



COOPERATION • WIN-WIN • INNOVATION • DEVELOPMENT



APEX SOLAR ENTERPRISE BROCHURE

LET EVERYONE ENJOY
THE WEALTH OF SUNSHINE



APEX SOLAR WECHAT PUBLIC ACCOUNT

GLOBAL OPERATION CENTER : ROOM 2701, BLOCK A, JEWEL INTERNATIONAL CENTER, XISHAN DISTRICT, WUXI CITY
PRODUCTION BASES: APEX SOLAR ENERGY TECHNOLOGY(YANGZHOU)CO.,LTD,NO. 1 XINJING ROAD, TIANSHAN INDUSTRIAL
CONCENTRATION ZONE, SONGQIAO TOWN, GAOYOU CITY , JIANGSU PROVINCE ,CHINA
WEBSITE: WWW.APEX-SOLARENERGY.COM

JIANGSU APEX SOLAR ENERGY GROUP CO., LTD.

APEX SOLAR
**LET EVERYONE ENJOY
THE WEALTH OF SUNSHINE**

Apex Solar Inc. operates with a 100% green production chain to help SMEs realize their carbon-reducing goals by providing:

Highest quality solar panels

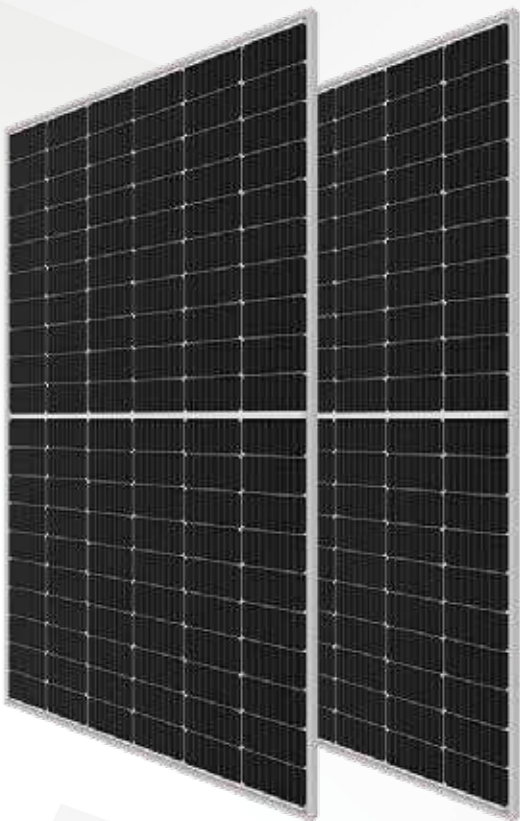
A full range of clean energy solutions

Custom designs to meet your specific needs

Excellent and responsive customer service.

We are committed to providing satisfied customers with the highest quality cutting-edge solar

Let us connect your solar plan to our 100% renewable supply chain and dedicated professional team so that we can work together to help you save on energy while protecting our natural environment.



HRAP-120H 365-380M6

20.86%
Maximum Module Efficiency

380W
Maximum Power Output

Power Shorting Tolerance:0-3W

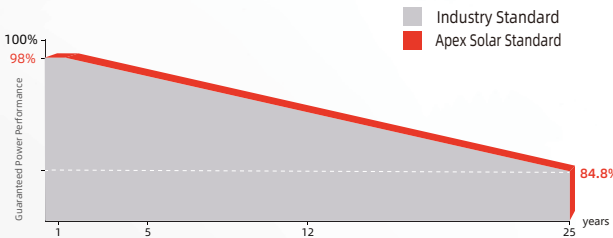
1755×1038×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



 **12** Process Warranty

 **25** Power Warranty

-  **0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
-  **High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
-  **Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
-  **Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
-  **Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
-  **Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

High Efficiency Half-cells Solar Panel HRAP-120H 365-380M6

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	365	370	375	380
Maximum Power Voltage(Vmp) [V]	33.85	34.05	34.25	34.40
Maximum Power Current(Imp) [A]	10.79	10.87	10.95	11.04
Open Circuit Voltage(Voc) [V]	41.05	41.25	41.45	41.65
Short Circuit Current(Isc) [A]	11.27	11.35	11.43	11.51
Module Efficiency [%]	20.00	20.30	20.60	20.86

STC: Irradiance 1000 W/m2 module temperature 25℃ AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	266.7	270.4	274.1	277.8
Maximum Power Voltage(Vmp) [V]	31.2	31.3	31.5	31.7
Maximum Power Current(Imp) [A]	8.56	8.63	8.7	8.76
Open Circuit Voltage(Voc) [V]	38.1	38.3	38.5	38.7
Short Circuit Current(Isc) [A]	9.06	9.12	9.19	9.25

NMOT: Irradiance 800 W/m2 ambient temperature 20℃ wind speed:1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	166×166mm
Cell Arrangement	120(6×20)
Weight	19.5kg(±3%)
Module Dimensions	1755×1038×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

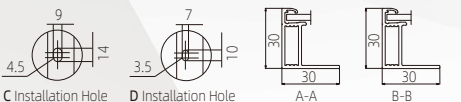
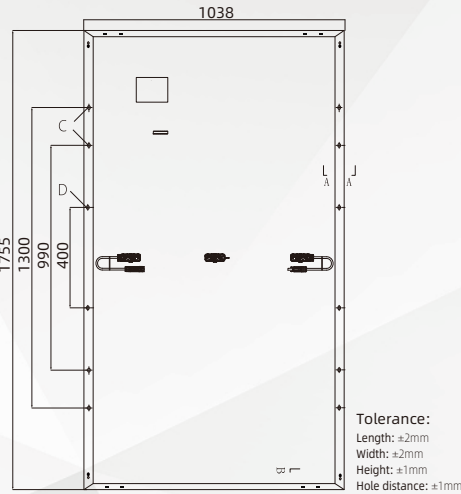
OPERATING CONDITIONS

Maximum System Voltage (V)	1000VDC/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/℃
Voc Temperature Coefficient	-0.28%/℃
ISC Temperature Coefficient	+0.05%/℃
Nominal Operating Cell Temperature	45±2℃
Operating Temperature	- 40℃-+85℃
Maximum Series Fuse	20A

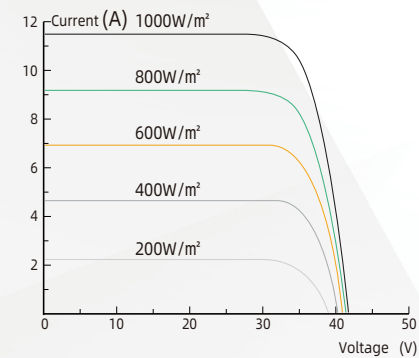
PACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	845pcs/40HQ

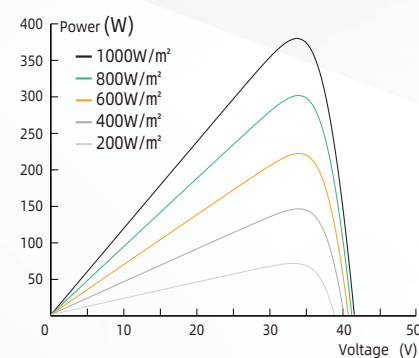
Module Dimension(mm)



Current-Voltage Curve (380W)



Power-Voltage Curve (380W)





HRAP-144H 440-460M6

21.16%

Maximum Module Efficiency

460W

Maximum Power Output

Power Shorting Tolerance:0-3W

2094×1038×35mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

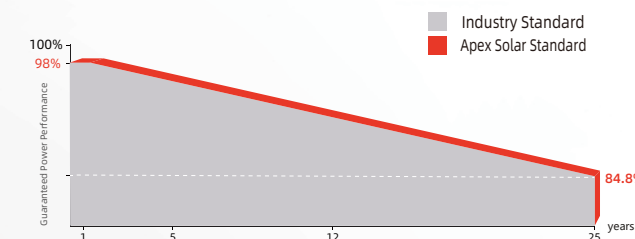
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

25 YEARS Power Warranty

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	440	445	450	455	460
Maximum Power Voltage(Vmp) [V]	41.2	41.44	41.67	41.9	42.13
Maximum Power Current(Imp) [A]	10.68	10.74	10.8	10.86	10.92
Open Circuit Voltage(Voc) [V]	49.3	49.55	49.8	50.05	50.3
Short Circuit Current(Isc) [A]	11.3	11.36	11.42	11.48	11.54
Module Efficiency [%]	20.24	20.47	20.7	20.93	21.16

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	334.76	338.61	342.39	346.19	349.57
Maximum Power Voltage(Vmp) [V]	39.29	39.52	39.74	39.96	40.18
Maximum Power Current(Imp) [A]	8.52	8.57	8.62	8.66	8.7
Open Circuit Voltage(Voc) [V]	46.76	46.99	47.23	47.47	47.71
Short Circuit Current(Isc) [A]	9.09	9.14	9.19	9.24	9.29

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	166×166mm
Cell Arrangement	144(6×24)
Weight	23kg(±3%)
Module Dimensions	2094×1038×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

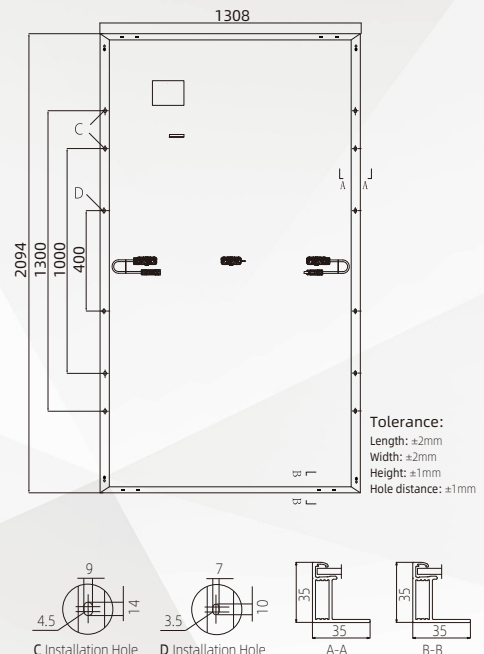
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05 %/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	20A

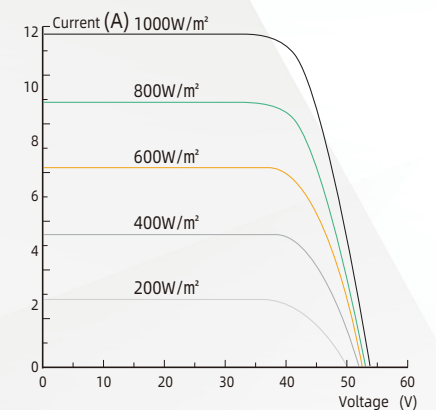
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	715pcs/40HQ

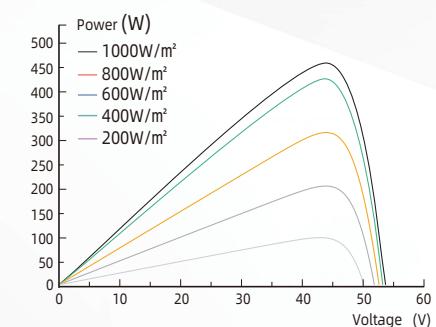
Module Dimension(mm)



Current-Voltage Curve (460W)



Power-Voltage Curve (460W)



0-3W

0-3W

Guaranteed 0-3W positive tolerance ensures the power output reliability



High customer value

Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations



Highly reliable due to stringent quality control

Three times strict EL testing beyond certification requirements



Fusion of MBB and half-cut cells technology

The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability



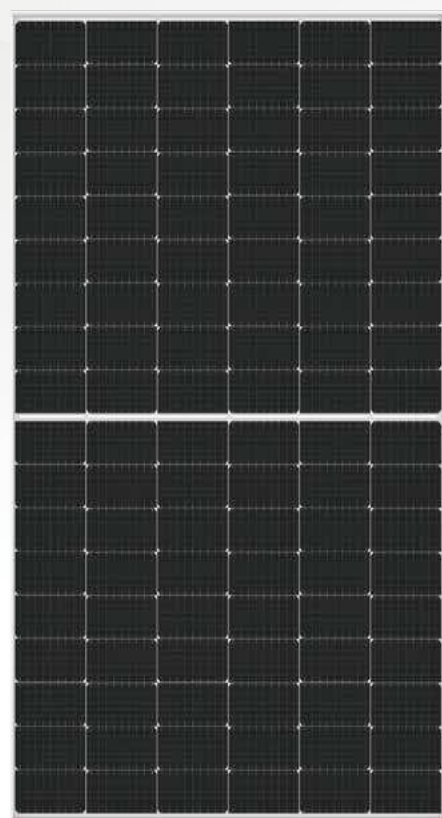
Excellent Anti-PID performance

Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process



Outstanding low light performance

The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-108H 400-420M10

21.48%

Maximum Module Efficiency

420W

Maximum Power Output

Power Shorting Tolerance:0-3W

1724×1134×30mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

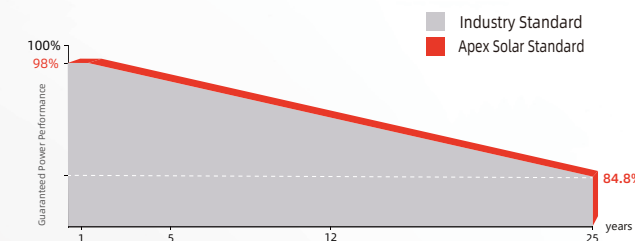
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

