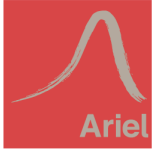


Tier1

BloombergNEF



Lloyd's Syndicate 1910



ISO14001

ISO9001

ISO45001



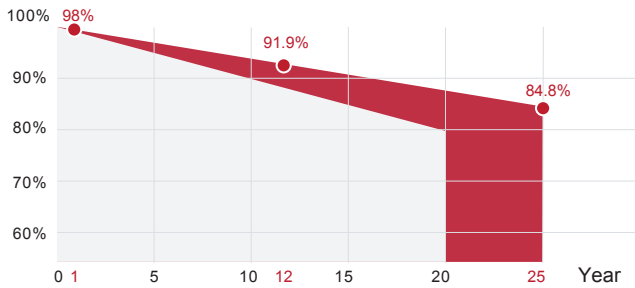
M12 HIEFF TWIN MONO

SPxxx-132M12

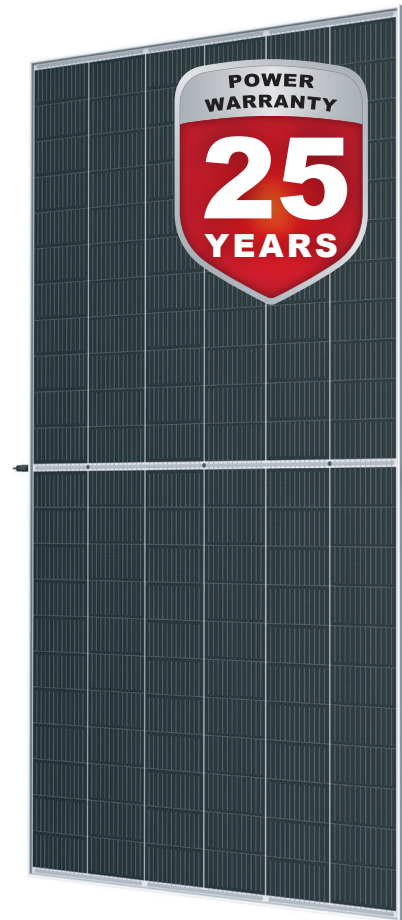
- Silver frame (xxx=640~670W)
- Bifacial
- Black frame
- Full black

12Yr quality guarantee | 25Yr power warranty

■ SUNPRO Standard (Additional value from 25-year warranty)
 □ Industry Standard



*SUNPRO Standard tiered 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

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/m², Cells Temperature 25°C)

Typical type

	640W	645W	650W	655W	660W	665W	670W
Max power(Pmax)	640	645	650	655	660	665	670
Max power voltage(Vmp)	36.97	37.18	37.38	37.58	37.79	38.01	38.22
Max power current(Imp)	17.31	17.35	17.39	17.43	17.47	17.5	17.53
Open circuit voltage(Voc)	44.85	45.06	45.27	45.48	45.69	45.91	46.13
Short circuit current(Isc)	18.36	18.4	18.44	18.48	18.52	18.56	18.60
Module Efficiency(%)	20.60	20.76	20.92	21.09	21.25	21.41	21.57
Max system voltage	DC 1500V(TUV) / 1000V(UL)						
Maximum Series Fuse Rating	35A						

Electrical parameters at NMOT test conditions (Irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s)

Typical type	650W	655W	660W	665W	670W
Max power(Pmax)	529.7	533.6	537.8	541.8	545.7
Max power voltage(Vmp)	38.1	38.3	38.5	38.7	38.9
Max power current(Imp)	13.89	13.93	13.97	14.00	14.03
Open circuit voltage(Voc)	45.5	45.7	45.9	46.1	46.4
Short circuit current(Isc)	14.72	14.76	14.80	14.83	14.86

Electrical Characteristics with 15% Rear Side Power Gain

Front power Pmax/W	640W	645W	650W	655W	660W	665W	670W
Total power Pmax/W	736	741.75	747.5	753.5	759	764.75	770.5
Vmp/V(Total)	36.97	37.18	37.38	37.58	37.79	38.01	38.22
Imp/A(Total)	19.91	19.95	20.00	20.04	20.08	20.12	20.16
Voc/V(Total)	44.85	45.06	45.27	45.48	45.69	45.91	46.13
Isc/A(Total)	21.11	21.16	21.21	21.25	21.30	21.34	21.39

DIMENSIONS AND STRUCTURE



Mechanical Data

Dimensions	2384x1303x35mm
Weight	34 kg
Glass	3.2mm tempered glass
Output cables	4mm ² , symmetrical lengths 1300mm
Connectors	MC4 compatible IP68
Cell type	Mono-Crystalline PERC, 12BB, 210x105mm
Number of cells	132 cells (Half-Cell)

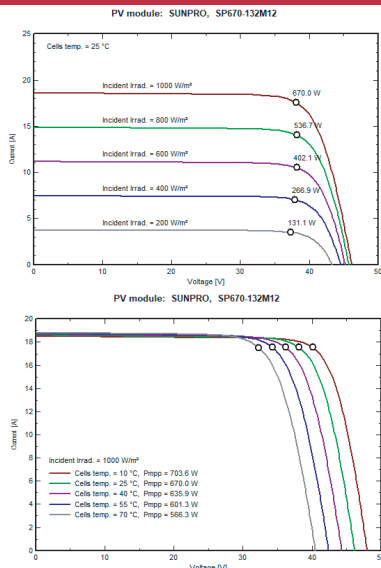
Temperature Characteristics

Temp.Coeff.of Isc(TK Isc)	0.049%/°C
Temp.Coeff.of Voc(TK Voc)	-0.27%/°C
Temp.Coeff.of Pmax(TK Pmax)	-0.35%/°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	17
Pieces per container	527

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	TUV, CE, WEEE, INMERTRO, 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 25 years 84.8% of power