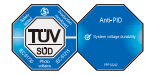




M10 HIEFF TWIN MONO by SUNPRO

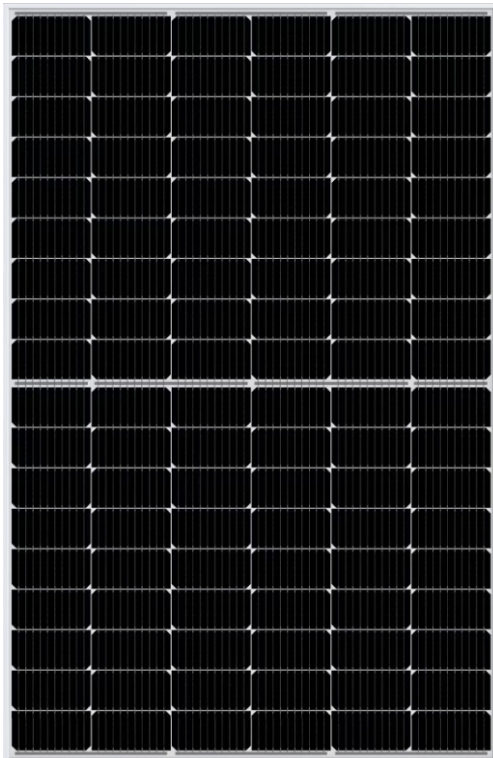
SPxxx-108M10
(xxx=390~410)
HIGH EFFICIENCY



ISO 14001

ISO 9001

ISO 45001



POWER TOLERANCE

0~+3%



WITHSTAND STRONG SNOW LOAD 5400 Pa/ WIND LOAD 2400 Pa



NEW TECHNOLOGY: HIEFF UP TO 20,97%

Higher yield per surface area,
lower BOS costs, higher power classes,
and an efficiency rate of up to 20.97%.

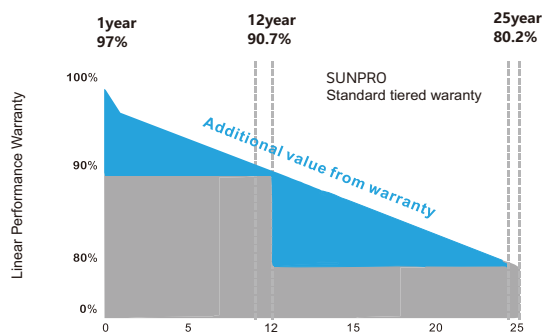


PRODUCT WITH HIEFF BY SUNPRO TECHNOLOGY

SUNPRO DUO combines cutting edge cell
separation and innovative 10-busbar design
with SUNPRO Technology.

Reliability & Certification

Product Guarantee: **12-year**
Linear Performance Warranty
12-year:90.7% power output
25-year:80.2% power output



Product Specification

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

Typical type	390W	395W	400W	405W	410W
Max power(Pmax)	390	395	400	405	410
Max power voltage(Vmp)	36.54	36.74	36.94	37.14	37.34
Max power current(Imp)	13.50	13.55	13.60	13.65	13.70
Open circuit voltage (Voc)	30.42	30.62	30.82	31.02	31.22
Short circuit current (Isc)	12.82	12.88	12.94	13.00	13.06
Module Efficiency(%)	19.95	20.20	20.46	20.72	20.97
Max system voltage	DC 1500V(TUV) / DC 1000V(TUV)				
Maximum Series Fuse Rating	25A				

Electrical parameters at NMOT test conditions

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

Item					
Max power(Pmax)	287	291	295	298	302
Max power voltage(Vmp)	34.09	34.29	34.49	34.69	34.89
Max power current(Imp)	10.60	10.65	10.70	10.75	10.80
Open circuit voltage (Voc)	28.38	28.58	28.78	28.98	29.18
Short circuit current (Isc)	10.11	10.18	10.25	10.28	10.35

Mechanical Data

Item	Specification
Dimensions	1724x1134x30mm
Weight	21.5kgs
Front glass	3.2mm, High Transmission, AR Coated Tempered Glass
Output cables	4mm ² symmetrical lengths 1100mm
Connectors	MC4 compatible IP68
Cell type	Mono-Crystalline PERC Half-Cell
Number of cells	10BB 108 cells