25 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-108H 400-420M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	400	405	410	415	420
Maximum Power Voltage(Vmp) [V]	30.75	31.00	31.25	31.49	31.73
Maximum Power Current(Imp) [A]	13.01	13.07	13.12	13.18	13.24
Open Circuit Voltage(Voc) [V]	36.75	37.00	37.25	37.50	37.75
Short Circuit Current(Isc) [A]	13.76	13.83	13.88	13.94	14.01
Module Efficiency [%]	20.46	20.72	20.97	21.23	21.48

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	299	302.7	306.5	310.2	313.9
Maximum Power Voltage(Vmp) [V]	28.56	28.80	29.03	29.25	29.47
Maximum Power Current(Imp) [A]	10.47	10.52	10.56	10.60	10.65
Open Circuit Voltage(Voc) [V]	34.55	34.79	35.08	35.26	35.49
Short Circuit Current(Isc) [A]	11.13	11.18	11.22	11.27	11.32

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	108(6×18)
Weight	21.5kg(±3%)
Module Dimensions	1724×1134×30mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

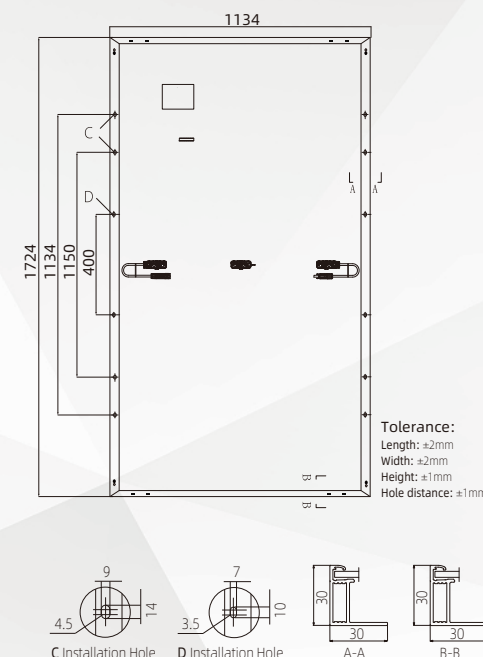
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	25A

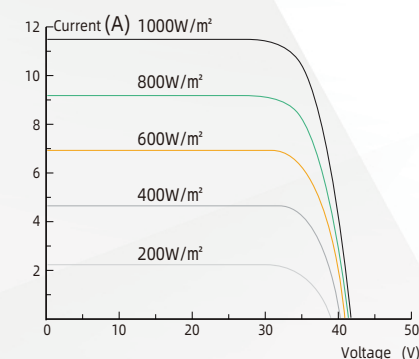
PACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	936pcs/40HQ

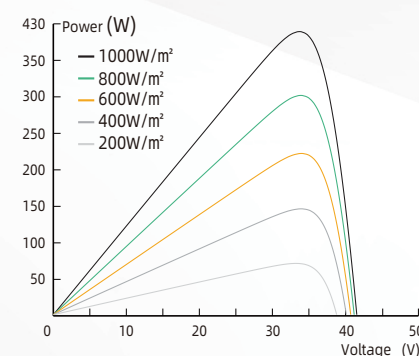
Module Dimension(mm)

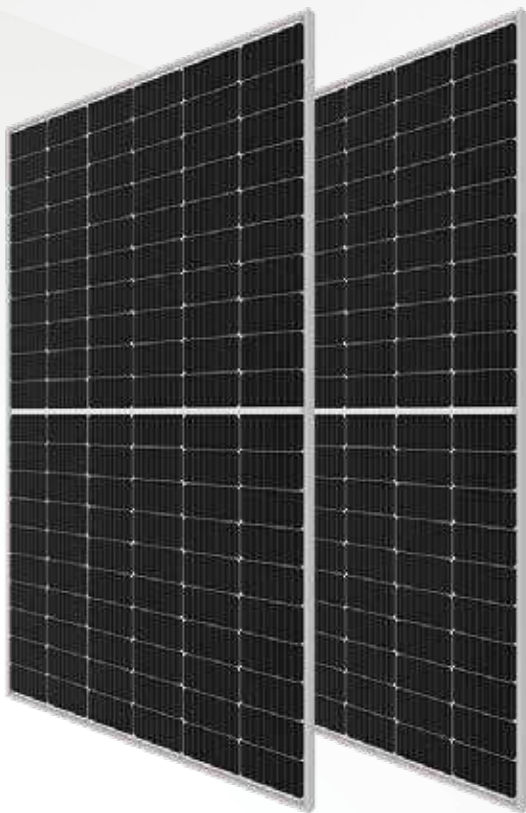


Current-Voltage Curve (420W)



Power-Voltage Curve (420W)





HRAP-120H 440-455M10

21.02%
Maximum Module Efficiency

455W
Maximum Power Output

Power Shorting Tolerance:0-3W

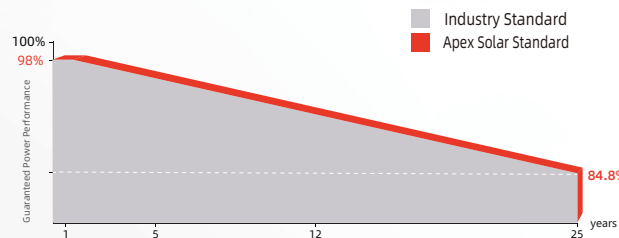
1909×1134×35mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 Process Warranty

25 Power Warranty

High Efficiency Half-cells Solar Panel HRAP-120H 440-455M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	440	445	450	455
Maximum Power Voltage(Vmp) [V]	33.91	34.06	34.21	34.36
Maximum Power Current(Imp) [A]	12.98	13.07	13.16	13.25
Open Circuit Voltage(Voc) [V]	40.95	41.1	41.25	41.4
Short Circuit Current(Isc) [A]	13.41	13.52	13.62	13.72
Module Efficiency [%]	20.33	20.56	20.79	21.02
STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5				

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	330	334	338	342
Maximum Power Voltage(Vmp) [V]	31.34	31.49	31.64	31.79
Maximum Power Current(Imp) [A]	10.54	10.62	10.69	10.77
Open Circuit Voltage(Voc) [V]	37.76	37.91	38.06	38.21
Short Circuit Current(Isc) [A]	11.19	11.28	11.36	11.45
NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s				

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	120(6×20)
Weight	23.5kg(±3%)
Module Dimensions	1909×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

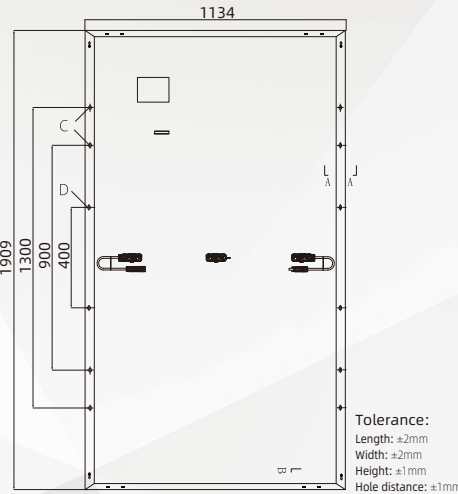
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05 %/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	20A

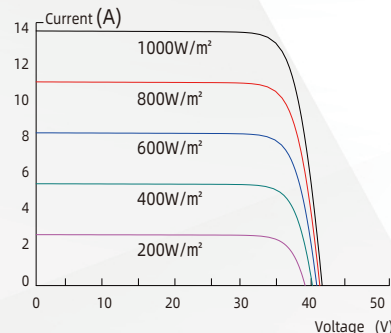
PACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	864pcs/40HQ

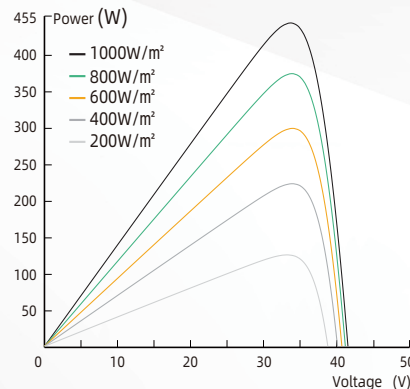
Module Dimension(mm)



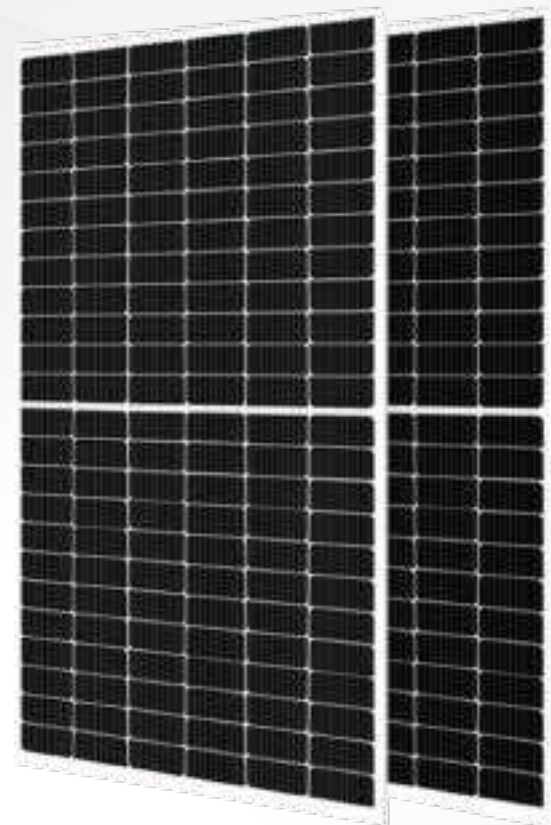
Current-Voltage Curve (455W)



Power-Voltage Curve (455W)



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-132H 485-505M10

21.3%

Maximum Module Efficiency

505W

Maximum Power Output

Power Shorting Tolerance:0-3W

2094×1134×35mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

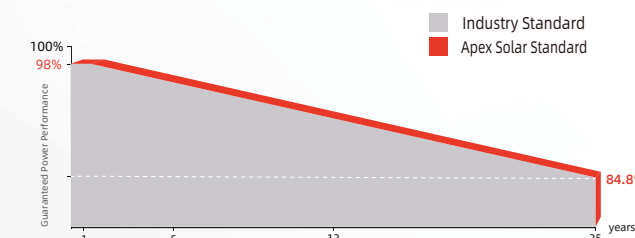
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 Process Warranty

25 Power Warranty

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	485	490	495	500	505
Maximum Power Voltage(Vmp) [V]	37.81	37.99	38.17	38.35	38.53
Maximum Power Current(Impp) [A]	12.83	12.90	12.97	13.04	13.11
Open Circuit Voltage(Voc) [V]	45.20	45.33	45.46	45.59	45.72
Short Circuit Current(Isc) [A]	13.72	13.79	13.86	13.93	14.00
Module Efficiency [%]	20.4	20.6	20.8	21.1	21.3

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	367	370	374	378	382
Maximum Power Voltage(Vmp) [V]	35.67	35.76	35.84	35.93	36.02
Maximum Power Current(Impp) [A]	10.28	10.36	10.44	10.52	10.60
Open Circuit Voltage(Voc) [V]	42.30	42.43	42.58	42.72	42.86
Short Circuit Current(Isc) [A]	11.06	11.13	11.20	11.27	11.34

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	132(6×22)
Weight	26.3kg(±3%)
Module Dimensions	2094×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

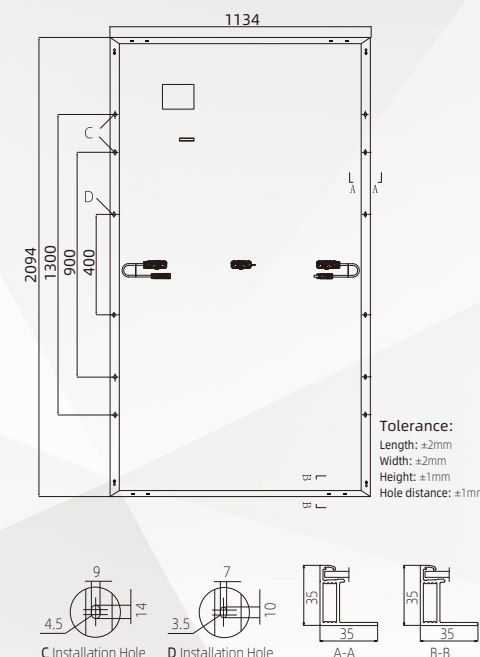
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	20A

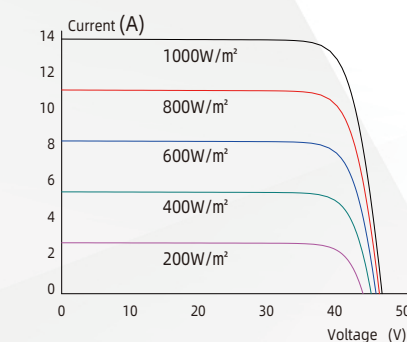
PACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	682pcs/40HQ

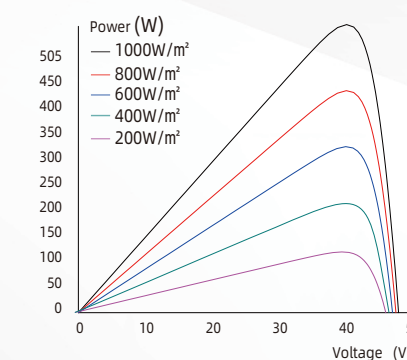
Module Dimension(mm)



