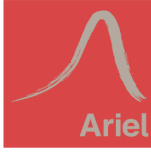
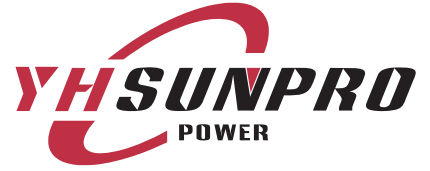


Tier1

BloombergNEF



Lloyd's Syndicate 1910



ISO14001

ISO9001

ISO45001



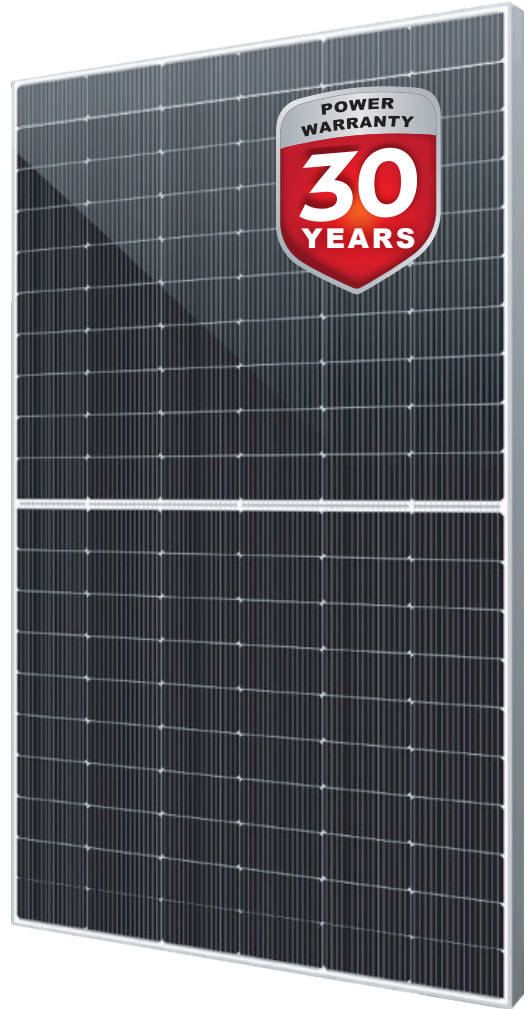
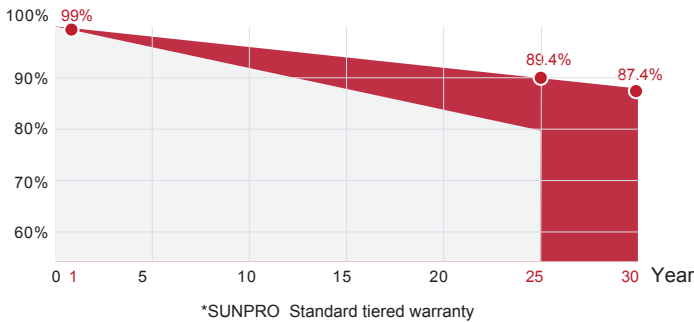
M10 N TYPE MONO

SPxxx-N120M10

- Silver frame (xxx=455~480W)
- Black frame
- Full black

12 Yr quality guarantee | 30 Yr power warranty

- SUNPRO TOPCon module (Additional value from 30-year warranty)
- Common module



WARRANTY & GUARANTEE

Linear output power guarantee
25 years: 89.4% power output
30 years: 87.4% power output



WITHSTAND STRONG

Snow load 5400Pa
Wind load 2400Pa



PID RESISTANCE

Power positive tolerance: 0~+3%.
The attenuation probability of PID phenomenon is minimized through battery production technology optimization and material control