Temperature Characteristics

Item	Specification
Temp.Coeff.of Isc(TK Isc)	0.05%/°C
Temp.Coeff.of Voc(TK Voc)	-0.29%/°C
Temp.Coeff.of Pmax(TK Pmax)	-0.35%/°C
Operating temperature	-40~+85°C
Normal operating cell temperature	44±2°C

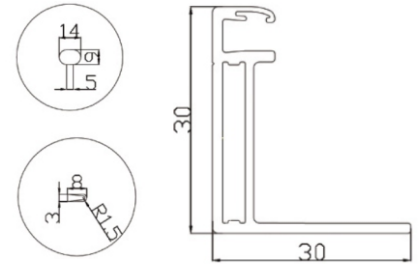
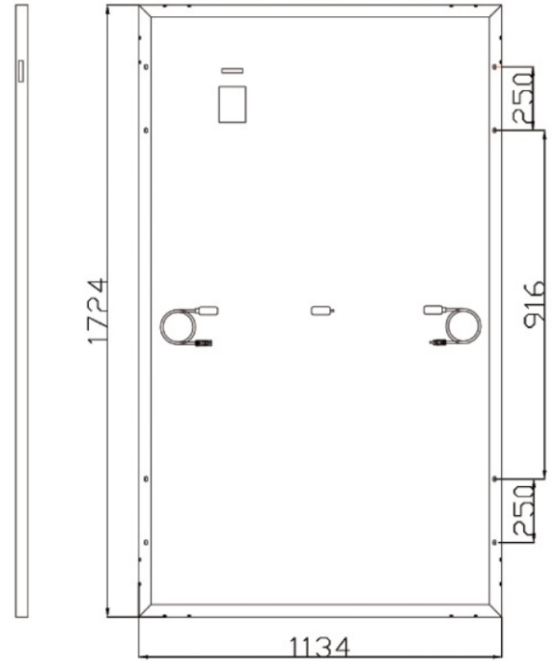
Packing Configuration

Item	Specification
Container	40'HQ
Pieces per pallet	36
Pallets per container	/
Pieces per container	936

Test, Certifications and Warranties

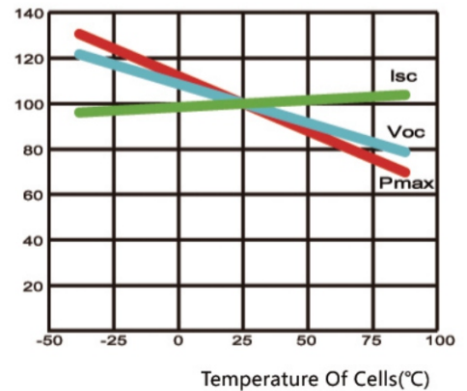
Item	Specification
Standard tests	IEC 61215, IEC 61730, IEC 61701, IEC 62716, PPP 58042B
System certs	ISO 9001, ISO14001, ISO45001
Certifications	TUV, AMMONIA AND SALT MIST CORROSION, ANTI-PID, CE, WEEE, INMERTRO
Extreme wind and snow loads testing	Withstand extreme wind(2400 Pascal) and snow loads(5400 Pascal)
Power tolerance	0~+3%
Junction box	IP68
Warranties	12 years product warranty and 25 years 80% of power