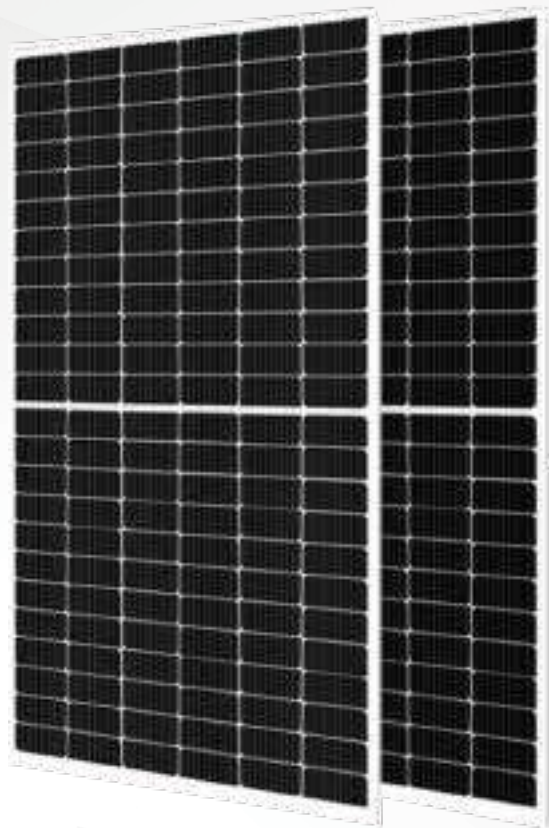
Current-Voltage Curve (505W)



Power-Voltage Curve (505W)



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-144H 525-550M10

21.3%

Maximum Module Efficiency

550W

Maximum Power Output

Power Shorting Tolerance:0~+3W

2279×1134×35mm

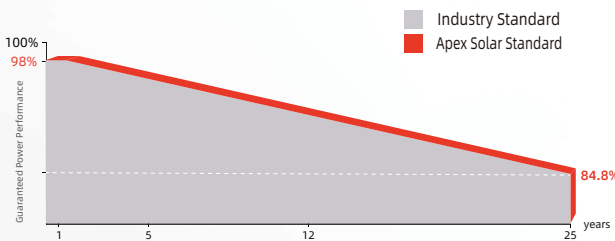
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 years Process Warranty

25 years Power Warranty

High Efficiency Half-cells Solar Panel HRAP-144H 525-550M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	525	530	535	540	545	550
Maximum Power Voltage(Vmp) [V]	41.15	41.31	41.47	41.64	41.80	41.96
Maximum Power Current(Imp) [A]	12.76	12.83	12.90	12.97	13.04	13.11
Open Circuit Voltage(Voc) [V]	49.15	49.30	49.45	49.60	49.75	49.90
Short Circuit Current(Isc) [A]	13.65	13.72	13.79	13.86	13.93	14.00
Module Efficiency [%]	20.3	20.5	20.7	20.9	21.1	21.3

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	397	401	405	408	412	416
Maximum Power Voltage(Vmp) [V]	38.36	38.57	38.78	38.99	39.20	39.43
Maximum Power Current(Imp) [A]	10.35	10.39	10.43	10.47	10.51	10.55
Open Circuit Voltage(Voc) [V]	46.05	46.18	46.31	46.43	46.55	46.68
Short Circuit Current(Isc) [A]	10.97	11.01	11.05	11.09	11.13	11.17

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	144(6×24)
Weight	29.0kg(±3%)
Module Dimensions	2279×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

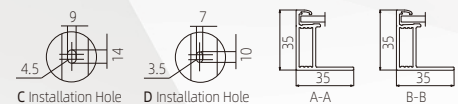
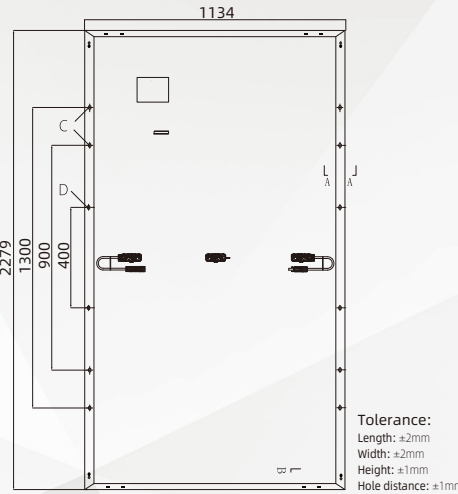
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	20A

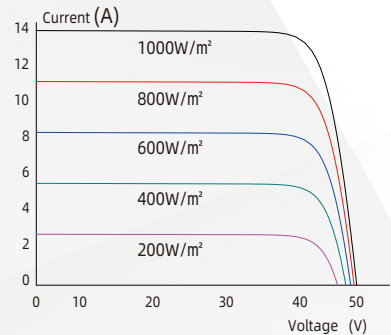
PACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	620pcs/40HQ

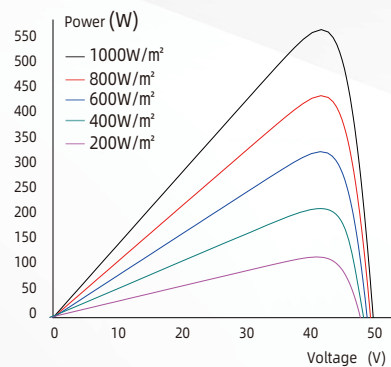
Module Dimension(mm)

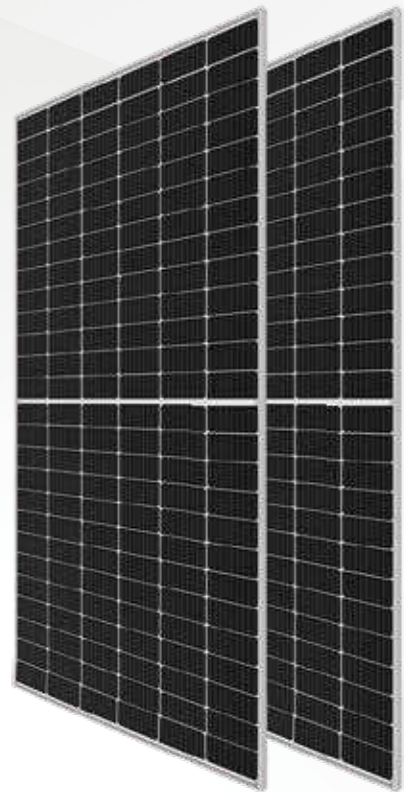


Current-Voltage Curve (550W)



Power-Voltage Curve (550W)





HRAP-156H 570-590M10

21.05%

Maximum Module Efficiency

590W

Maximum Power Output

Power Shorting Tolerance:0-3W

2474×1134×35mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

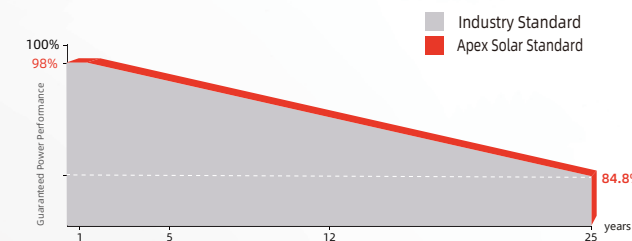
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

25 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-156H 570-590M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	570	575	580	585	590
Maximum Power Voltage(Vmp) [V]	44.02	44.17	44.32	44.47	44.62
Maximum Power Current(Impp) [A]	12.96	13.03	13.1	13.17	13.23
Open Circuit Voltage(Voc) [V]	53.22	53.37	53.52	53.67	53.82
Short Circuit Current(Isc) [A]	13.4	13.48	13.56	13.64	13.72
Module Efficiency [%]	20.34	20.51	20.69	20.87	21.05

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	426	430	434	438	442
Maximum Power Voltage(Vmp) [V]	40.5	40.65	40.8	40.95	41.1
Maximum Power Current(Impp) [A]	10.53	10.59	10.65	10.71	10.77
Open Circuit Voltage(Voc) [V]	48.91	49.06	49.21	49.36	49.51
Short Circuit Current(Isc) [A]	11.17	11.24	11.31	11.38	11.44

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	156(6×26)
Weight	31.0kg(±3%)
Module Dimensions	2474×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

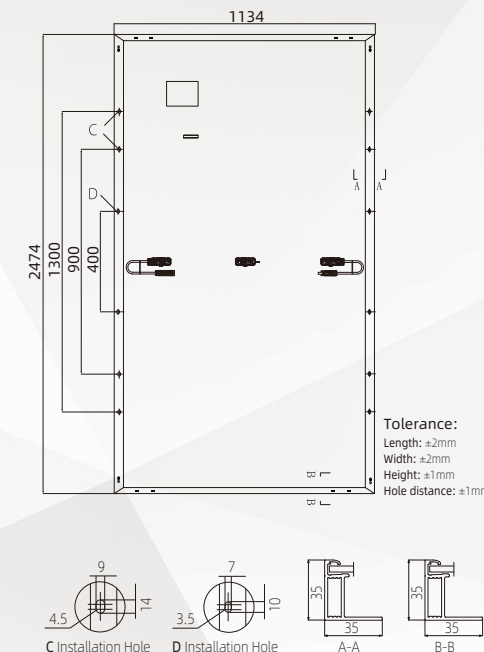
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	20A

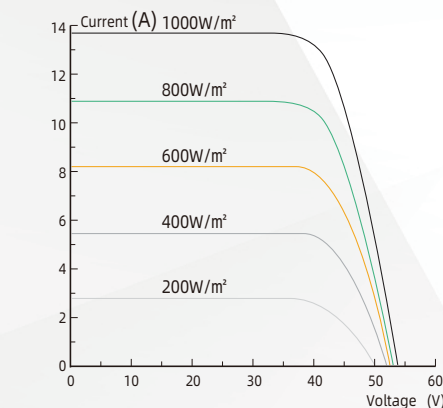
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	558pcs/40HQ

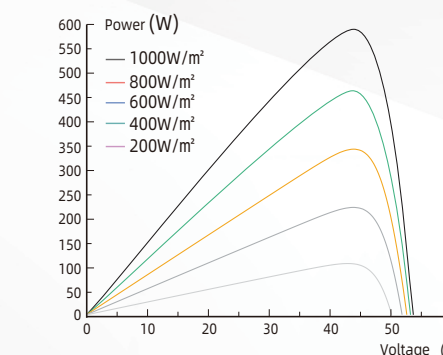
Module Dimension(mm)



Current-Voltage Curve (590W)



Power-Voltage Curve (590W)





HRAP-110H 540-560M12

21.4%

Maximum Module Efficiency

560W

Maximum Power Output

Power Shorting Tolerance:0-3W

2384×1096×35mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

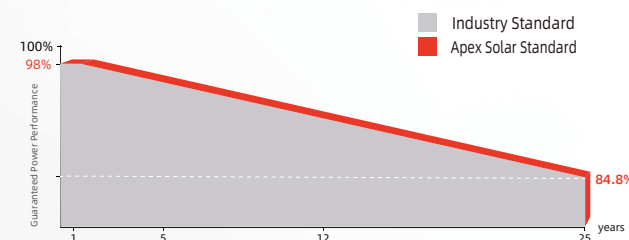
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing , 25-year Warranty for Extra Linear Power Output



12 Process Warranty

25 Power Warranty

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	540	545	550	555	560
Maximum Power Voltage(Vmp) [V]	31.2	31.4	31.6	31.8	32
Maximum Power Current(Impp) [A]	17.33	17.37	17.4	17.45	17.5
Open Circuit Voltage(Voc) [V]	37.5	37.7	37.9	38.1	38.3
Short Circuit Current(Isc) [A]	18.41	18.47	18.52	18.56	18.6
Module Efficiency [%]	20.7	20.9	21	21.2	21.4

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	409	413	417	420	424
Maximum Power Voltage(Vmp) [V]	29	29.2	29.3	29.5	29.7
Maximum Power Current(Impp) [A]	14.1	14.15	14.19	14.23	14.27
Open Circuit Voltage(Voc) [V]	35.3	35.5	35.7	35.9	36.1
Short Circuit Current(Isc) [A]	14.84	14.88	14.92	14.96	15

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	210×210mm
Cell Arrangement	110(5×22)
Weight	28.60kg(±3%)
Module Dimensions	2384×1096×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

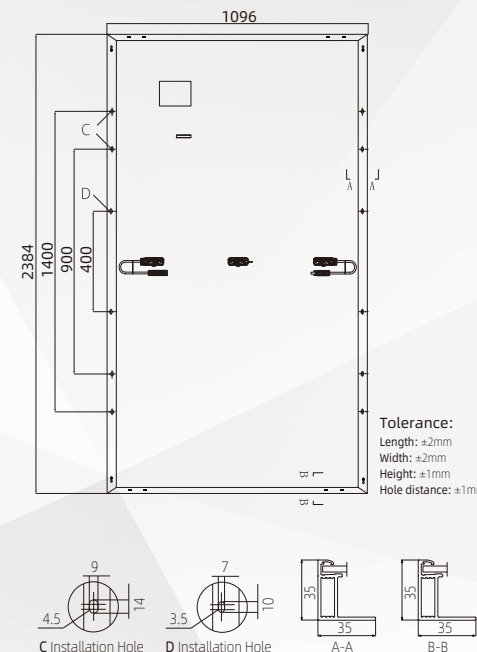
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	30A

