

Tier1

BloombergNEF

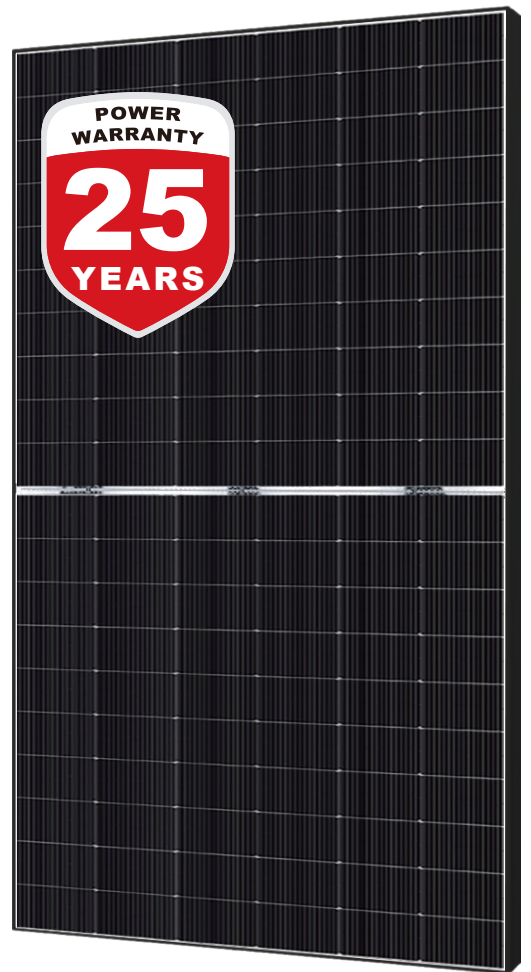
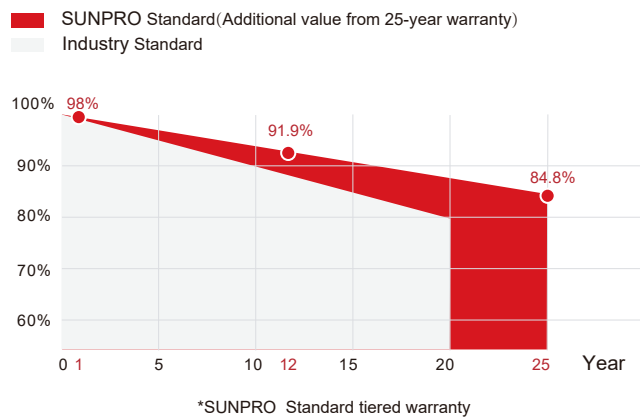


## M10 HI-EFF TWIN MONO

SPxxx-120M10  
445~470W

- Black frame
- Bifacial Transparent
- Full black
- Bifacial

12Yr quality guarantee | 25Yr power warranty



### WARRANTY & GUARANTEE

Linear output power guarantee  
12 years: 91.9% power output  
25 years: 84.8% power output



### WITHSTAND STRONG

Snow load 5400Pa  
Wind load 2400Pa



### 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 21.70%. Excellent low light performance. Higher power output under the conditions of haze, overcast, etc.