Dimensions and Structure

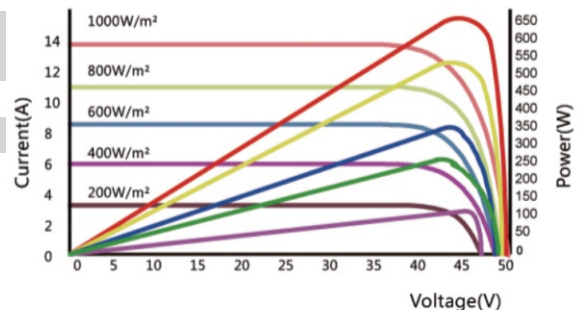


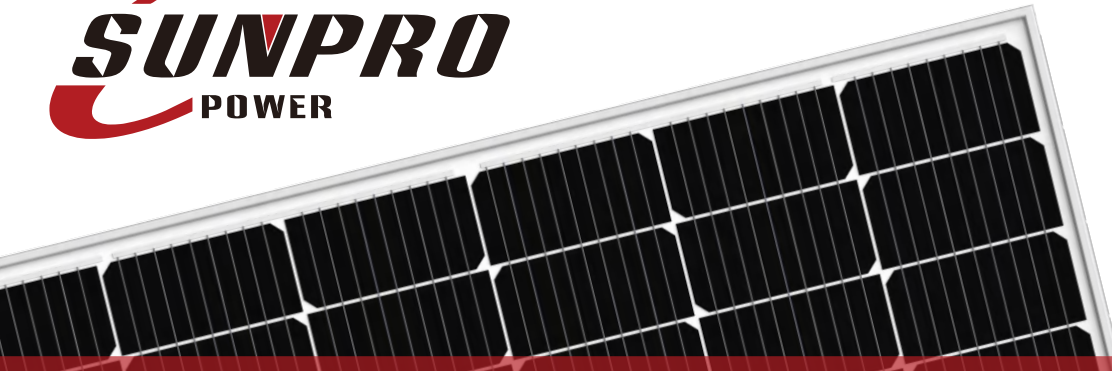
I-V Curve

I-V characteristics at different temperature



I-V characteristics at different tempera





M10 HIEFF TWIN MONO by SUNPRO

SPxxx-120M10
(xxx=440~460)

HIGH EFFICIENCY



ISO 14001



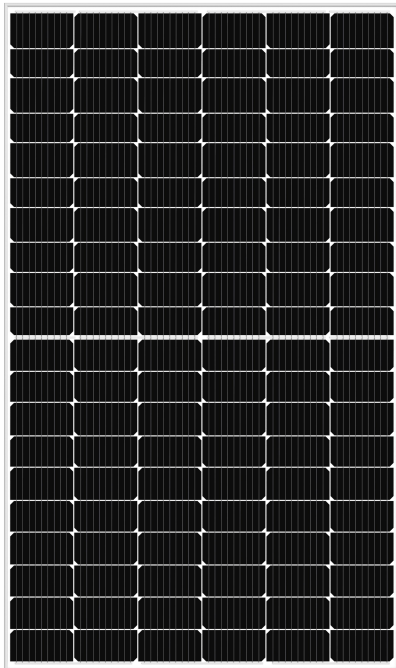
ISO 9001



ISO 45001



SOLARIF
GROUP



POWER TOLERANCE

0~+3%



WITHSTAND STRONG SNOW LOAD
5400 Pa/ WIND LOAD 2400 Pa



NEW TECHNOLOGY: HIEFF UP TO 21.24%

Higher yield per surface area,
lower BOS costs, higher power classes,
and an efficiency rate of up to 21.24%.

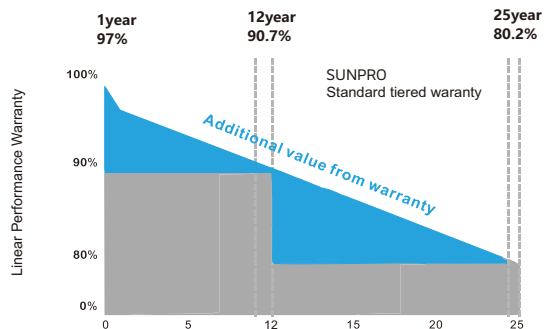


PRODUCT WITH HIEFF BY SUNPRO TECHNOLOGY

SUNPRO DUO combines cutting edge cell
separation and innovative 10-busbar
design with SUNPRO Technology.