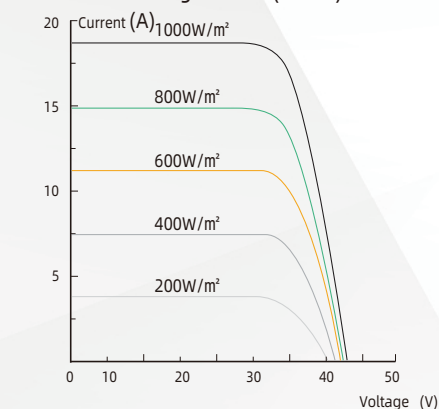
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	616pcs/40HQ

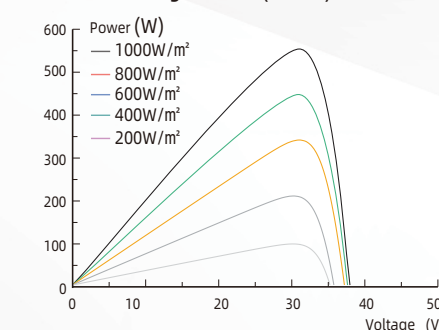
Module Dimension(mm)



Current-Voltage Curve (560W)



Power-Voltage Curve (560W)



0-3W

0-3W

Guaranteed 0-3W positive tolerance ensures the power output reliability



High customer value

Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations



Highly reliable due to stringent quality control

Three times strict EL testing beyond certification requirements



Fusion of MBB and half-cut cells technology

The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability



Excellent Anti-PID performance

Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process



Outstanding low light performance

The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-120H 590-610M12

21.57%
Maximum Module Efficiency

610W
Maximum Power Output

Power Shorting Tolerance:0-3W

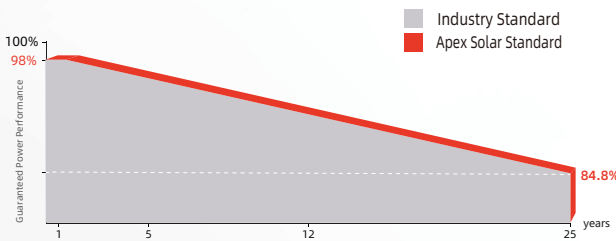
2172×1303×35mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

25 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-120H 590-610M12

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	590	595	600	605	610
Maximum Power Voltage(Vmp) [V]	34	34.2	34.4	34.6	34.8
Maximum Power Current(Impp) [A]	17.35	17.4	17.44	17.49	17.54
Open Circuit Voltage(Voc) [V]	41.1	41.3	41.5	41.7	41.9
Short Circuit Current(Isc) [A]	18.42	18.47	18.52	18.57	18.64
Module Efficiency [%]	20.8	21	21.2	21.4	21.57

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	447	451	454	458	462
Maximum Power Voltage(Vmp) [V]	31.7	31.9	32	32.2	32.4
Maximum Power Current(Impp) [A]	14.09	14.13	14.18	14.22	14.26
Open Circuit Voltage(Voc) [V]	38.7	38.9	39.1	39.3	38.5
Short Circuit Current(Isc) [A]	14.85	14.88	14.92	14.96	15

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	210×210mm
Cell Arrangement	120(6×20)
Weight	30.9kg(±3%)
Module Dimensions	2172×1303×35mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

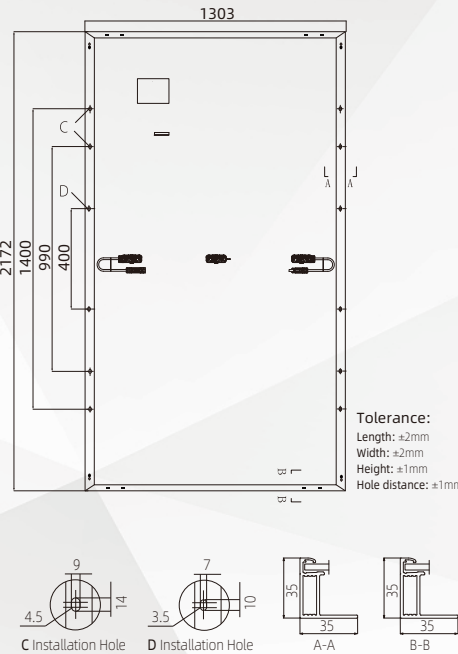
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	30A

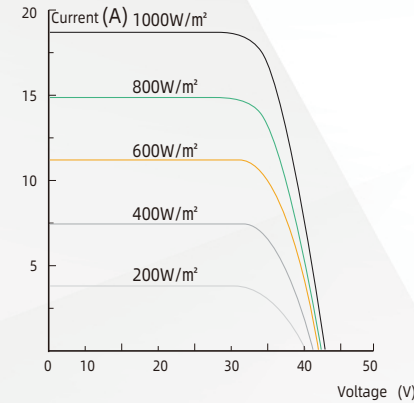
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	558pcs/40HQ

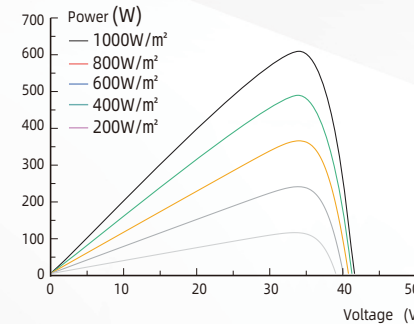
Module Dimension(mm)



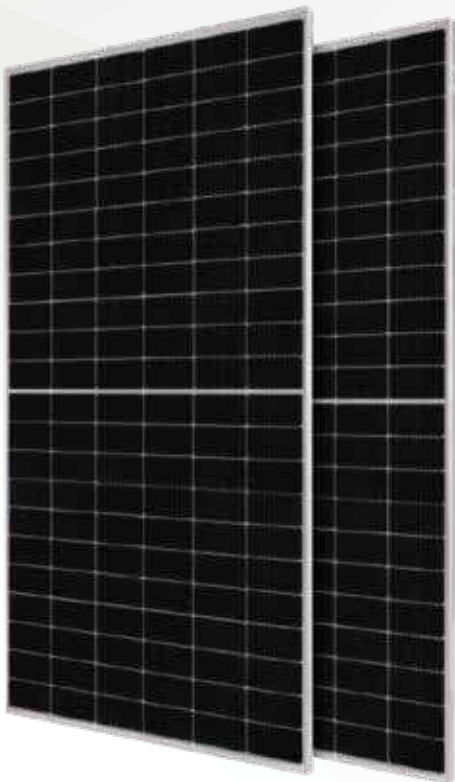
Current-Voltage Curve (610W)



Power-Voltage Curve (610W)



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-132H 655-675M12

21.73%
Maximum Module Efficiency

675W
Maximum Power Output

Power Shorting Tolerance:0-3W

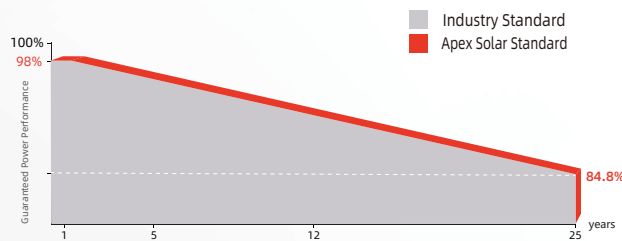
2384×1303×35mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing , 25-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

25 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-132H 655-675M12

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	655	660	665	670	675
Maximum Power Voltage(Vmp) [V]	37.59	37.79	37.99	38.19	38.39
Maximum Power Current(Imp) [A]	17.43	17.47	17.51	17.55	17.59
Open Circuit Voltage(Voc) [V]	45.49	45.69	45.89	46.09	46.29
Short Circuit Current(Isc) [A]	18.49	18.52	18.55	18.61	18.64
Module Efficiency [%]	21.09	21.25	21.41	21.57	21.73

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	496	500	504	508	512
Maximum Power Voltage(Vmp) [V]	35.09	35.29	35.49	35.69	35.89
Maximum Power Current(Imp) [A]	14.14	14.17	14.20	14.23	14.26
Open Circuit Voltage(Voc) [V]	42.79	42.99	43.19	43.39	43.59
Short Circuit Current(Isc) [A]	14.88	14.93	14.98	15.03	15.08

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	210×210mm
Cell Arrangement	132(6×22)
Weight	34.0kg(±3%)
Module Dimensions	2384×1303×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

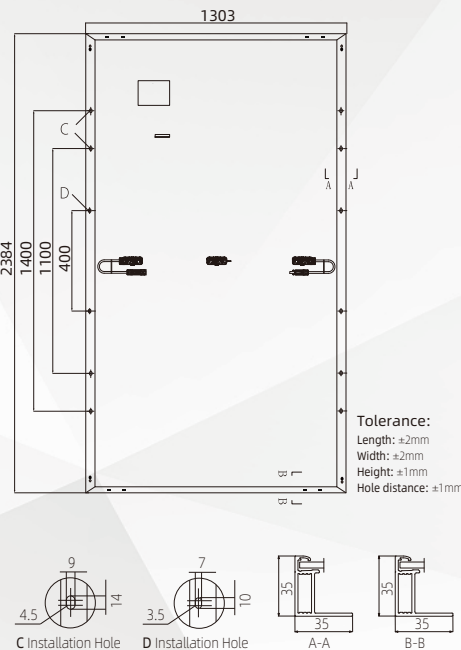
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	30A

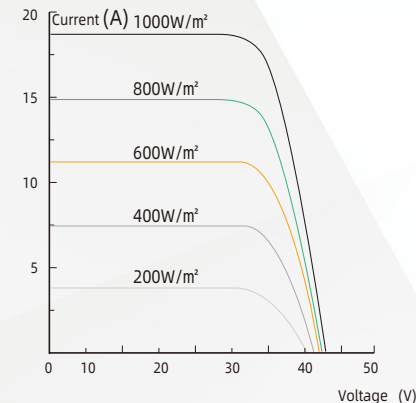
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	558pcs/40HQ

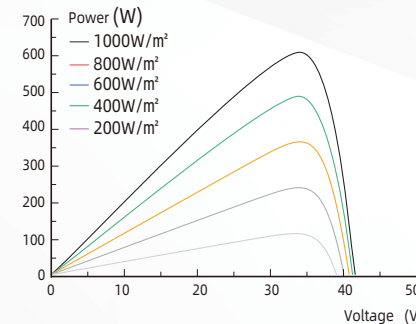
Module Dimension(mm)



Current-Voltage Curve (675W)

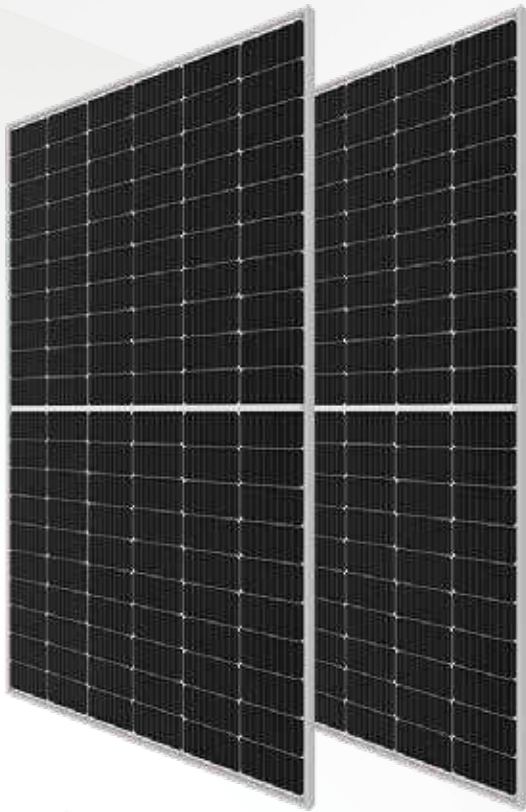


Power-Voltage Curve (675W)



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

**108cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-108HBD
395-420M10**

21.51%
Maximum Module Efficiency

420W
Maximum Power Output

Power Shorting Tolerance:0-3W

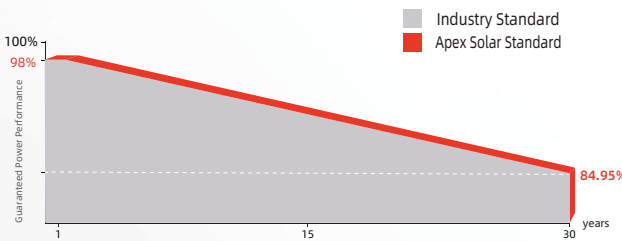
1722×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



 **12** Process Warranty

 **30** Power Warranty

High Efficiency Half-cells Solar Panel HRAP-108HBD 395-420M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	395	400	405	410	415	420
Maximum Power Voltage(Vmp) [V]	30.84	31.02	31.23	31.45	31.64	31.82
Maximum Power Current(Imp) [A]	12.81	12.90	12.97	13.04	13.12	13.20
Open Circuit Voltage(Voc) [V]	36.98	37.07	37.19	37.32	37.45	37.58
Short Circuit Current(Isc) [A]	13.70	13.79	13.87	13.95	14.02	14.10
Module Efficiency [%]	20.23	20.48	20.74	21.00	21.25	21.51