### POWER TOLERANCE

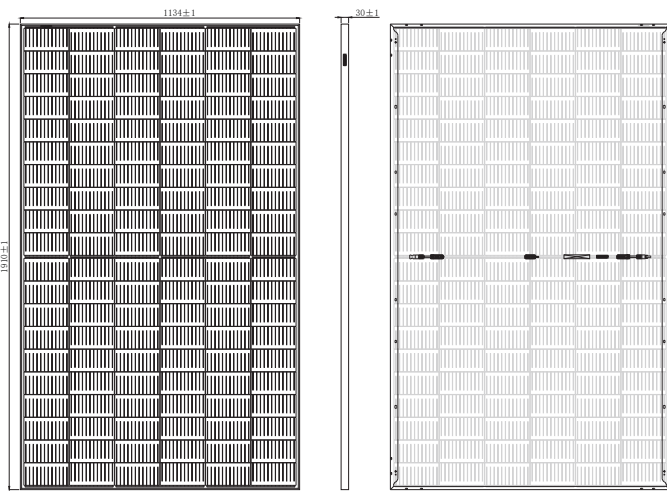
Power positive tolerance: 0~+5W

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

### Typical type

	445W	450W	455W	460W	465W	470W
Max power(Pmax)	445	450	455	460	465	470
Max power voltage(Vmp)	34.56	34.81	35.06	35.31	35.56	35.81
Max power current(Imp)	12.88	12.93	12.98	13.03	13.08	13.13
Open circuit voltage(Voc)	41.30	41.50	41.70	41.90	42.10	42.30
Short circuit current(Isc)	13.65	13.70	13.75	13.80	13.85	13.90
Module Efficiency(%)	20.55	20.78	21.01	21.24	21.47	21.70
Max system voltage	DC 1500V(TÜV) / 1000V (CUL)					
Maximum Series Fuse Rating	25A					

### DIMENSIONS AND STRUCTURE



### Electrical parameters at NMOT test conditions

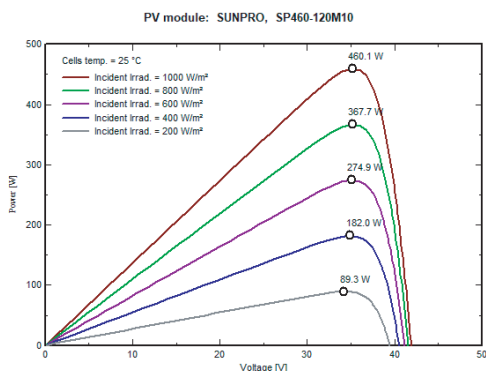
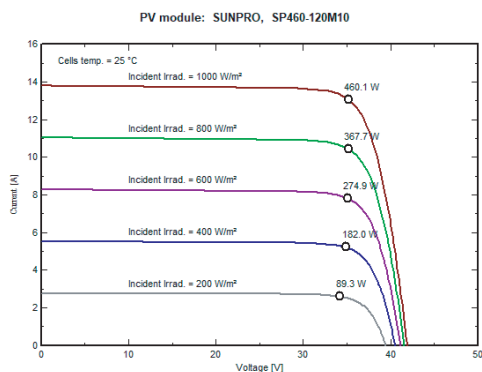
(Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s)

Typical type	445W	450W	455W	460W	465W	470W
Max power(Pmax)	331	335	339	342	346	350
Max power voltage(Vmp)	31.80	32.10	32.30	32.50	32.70	32.90
Max power current(Imp)	10.40	10.44	10.49	10.54	10.58	10.63
Open circuit voltage(Voc)	38.50	38.70	38.90	39.10	39.30	39.40
Short circuit current(Isc)	11.00	11.04	11.08	11.12	11.16	11.20

### Mechanical Data

Dimensions	1910x1134x30mm
Weight	22.5 kg
Glass	3.2mm ultra clear embossed tempered coated glass
Output cables	4mm <sup>2</sup> , symmetrical lengths 1100mm
Connectors	MC4 compatible IP68
Cell type	Mono-Crystalline PERC, 182mm x 91mm
Number of cells	120cells ( Half-Cell )

### I-V CHARACTERISTICS AT DIFFERENT IRRADIATION



### Temperature Characteristics

Temp.Coeff.of Isc(TK Isc)	0.048%/°C	Container	40'HQ
Temp.Coeff.of Voc(TK Voc)	-0.27%/°C	Pieces per pallet	36
Temp.Coeff.of Pmax(TK Pmax)	-0.34%/°C	Pallets per container	24
Operating temperature	-40~+85°C	Pieces per container	864
Normal operating cell temperature	44±2°C		

### Packing Configuration

### 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, INMETRO, 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	12 years product warranty and 25 years 84.8% of power