Reliability & Certification

Product Guarantee: **12-year**
Linear Performance Warranty
12-year:90.7% power output
25-year:80.2% power output



Product Specification

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

Typical type	440W	445W	450W	455W	460W
Max power(Pmax)	440	445	450	455	460
Max power voltage(Vmp)	34.32	34.56	34.81	35.06	35.31
Max power current(Imp)	12.83	12.88	12.93	12.98	13.03
Open circuit voltage (Voc)	41.1	41.3	41.5	41.7	41.9
Short circuit current (Isc)	13.6	13.65	13.7	13.75	13.8
Module Efficiency(%)	20.31	20.55	20.78	21.01	21.24
Max system voltage	DC 1500V (TUV) /1000V(UL)				
Maximum Series Fuse Rating	25A				

Mechanical Data

Item	Specification
Dimensions	1910x1134x35mm
Weight	23.5 kg
Front glass	3.2mm tempered glass
Output cables	4mm ² symmetrical lengths 1300mm
Connectors	MC4 compatible IP68
Cell type	Mono Crystalline Silicon
Number of cells	91mmx182mm-10BB 120cells

Temperature Characteristics

Item	Specification
Temp.Coeff.of Isc(TK Isc)	0.049%/°C
Temp.Coeff.of Voc(TK Voc)	-0.26%/°C
Temp.Coeff.of Pmax(TK Pmax)	-0.33%/°C
Operating temperature	-40~+85°C
Normal operating cell temperature	44±2°C

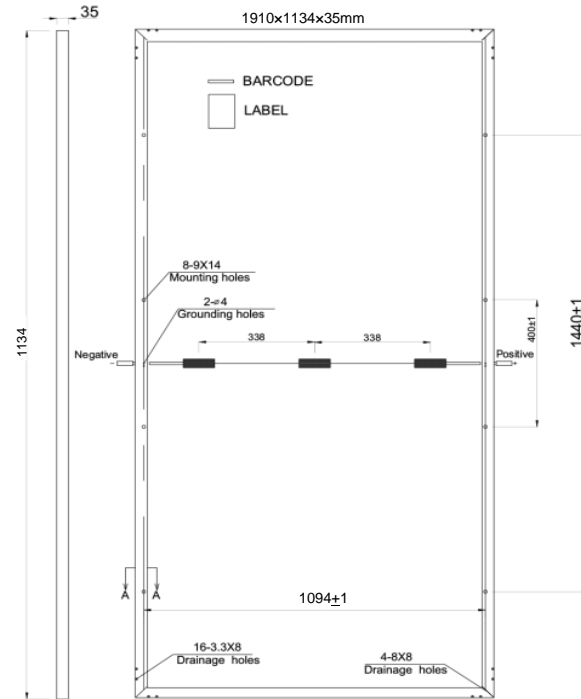
Packing Configuration

Item	Specification
Container	40'HQ
Pieces per pallet	62
Pallets per container	12
Pieces per container	744

Test, Certifications and Warranties

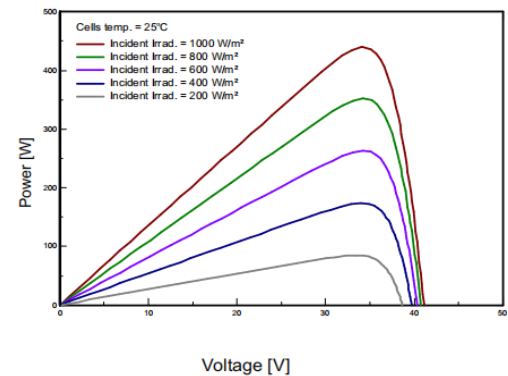
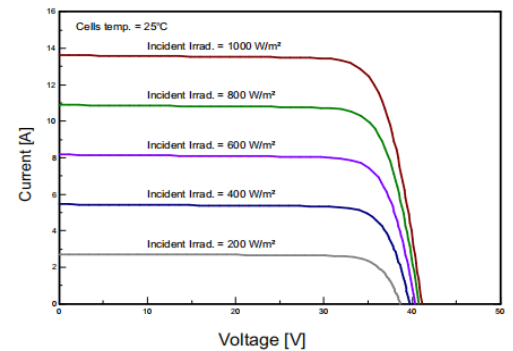
Item	Specification
Standard tests	IEC 61215, IEC 61730, EC 61701, IEC 62716, PPP 58042B
System certs	ISO 9001, ISO14001, ISO45001
Certifications	TUV, AMMONIA AND SALT MIST CORROSION, ANTI-PID, CE, WEEE, INMERTRO
Extreme wind and snow loads testing	Withstand extreme wind(2400 Pascal) and snow loads(5400 Pascal)
Power tolerance	0~+3%
Junction box	IP68
Warranties	12 years product warranty and 25 years 80% of power

Dimensions and Structure



I-V Curve

I-V characteristics at different temperature





M10 HIEFF TWIN MONO by SUNPRO

SPxxx-132M10
(xxx=485~505)

HIGH EFFICIENCY



ISO 14001



ISO 9001



ISO 45001



POWER TOLERANCE

0~+3%



WITHSTAND STRONG SNOW LOAD 5400 Pa/ WIND LOAD 2400 Pa



NEW TECHNOLOGY: HIEFF UP TO 21.48%

Higher yield per surface area,
lower BOS costs, higher power classes,
and an efficiency rate of up to 21.48%.