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	298	302	306	310	314	318
Maximum Power Voltage(Vmp) [V]	34.75	34.88	35.12	35.23	35.37	35.50
Maximum Power Current(Imp) [A]	29.08	29.26	29.47	29.72	29.89	30.09
Open Circuit Voltage(Voc) [V]	10.96	11.03	11.10	11.16	11.22	11.29
Short Circuit Current(Isc) [A]	10.25	10.32	10.38	10.43	10.50	10.57

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
C Cell Dimensions	182×182mm
Cell Arrangement	108(6×18)
Weight	21.5kg(±3%)
Module Dimensions	1722×1134×30mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

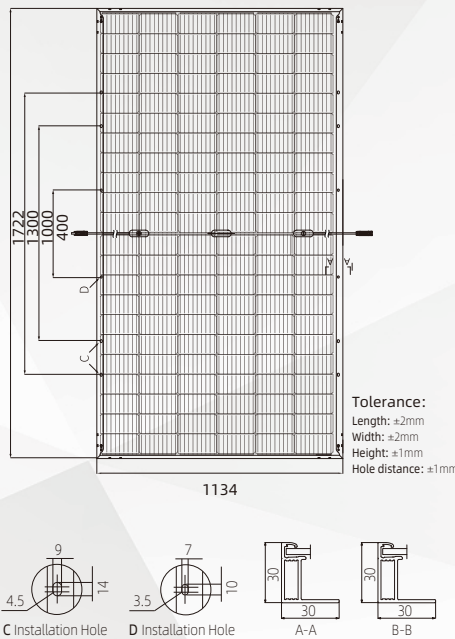
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05 %/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	25A

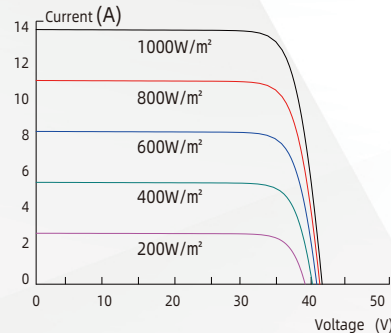
PACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	936pcs/40HQ

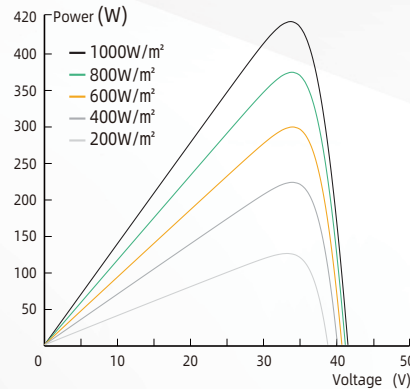
Module Dimension(mm)



Current-Voltage Curve (420W)



Power-Voltage Curve (420W)



-  **0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
-  **High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
-  **Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
-  **Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
-  **Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
-  **Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

**144cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-144HBD
435-455M6**

20.93%
Maximum Module Efficiency

455W
Maximum Power Output

Power Shorting Tolerance:0-3W

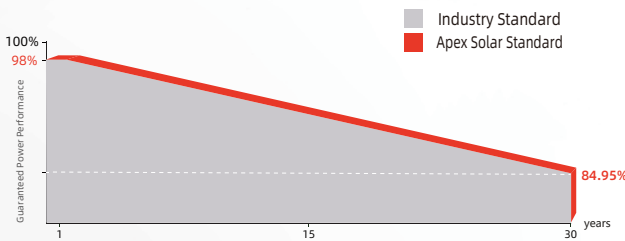
2094×1038×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-144HBD 435-455M6

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	435	440	445	450	455
Maximum Power Voltage(Vmp) [V]	40.97	41.2	41.44	41.67	41.9
Maximum Power Current(Impp) [A]	10.62	10.68	10.74	10.8	10.86
Open Circuit Voltage(Voc) [V]	49.05	49.3	49.55	49.8	50.05
Short Circuit Current(Isc) [A]	11.24	11.3	11.36	11.42	11.48
Module Efficiency [%]	20.01	20.24	20.47	20.7	20.93

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NOCT

Rated Maximum Power(Pmax)[W]	331.03	334.76	338.61	342.39	346.19
Maximum Power Voltage(Vmp) [V]	39.07	39.29	39.52	39.74	39.96
Maximum Power Current(Impp) [A]	8.47	8.52	8.57	8.62	8.66
Open Circuit Voltage(Voc) [V]	46.52	46.76	46.99	47.23	47.47
Short Circuit Current(Isc) [A]	9.04	9.09	9.14	9.19	9.24

NOCT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
C ell Dimensions	166×166mm
Cell Arrangement	144(6×24)
Weight	27kg(±3%)
Module Dimensions	2094×1038×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

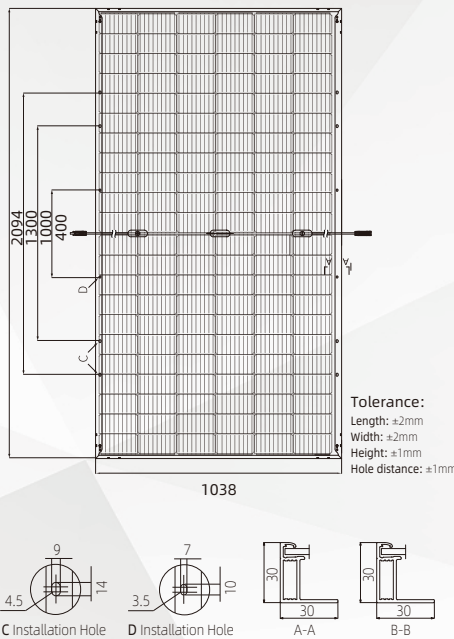
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05 %/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	20A

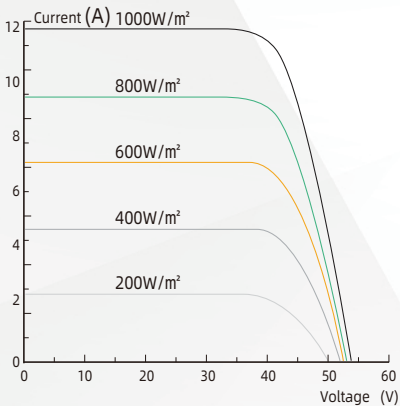
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	825pcs/40HQ

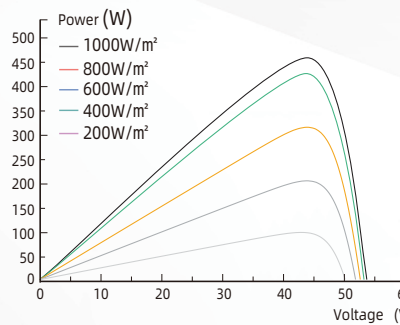
Module Dimension(mm)



Current-Voltage Curve (455W)



Power-Voltage Curve (455W)



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

**120cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-120HBD
440-455M10**

21.08%
Maximum Module Efficiency

455W
Maximum Power Output

Power Shorting Tolerance:0-3W

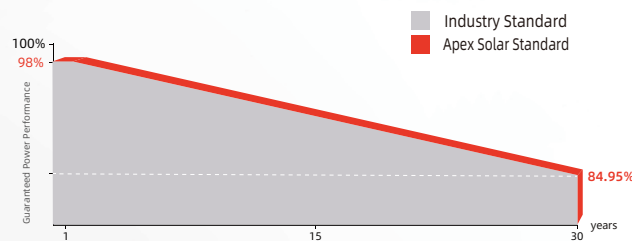
1909×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



 Process Warranty  Power Warranty

High Efficiency Half-cells Solar Panel HRAP-120HBD 440-455M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	440	445	450	455
Maximum Power Voltage(Vmp) [V]	34.10	34.30	34.50	34.70
Maximum Power Current(Imp) [A]	12.91	12.98	13.05	13.12
Open Circuit Voltage(Voc) [V]	41.00	41.20	41.40	41.60
Short Circuit Current(Isc) [A]	13.64	13.71	13.78	13.85
Module Efficiency [%]	20.39	20.62	20.85	21.08

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	328.90	332.60	336.40	340.10
Maximum Power Voltage(Vmp) [V]	31.70	31.90	32.10	32.30
Maximum Power Current(Imp) [A]	10.37	10.43	10.48	10.54
Open Circuit Voltage(Voc) [V]	38.30	38.50	38.70	38.90
Short Circuit Current(Isc) [A]	11.02	11.07	11.13	11.18

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
C ell Dimensions	182×182mm
Cell Arrangement	120(6×20)
Weight	26kg(±3%)
Module Dimensions	1909×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

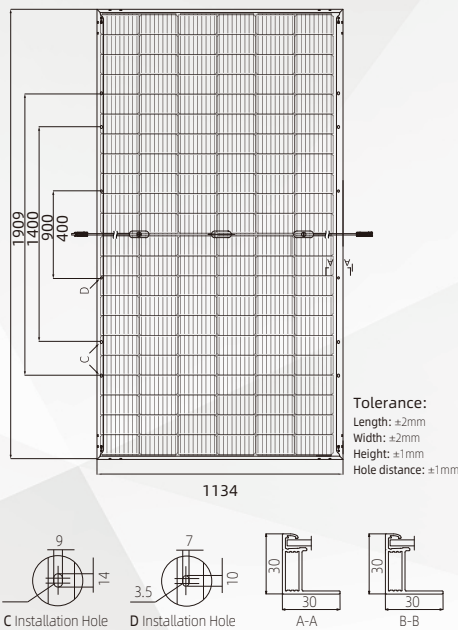
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05 %/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	25A

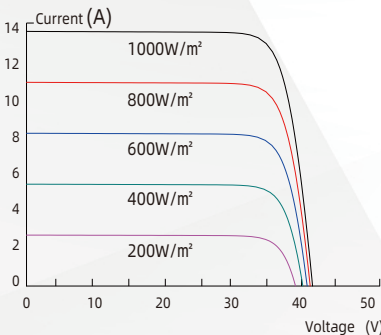
PACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	864pcs/40HQ

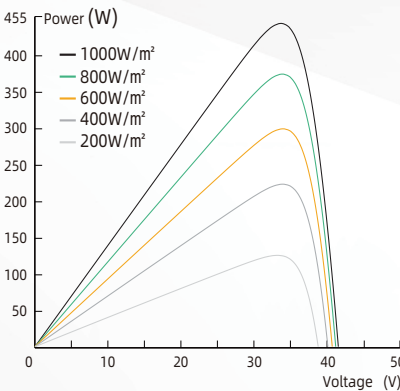
Module Dimension(mm)



Current-Voltage Curve (455W)



Power-Voltage Curve (455W)



-  **0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
-  **High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
-  **Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
-  **Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
-  **Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
-  **Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

144cells Monocrystalline Bifacial Dual Glass Module

HRAP-144HBD 530-550M10

21.3%

Maximum Module Efficiency

550W

Maximum Power Output

Power Shorting Tolerance:0-3W

2279×1134×30mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

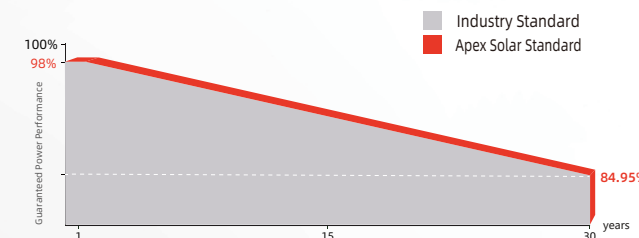
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-144HBD 530-550M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	530	535	540	545	550
Maximum Power Voltage(Vmp) [V]	41.31	41.47	41.64	41.80	41.96
Maximum Power Current(Impp) [A]	12.83	12.90	12.97	13.04	13.11
Open Circuit Voltage(Voc) [V]	49.30	49.45	49.60	49.75	49.90
Short Circuit Current(Isc) [A]	13.72	13.79	13.86	13.93	14.00
Module Efficiency [%]	20.5	20.7	20.9	21.1	21.3

STC: Irradiance 1000 W/m² module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	401	405	408	412	416
Maximum Power Voltage(Vmp) [V]	38.57	38.78	38.99	39.20	39.43
Maximum Power Current(Impp) [A]	10.39	10.43	10.47	10.51	10.55
Open Circuit Voltage(Voc) [V]	46.18	46.31	46.43	46.55	46.68
Short Circuit Current(Isc) [A]	11.01	11.05	11.09	11.13	11.17

NMOT: Irradiance 800 W/m² ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182x182mm
Cell Arrangement	144(6x24)
Weight	32.3kg(±3%)
Module Dimensions	2279×1134×30mm
Cable	4.0 mm ² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

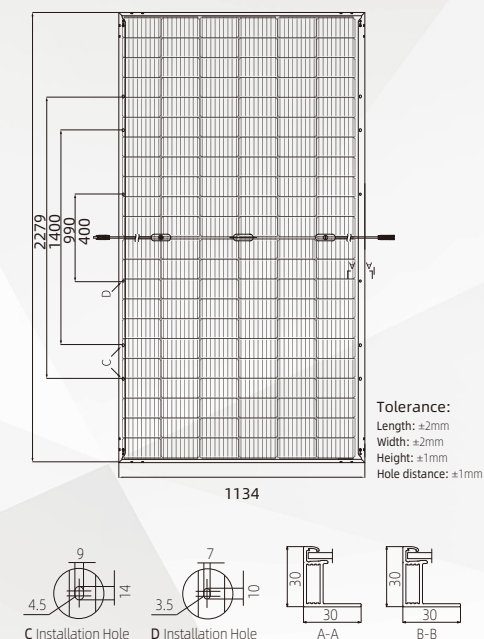
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	20A

