93	13.96	14.00	14.03	14.07
Open circuit voltage(Voc)	41.80	42.00	42.30	42.50	42.70	42.90	43.20	43.90
Short circuit current(Isc)	14.74	14.77	14.80	14.84	14.87	14.90	14.93	14.96

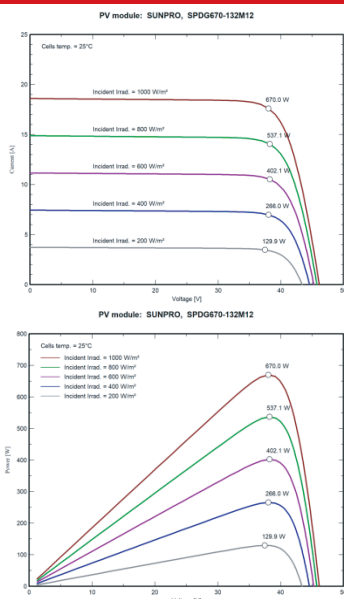
### Electrical Characteristics with 15% Rear Side Power Gain

Front power Pmax/W	635W	640W	645W	650W	655W	660W	665W	670W
Total power Pmax/W	730.25	736	741.75	747.5	753.25	759	764.75	770.5
Vmp/V(Total)	36.75	36.97	37.18	37.38	37.79	37.79	38.01	38.22
Imp/A(Total)	19.87	19.91	19.95	20.00	20.08	20.08	20.12	20.16
Voc/V(Total)	44.64	44.85	45.06	45.27	45.69	45.69	45.91	46.13
Isc/A(Total)	21.07	21.11	21.16	21.21	21.30	21.30	21.34	21.39

### DIMENSIONS AND STRUCTURE



### I-V CHARACTERISTICS AT DIFFERENT IRRADIATION



### Mechanical Data

Dimensions	2384x1303x35mm
Weight	39 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, 210x105mm
Number of cells	132 cells ( Half-Cell )

### Temperature Characteristics

Temp.Coeff.of Isc(TK Isc)	0.05%/°C
Temp.Coeff.of Voc(TK Voc)	-0.27%/°C
Temp.Coeff.of Pmax(TK Pmax)	-0.34%/°C
Operating temperature	-40~+85°C
Normal operating cell temperature	44±2°C

### Packing Configuration

Container	40'HQ
Pieces per pallet	31
Pallets per container	18
Pieces per container	558

### 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~+3%
Junction box	IP 68
Warranties	15 years product warranty and 30 years 82.1% of power