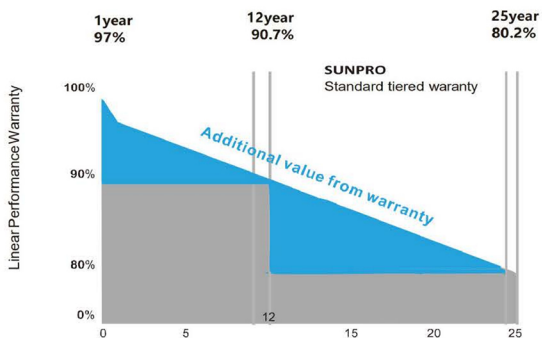


PRODUCT WITH HIEFF BY SUNPRO TECHNOLOGY

SUNPRO DUO combines cutting edge cell
separation and innovative 9-busbar design
with SUNPRO Technology.

Reliability & Certification

Product Guarantee: **12-year**
Linear Performance Warranty
12-year: 90.7% power output
25-year: 80.2% power output



Product Specification

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

Typical type	485W	490W	495W	500W	505W
Max power(Pmax)	485	490	495	440	505
Max power voltage(Vmp)	37.20	37.40	37.60	37.80	38.00
Max power current(Imp)	13.04	13.10	13.16	13.22	13.28
Open circuit voltage (Voc)	44.70	44.9	45.10	45.30	45.50
Short circuit current (Isc)	13.68	13.73	13.78	13.83	13.89
Module Efficiency(%)	20.42	20.64	20.85	21.06	21.27
Max system voltage	DC 1500V(TUV) / DC 1000V(TUV)				
Maximum Series Fuse Rating	20A				

Mechanical Data

Item	Specification
Dimensions	2094x1134x30mm
Weight	26kgs
Front glass	3.2mm tempered glass
Output cables	4mm ² symmetrical lengths 1100mm
Connectors	Mc4 compatible IP68
Cell type	Mono-Crystalline PERC Half-Cell
Number of cells	91mmx182mm 132 cells

Temperature Characteristics

Item	Specification
Temp.Coeff.of Isc(TK Isc)	0.049%/°C
Temp.Coeff.of Voc(TK Voc)	-0.26%/°C
Temp.Coeff.of Pmax(TK Pmax)	-0.34%/°C
Operating temperature	-40~+85°C
Normal operating cell temperature	45±2°C

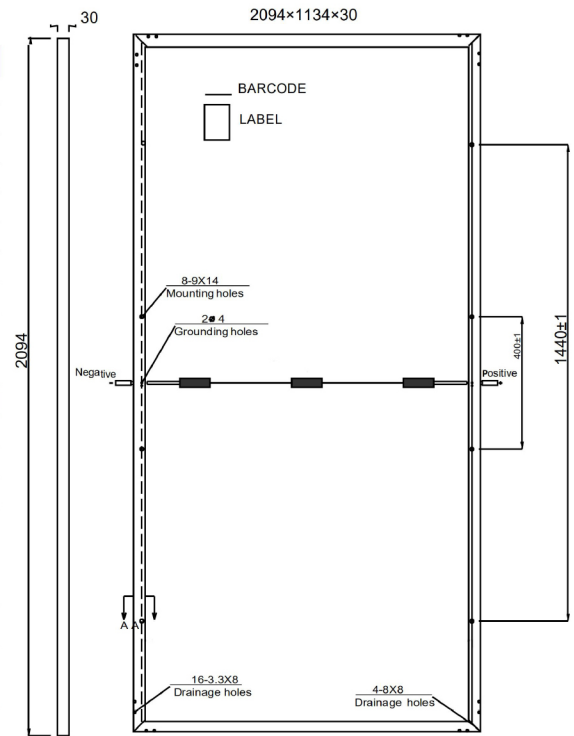
Packing Configuration

Item	Specification
Container	40'HQ
Pieces per pallet	36
Pallets per container	22
Pieces per container	792