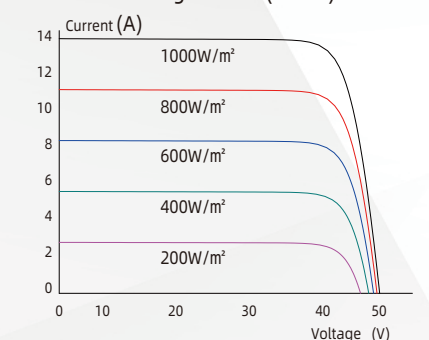
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	720pcs/40HQ

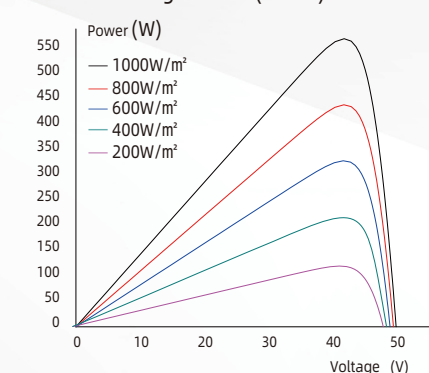
Module Dimension(mm)



Current-Voltage Curve (550W)



Power-Voltage Curve (550W)



0-3W%

Guaranteed 0-3W positive tolerance ensures the power output reliability



High customer value

Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations



Highly reliable due to stringent quality control

Three times strict EL testing beyond certification requirements



Fusion of MBB and half-cut cells technology

The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability



Excellent Anti-PID performance

Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process



Outstanding low light performance

The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

**120cells Monocrystalline Bifacial
Dual Glass Module**

**HRAP-120HBD
590-605M12**

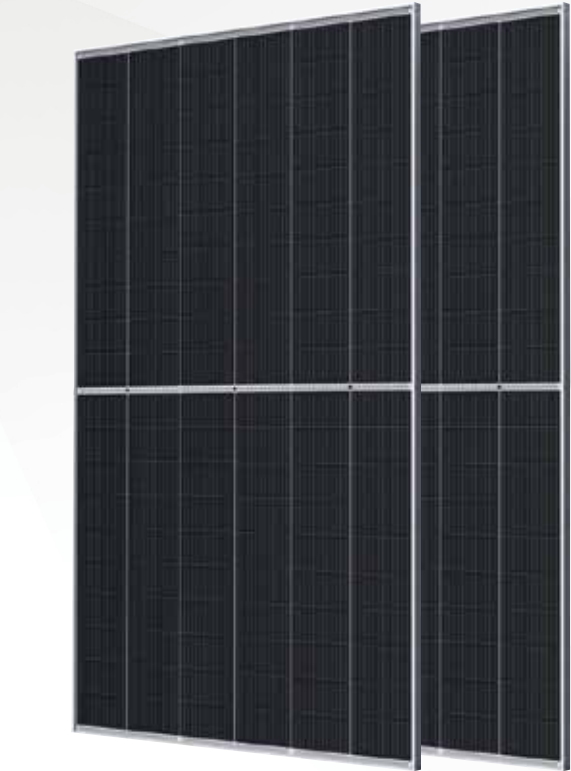
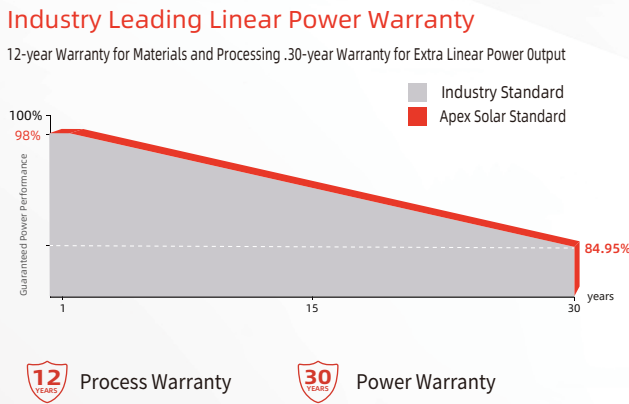
21.4%
Maximum Module Efficiency

605W
Maximum Power Output

Power Shorting Tolerance:0-3W

2172×1303×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

High Efficiency Half-cells Solar Panel HRAP-120HBD 590-605M12

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	590	595	600	605
Maximum Power Voltage(Vmp) [V]	34	34.2	34.4	34.6
Maximum Power Current(Impp) [A]	17.35	17.4	17.44	17.49
Open Circuit Voltage(Voc) [V]	41.1	41.3	41.5	41.7
Short Circuit Current(Isc) [A]	18.42	18.47	18.52	18.57
Module Efficiency [%]	20.8	21	21.2	21.4

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	447	451	454	458
Maximum Power Voltage(Vmp) [V]	31.7	31.9	32	32.2
Maximum Power Current(Impp) [A]	14.09	14.13	14.18	14.22
Open Circuit Voltage(Voc) [V]	38.7	38.9	39.1	39.3
Short Circuit Current(Isc) [A]	14.85	14.88	14.92	14.96

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
C ell Dimensions	210×210mm
Cell Arrangement	120(6×20)
Weight	30.9kg(±3%)
Module Dimensions	2172×1303×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

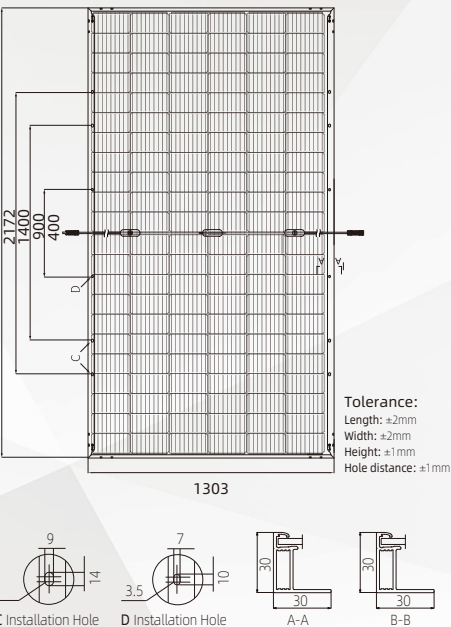
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05 %/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	30A

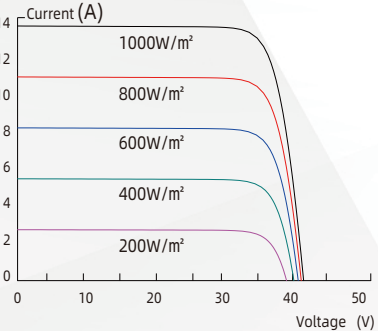
PACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	558pcs/40HQ

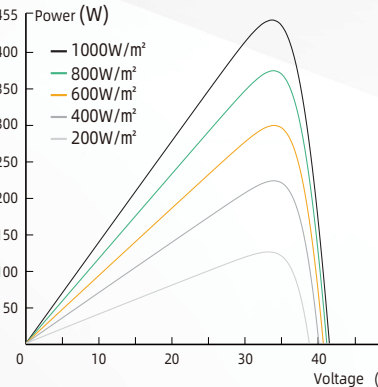
Module Dimension(mm)



Current-Voltage Curve (605W)



Power-Voltage Curve (605W)



**132cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-132HBD
655-670M12**

21.57%
Maximum Module Efficiency

670W
Maximum Power Output

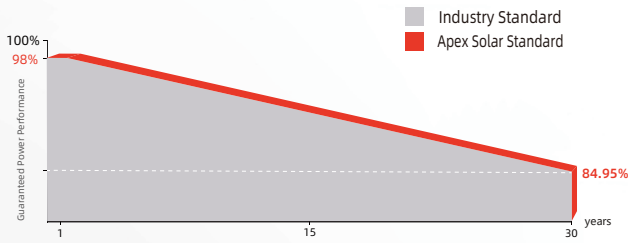
Power Shorting Tolerance:0-3W

2384×1303×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty
12-year Warranty for Materials and Processing ;30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty **30 YEARS** Power Warranty

- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

High Efficiency Half-cells Solar Panel HRAP-132HBD 655-670M12

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	655	660	665	670
Maximum Power Voltage(Vmp) [V]	37.59	37.79	37.99	38.19
Maximum Power Current(Imp) [A]	17.43	17.47	17.51	17.55
Open Circuit Voltage(Voc) [V]	45.49	45.69	45.89	46.09
Short Circuit Current(Isc) [A]	18.49	18.52	18.55	18.61
Module Efficiency [%]	21.09	21.25	21.41	21.57

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	496	500	504	508
Maximum Power Voltage(Vmp) [V]	35.09	35.29	35.49	35.69
Maximum Power Current(Imp) [A]	14.14	14.17	14.20	14.23
Open Circuit Voltage(Voc) [V]	42.79	42.99	43.19	43.39
Short Circuit Current(Isc) [A]	14.88	14.93	14.98	15.03

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
C ell Dimensions	210×210mm
Cell Arrangement	132(6×22)
Weight	38.1kg(±3%)
Module Dimensions	2384×1303×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

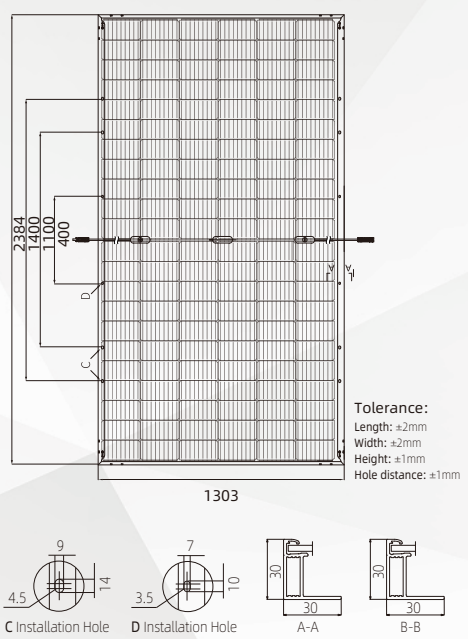
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	35A

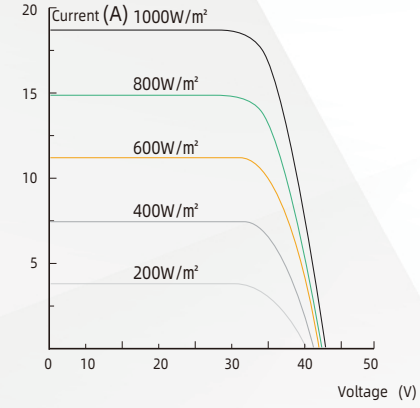
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	648pcs/40HQ

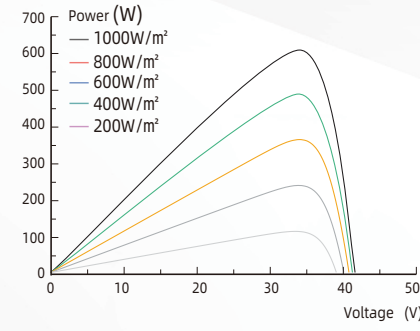
Module Dimension(mm)

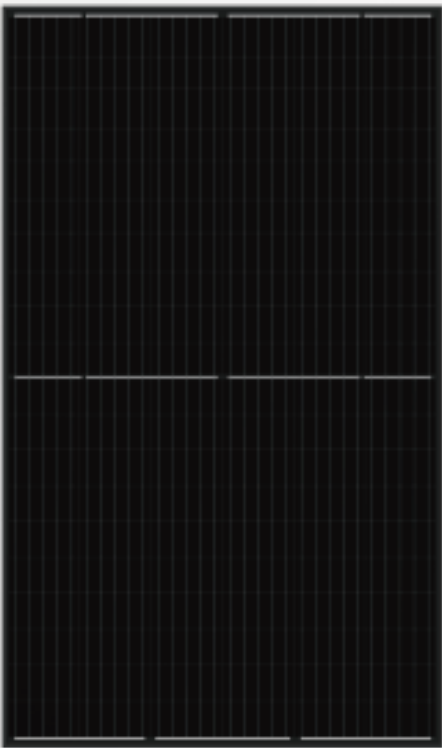


Current-Voltage Curve (670W)



Power-Voltage Curve (670W)





HRAP-120H

365-380M6

20.86%

Maximum Module Efficiency

380W

Maximum Power Output

Power Shorting Tolerance:0-3W

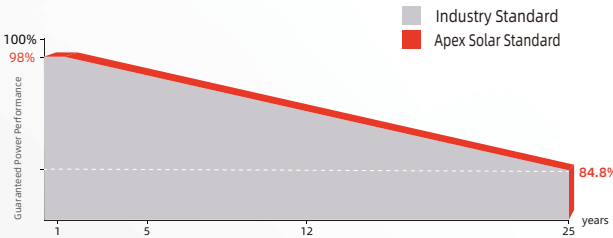
1755×1038×30mm

Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty
12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12