R&D AND PRODUCTION

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



HIGH EFFICIENCY

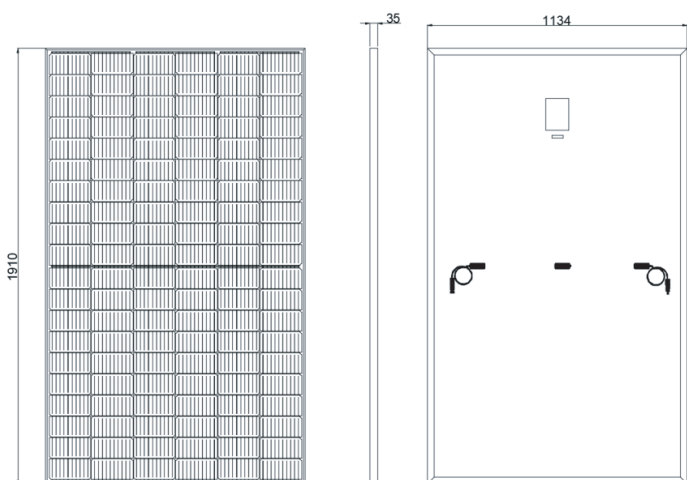
N-type, Components have better reliability and lower LID/LETID attenuation. Efficiency can reach 22.20%. Excellent low light performance. Higher power output under the conditions of haze, overcast, etc.

Electrical parameters at standard test conditions (STC:AM=1.5, 1000W/m², Cells Temperature 25°C)

Typical type

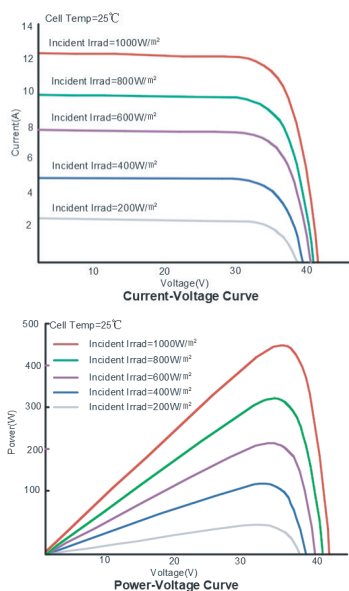
	455W	460W	465W	470W	475W	480W
Max power(Pmax)	455	460	465	470	475	480
Max power voltage(Vmp)	34.76	34.88	34.99	35.11	35.24	35.38
Max power current(Imp)	13.09	13.19	13.29	13.39	13.48	13.57
Open circuit voltage(Voc)	42.10	42.24	42.38	42.52	42.66	42.71
Short circuit current(Isc)	13.83	13.94	14.03	14.12	14.20	14.31
Module Efficiency(%)	21.01	21.24	21.47	21.70	21.93	22.20
Max system voltage	DC 1500V (TUV) /1500V(UL)					
Maximum Series Fuse Rating	25A					

DIMENSIONS AND STRUCTURE



Length: + 2mm
 Width: + 2mm
 Thickness: + 1mm
 Hole pitch: + 2mm

I-V CHARACTERISTICS AT DIFFERENT IRRADIATION



Electrical parameters at NMOT test conditions

(Irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s)

Typical type	460W	465W	470W	475W	480W
Max power(Pmax)	346	350	353	357	361
Max power voltage(Vmp)	32.60	32.77	32.94	33.10	33.27
Max power current(Imp)	10.61	10.67	10.73	10.79	10.85
Open circuit voltage(Voc)	39.94	40.10	40.25	40.41	40.57
Short circuit current(Isc)	11.29	11.36	11.42	11.49	11.55

Mechanical Data

Dimensions	1910x1134x35mm
Weight	24kg
Glass	3.2mm Coated toughened
Output cables	4mm ² , symmetrical lengths 1100mm
Connectors	MC4 compatible IP68
Cell type	N type Mono-Crystalline, 16BB, 182x91mm
Number of cells	120cells (Half-Cell)

Temperature Characteristics

Packing Configuration

Temp.Coeff.of Isc(TK Isc)	0.046%/°C	Container	40'GP
Temp.Coeff.of Voc(TK Voc)	-0.26%/°C	Pieces per pallet	31
Temp.Coeff.of Pmax(TK Pmax)	-0.31%/°C	Pallets per container	24
Operating temperature	-40~+85°C	Pieces per container	744
Normal operating cell temperature	45±2°C		

Tests, Certifications and Warranties

Standard tests	IEC 61215, IEC 61730, IEC 61701, IEC 62716, PPP 58042
System certs	ISO 9001, ISO14001, ISO45001
Certifications	TUV, CE, WEEE, INMETRO, FIRE CERTIFICATE C1
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	12 years product warranty and 30 years 87.4% of power