Test, Certifications and Warranties

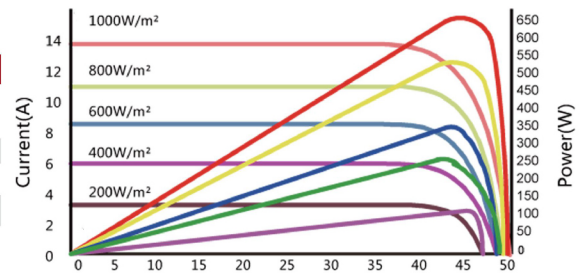
Item	Specification
Standard tests	IEC 61215, IEC 61730, EC 61701, IEC 62716, PPP 58042B
System certs	ISO 9001, ISO14001, ISO45001
Certifications	TUV, AMMONIA AND SALT MIST CORROSION, ANTI-PID, CE, WEEE, INMERTRO
Extreme wind and snow loads testing	Withstand extreme wind(2400 Pascal) and snow loads(5400 Pascal)
Power tolerance	0~+3%
Junction box	IP68
Warranties	12 years product warranty and 25 years 80% of power

Dimensions and Structure

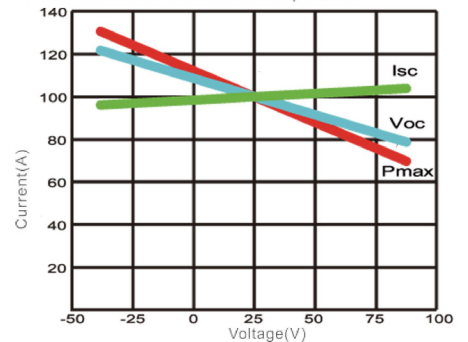


I-V Curve

I-V characteristics at different irradiances



I-V characteristics at different temperature

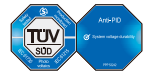




M10 HIEFF TWIN MONO by SUNPRO

SPxxx-144M10
(xxx=530~550)

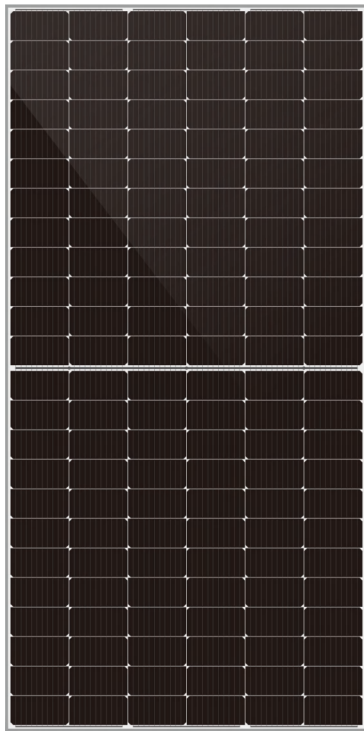
HIGH EFFICIENCY



ISO 14001

ISO 9001

ISO 45001



POWER TOLERANCE

0~+3%



WITHSTAND STRONG SNOW LOAD

5400 Pa/ WIND LOAD 2400 Pa



NEW TECHNOLOGY:

HIEFF UP TO 21,28%

Higher yield per surface area,
lower BOS costs, higher power classes,
and an efficiency rate of up to 21.28%.

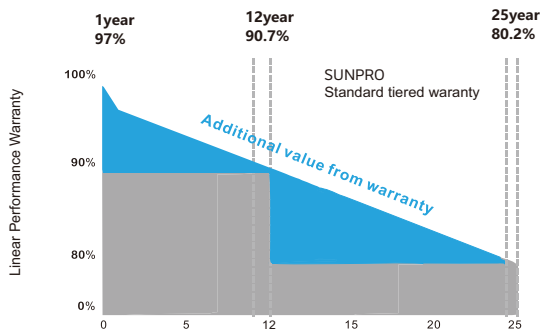


PRODUCT WITH HIEFF BY SUNPRO TECHNOLOGY

SUNPRO DUO combines cutting edge cell
separation and innovative 9-busbar design
with SUNPRO Technology.