Process Warranty

25

Power Warranty

High Efficiency Half-cells Solar Panel HRAP-120H 365-380M6

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	365	370	375	380
Maximum Power Voltage(Vmp) [V]	33.85	34.05	34.25	34.40
Maximum Power Current(Imp) [A]	10.79	10.87	10.95	11.04
Open Circuit Voltage(Voc) [V]	41.05	41.25	41.45	41.65
Short Circuit Current(Isc) [A]	11.27	11.35	11.43	11.51
Module Efficiency [%]	20.00	20.30	20.60	20.86
STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5				

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	266.7	270.4	274.1	277.8
Maximum Power Voltage(Vmp) [V]	31.2	31.3	31.5	31.7
Maximum Power Current(Imp) [A]	8.56	8.63	8.7	8.76
Open Circuit Voltage(Voc) [V]	38.1	38.3	38.5	38.7
Short Circuit Current(Isc) [A]	9.06	9.12	9.19	9.25
NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed:1m/s				

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	166×166mm
Cell Arrangement	120(6×20)
Weight	19.5kg(±3%)
Module Dimensions	1755×1038×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

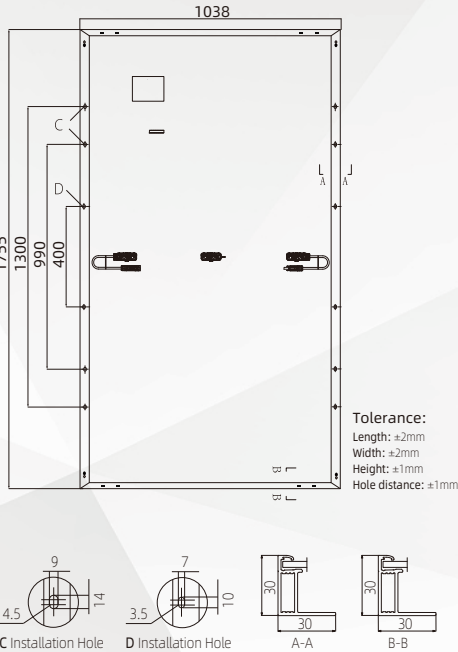
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C-+85°C
Maximum Series Fuse	20A

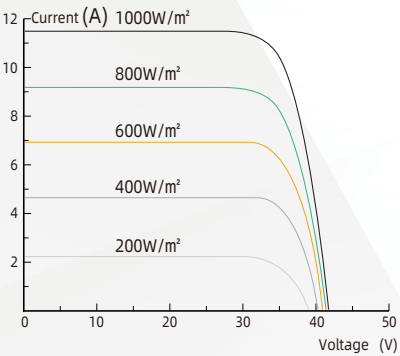
PACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	845pcs/40HQ

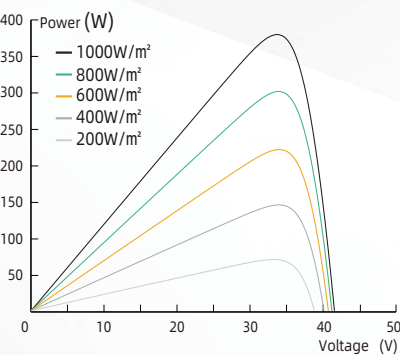
Module Dimension(mm)

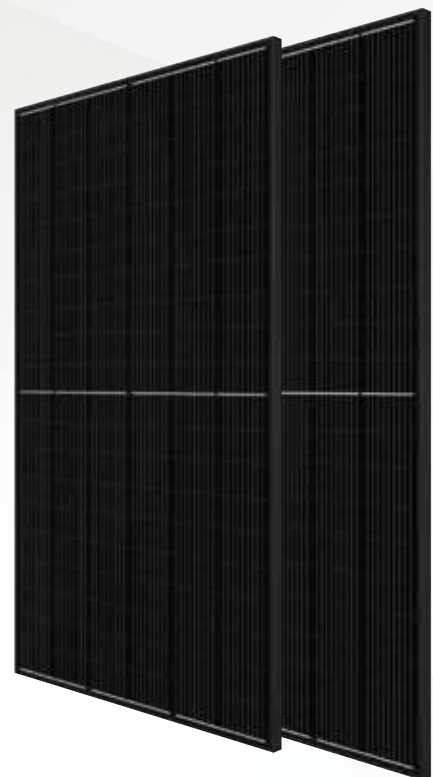


Current-Voltage Curve (380W)



Power-Voltage Curve (380W)





HRAP-108H 400-420M10

21.48%
Maximum Module Efficiency

420W
Maximum Power Output

Power Shorting Tolerance:0-3W

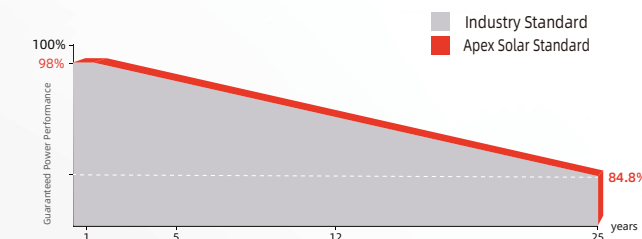
1724×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing . 25-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty 25 YEARS Power Warranty

High Efficiency Half-cells Solar Panel HRAP-108H 400-420M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	400	405	410	415	420
Maximum Power Voltage(Vmp) [V]	30.75	31.00	31.25	31.49	31.73
Maximum Power Current(Imp) [A]	13.01	13.07	13.12	13.18	13.24
Open Circuit Voltage(Voc) [V]	36.75	37.00	37.25	37.50	37.75
Short Circuit Current(Isc) [A]	13.76	13.83	13.88	13.94	14.01
Module Efficiency [%]	20.46	20.72	20.97	21.23	21.48

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	299	302.7	306.5	310.2	313.9
Maximum Power Voltage(Vmp) [V]	28.56	28.80	29.03	29.25	29.47
Maximum Power Current(Imp) [A]	10.47	10.52	10.56	10.60	10.65
Open Circuit Voltage(Voc) [V]	34.55	34.79	35.08	35.26	35.49
Short Circuit Current(Isc) [A]	11.13	11.18	11.22	11.27	11.32

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	108(6×18)
Weight	21.5kg(±3%)
Module Dimensions	1724×1134×30mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

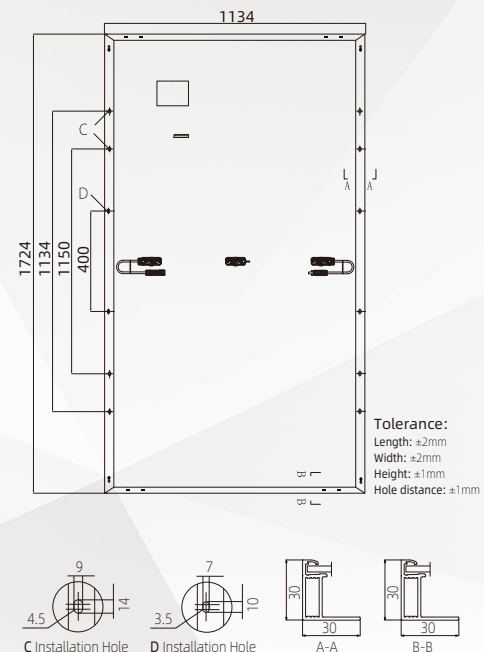
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.34%/°C
Voc Temperature Coefficient	-0.28%/°C
ISC Temperature Coefficient	+0.05%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	- 40°C~+85°C
Maximum Series Fuse	25A

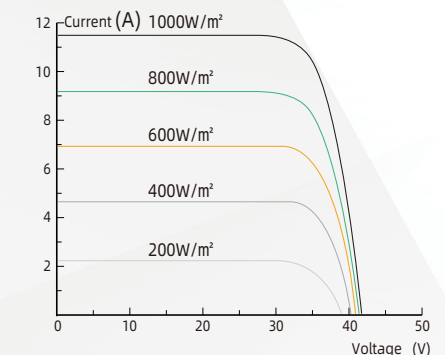
PACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	936pcs/40HQ

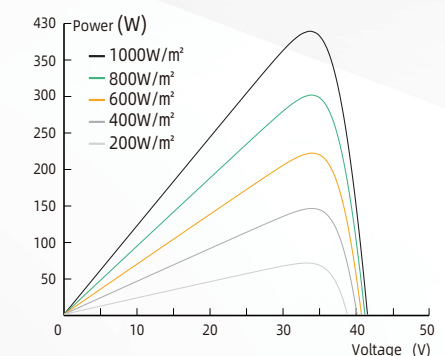
Module Dimension(mm)



Current-Voltage Curve (420W)



Power-Voltage Curve (420W)



- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

**108cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-108HBD
N410-N425M10**

N-TOPCon Technology

21.76%

Maximum Module Efficiency

425W

Maximum Power Output

Power Shorting Tolerance:0-3W

1724×1134×30mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

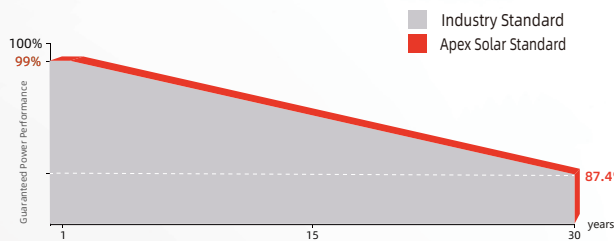
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ;30-year Warranty for Extra Linear Power Output



12 Process Warranty

30 Power Warranty

0-3w

0-3w

Guaranteed 0-3w positive tolerance ensures the power output reliability



High customer value

Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations



Highly reliable due to stringent quality control

Three times strict EL testing beyond certification requirements



Fusion of MBB and half-cut cells technology

The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability



Excellent Anti-PID performance

Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process



Outstanding low light performance

The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

HRAP-108HBD-N410-N425M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	410	415	420	425
Maximum Power Voltage(Vmp) [V]	31.13	31.32	31.51	31.70
Maximum Power Current(Impp) [A]	13.17	13.25	13.33	13.41
Open Circuit Voltage(Voc) [V]	37.73	37.92	38.11	38.30
Short Circuit Current(Isc) [A]	13.91	13.99	14.07	14.15
Module Efficiency [%]	21.00	21.25	21.51	21.76

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	308	312	316	320
Maximum Power Voltage(Vmp) [V]	29.06	29.21	29.34	29.50
Maximum Power Current(Impp) [A]	10.61	10.68	10.76	10.83
Open Circuit Voltage(Voc) [V]	35.84	36.02	36.20	36.38
Short Circuit Current(Isc) [A]	11.23	11.29	11.36	11.42

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
C Cell Dimensions	182×182mm
Cell Arrangement	108(2×54)
Weight	23kg(±3%)
Module Dimensions	1724×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

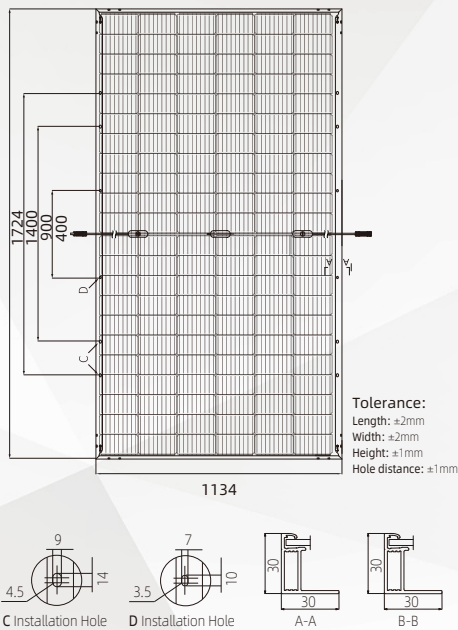
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

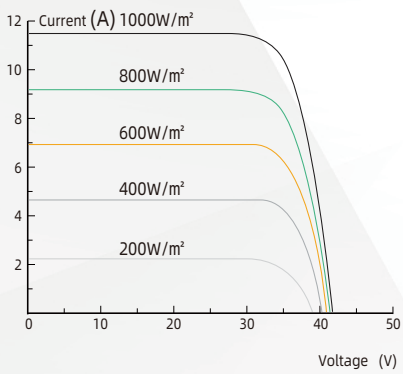
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	936pcs/40HQ

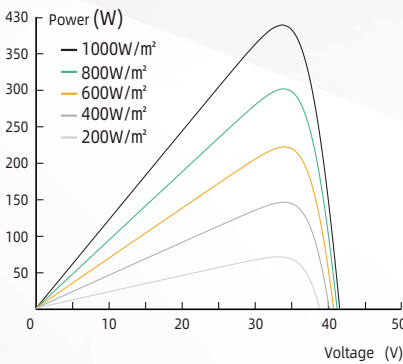
Module Dimension(mm)



Current-Voltage Curve 425W



Power-Voltage Curve (425W)





HRAP-108H-N410-N430M10

N-TOPCon Technology

22.02%
Maximum Module Efficiency

430W
Maximum Power Output

Power Shorting Tolerance:0-3W

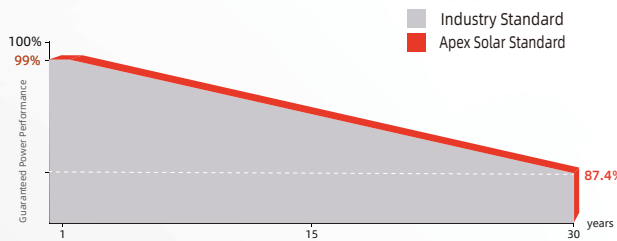
1722×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