Reliability & Certification

Product Guarantee: **12-year**
Linear Performance Warranty
12-year:90.7% power output
25-year:80.2% power output



Product Specification

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

Typical type	530W	535W	540W	545W	550W
Max power(Pmax)	530	535	540	545	550
Max power voltage(Vmp)	41.39	41.54	41.69	41.83	41.96
Max power current(Imp)	12.81	12.88	12.96	13.03	13.11
Open circuit voltage (Voc)	49.26	49.42	49.58	49.74	49.90
Short circuit current (Isc)	13.69	13.76	13.84	13.92	14.00
Module Efficiency(%)	20.51	20.70	20.89	21.09	21.28
Max system voltage	DC 1500V(TUV) / DC 1000V(TUV)				
Maximum Series Fuse Rating	20A				

Mechanical Data

Item	Specification
Dimensions	2279x1134x35mm
Weight	29kgs
Front glass	3.2mm tempered glass
	4mm ²
Output cables	symmetrical lengths
	1300mm
Connectors	MC4 compatible IP68
Cell type	Mono-Crystalline PERC Half-Cell
	91mmx182mm
Number of cells	144 cells in series

Temperature Characteristics

Item	Specification
Temp.Coeff.of Isc(TK Isc)	0.049%/°C
Temp.Coeff.of Voc(TK Voc)	-0.26%/°C
Temp.Coeff.of Pmax(TK Pmax)	-0.34%/°C
Operating temperature	-40~+85°C
Normal operating cell temperature	45±2°C

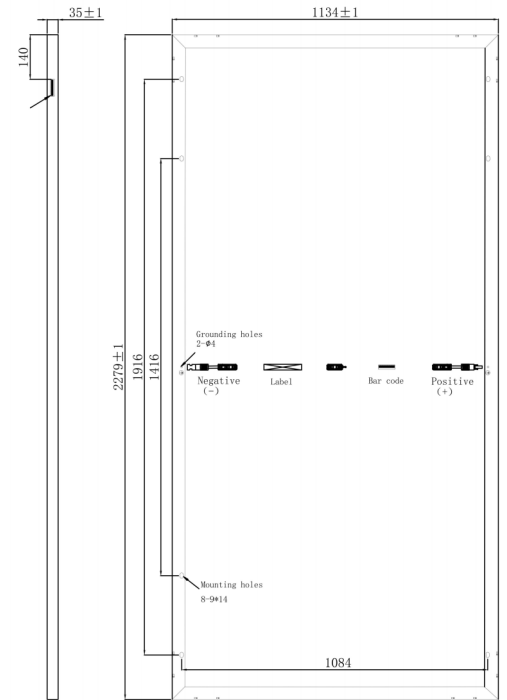
Packing Configuration

Item	Specification
Container	40'HQ
Pieces per container	62
Pallets per container	10
Pieces per container	620

Test, Certifications and Warranties

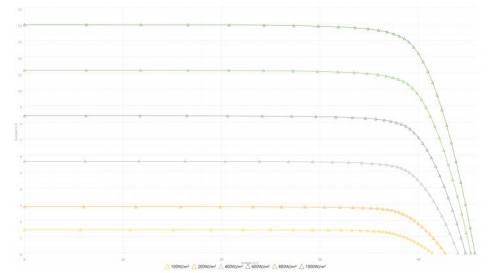
Item	Specification
Standard tests	IEC 61215, IEC 61730, IEC 61701, IEC 62716, PPP 58042B
System certs	ISO 9001, ISO14001, ISO45001
Certifications	TUV, AMMONIA AND SALT MIST CORROSION, ANTI-PID, CE, WEEE, INMERTRO
Extreme wind and snow loads testing	Withstand extreme wind(2400 Pascal) and snow loads(5400 Pascal)
Power tolerance	0~+3%
Junction box	IP68
Warranties	12 years product warranty and 25 years 80% of power

Dimensions and Structure



I-V Curve

I-V characteristics at different irradiances



I-V characteristics at different temperature