HRAP-108H-N410-N430M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	410	415	420	425	430
Maximum Power Voltage(Vmp) [V]	31.13	31.32	31.51	31.70	31.88
Maximum Power Current(Imp) [A]	13.17	13.25	13.33	13.41	13.49
Open Circuit Voltage(Voc) [V]	37.73	37.92	38.11	38.30	38.49
Short Circuit Current(Isc) [A]	13.91	13.99	14.07	14.15	14.23
Module Efficiency [%]	21.00	21.25	21.51	21.76	22.02

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	308	312	316	320	323
Maximum Power Voltage(Vmp) [V]	29.06	29.21	29.34	29.50	29.63
Maximum Power Current(Imp) [A]	10.61	10.68	10.76	10.83	10.91
Open Circuit Voltage(Voc) [V]	35.84	36.02	36.20	36.38	36.56
Short Circuit Current(Isc) [A]	11.23	11.29	11.36	11.42	11.49

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	108(2×54)
Weight	22kg(±3%)
Module Dimensions	1722×1134×30mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

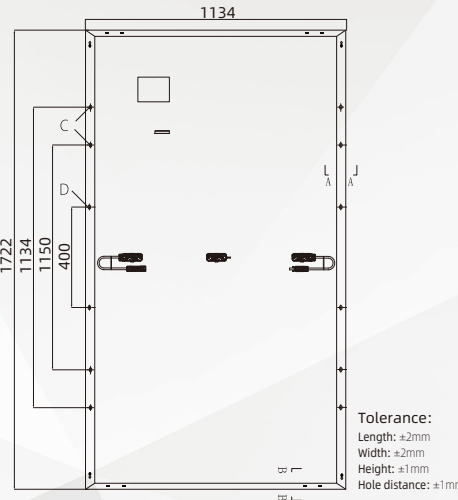
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

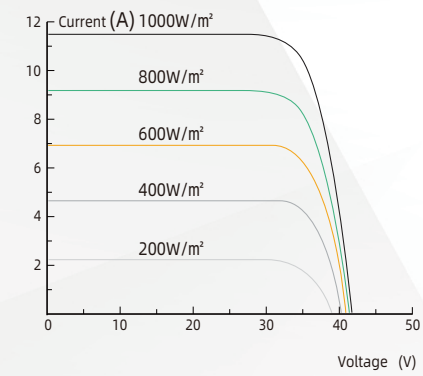
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	936pcs/40HQ

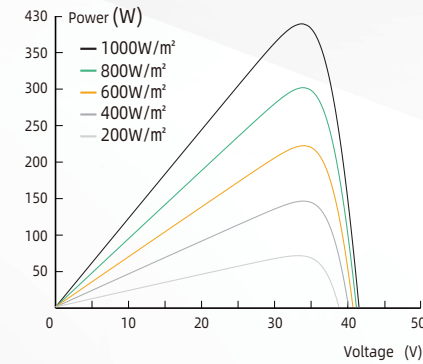
Module Dimension(mm)



Current-Voltage Curve (430W)



Power-Voltage Curve (430W)



- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

120cells Monocrystalline Bifacial
Dual Glass Module

**HRAP-120HBD
N460-N475M10**

N-TOPCon Technology

22.01%
Maximum Module Efficiency

475W
Maximum Power Output

Power Shorting Tolerance:0-3W

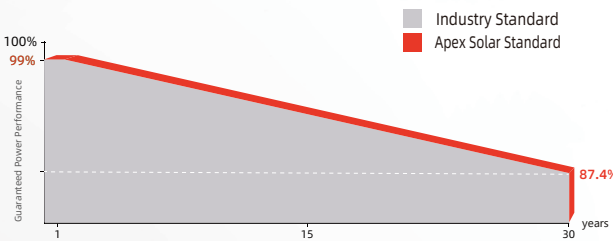
1909×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

HRAP-120HBD-N460-N475M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	460	465	470	475
Maximum Power Voltage(Vmp) [V]	34.72	34.89	35.05	35.21
Maximum Power Current(Imp) [A]	13.25	13.33	13.41	13.49
Open Circuit Voltage(Voc) [V]	42.05	42.22	42.38	42.54
Short Circuit Current(Isc) [A]	13.99	14.07	14.15	14.23
Module Efficiency [%]	21.32	21.55	21.78	22.01

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	346	350	353	357
Maximum Power Voltage(Vmp) [V]	32.60	32.77	32.94	33.10
Maximum Power Current(Imp) [A]	10.61	10.67	10.73	10.79
Open Circuit Voltage(Voc) [V]	39.94	40.10	40.25	40.41
Short Circuit Current(Isc) [A]	11.29	11.36	11.42	11.49

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
C ell Dimensions	182×182mm
Cell Arrangement	120(2×60)
Weight	24.2kg(±3%)
Module Dimensions	1909×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

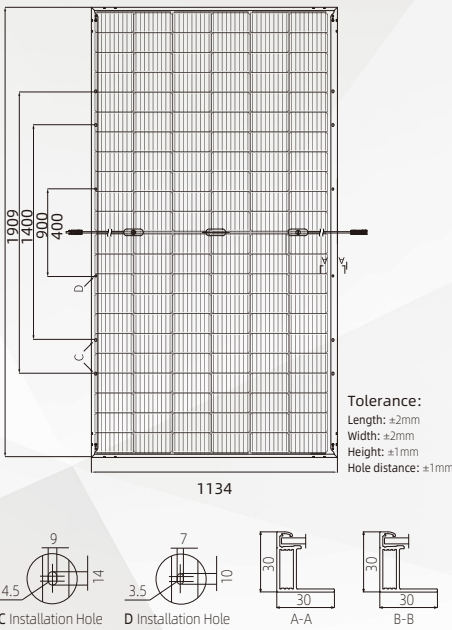
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

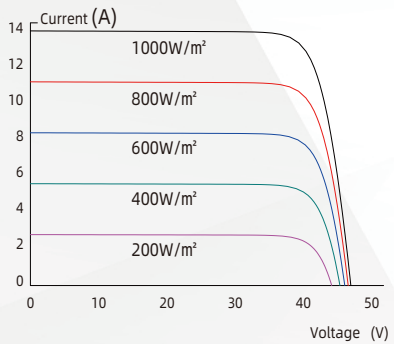
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	864pcs/40HQ

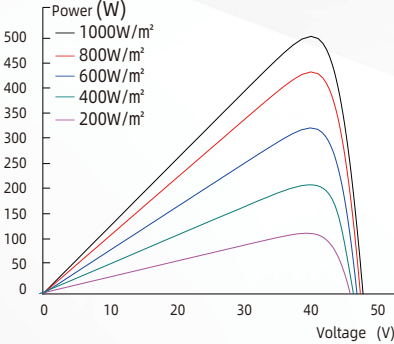
Module Dimension(mm)



Current-Voltage Curve (475W)



Power-Voltage Curve (475W)



- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-120H-N460-N480M10

N-TOPCon Technology

22.24%
Maximum Module Efficiency

480W
Maximum Power Output

Power Shorting Tolerance:0-3W

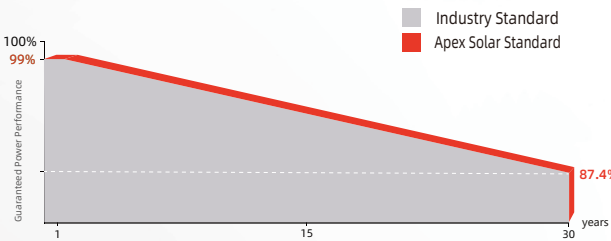
1909×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

HRAP-120H-N460-N480M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	460	465	470	475	480
Maximum Power Voltage(Vmp) [V]	34.72	34.89	35.05	35.21	35.38
Maximum Power Current(Impp) [A]	13.25	13.33	13.41	13.49	13.57
Open Circuit Voltage(Voc) [V]	42.05	42.22	42.38	42.54	42.71
Short Circuit Current(Isc) [A]	13.99	14.07	14.15	14.23	14.31
Module Efficiency [%]	21.32	21.55	21.78	22.01	22.24

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	346	350	353	357	361
Maximum Power Voltage(Vmp) [V]	32.60	32.77	32.94	33.10	33.27
Maximum Power Current(Impp) [A]	10.61	10.67	10.73	10.79	10.85
Open Circuit Voltage(Voc) [V]	39.94	40.10	40.25	40.41	40.57
Short Circuit Current(Isc) [A]	11.29	11.36	11.42	11.49	11.55

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	120(2×60)
Weight	24.2kg(±3%)
Module Dimensions	1909×1134×30mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

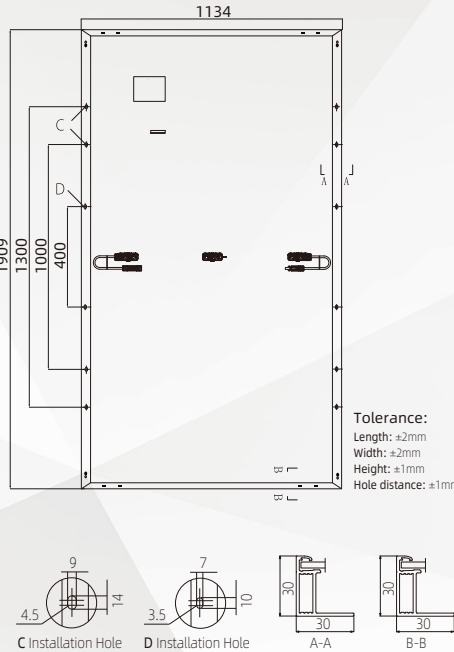
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

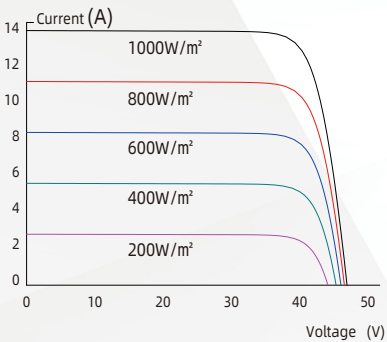
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	864pcs/40HQ

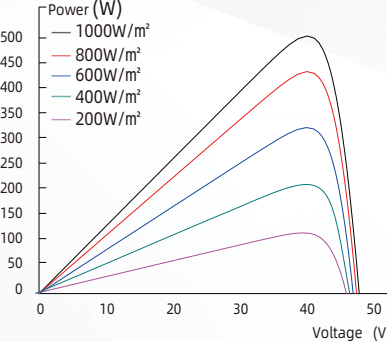
Module Dimension(mm)



Current-Voltage Curve (480W)

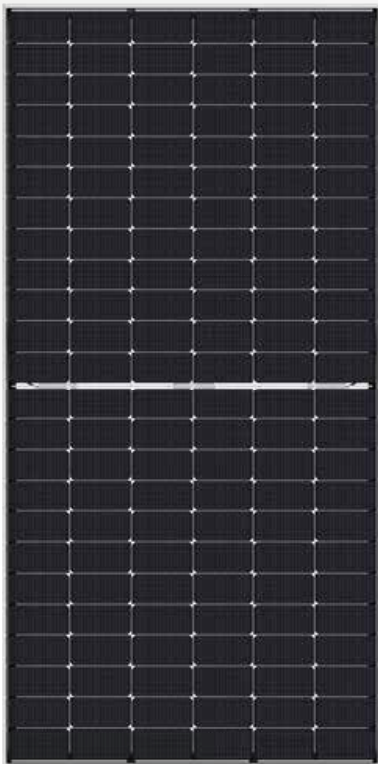


Power-Voltage Curve (480W)



- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

**144cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-144HBD
N560-N580M10**

N-TOPCon Technology

22.45%
Maximum Module Efficiency

580W
Maximum Power Output

Power Shorting Tolerance:0-3W

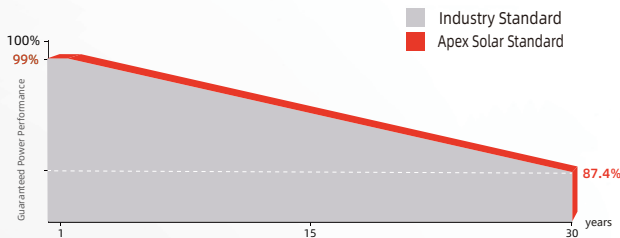
2279×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



 Process Warranty

 Power Warranty

HRAP-144HBD-N560-N580M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	560	565	570	575	580
Maximum Power Voltage(Vmp) [V]	41.95	42.14	42.29	42.44	42.59
Maximum Power Current(Imp) [A]	13.35	13.41	13.48	13.55	13.62
Open Circuit Voltage(Voc) [V]	50.67	50.87	51.07	51.27	51.47
Short Circuit Current(Isc) [A]	14.13	14.19	14.25	14.31	14.37
Module Efficiency [%]	21.68	21.87	22.07	22.26	22.45

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	421	425	429	432	436
Maximum Power Voltage(Vmp) [V]	39.39	39.52	39.65	39.78	39.87
Maximum Power Current(Imp) [A]	10.69	10.75	10.81	10.87	10.94
Open Circuit Voltage(Voc) [V]	48.13	48.32	48.51	48.70	48.89
Short Circuit Current(Isc) [A]	11.41	11.46	11.50	11.55	11.60

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
C ell Dimensions	182×182mm
Cell Arrangement	144(2×72)
Weight	32kg(±3%)
Module Dimensions	2279×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

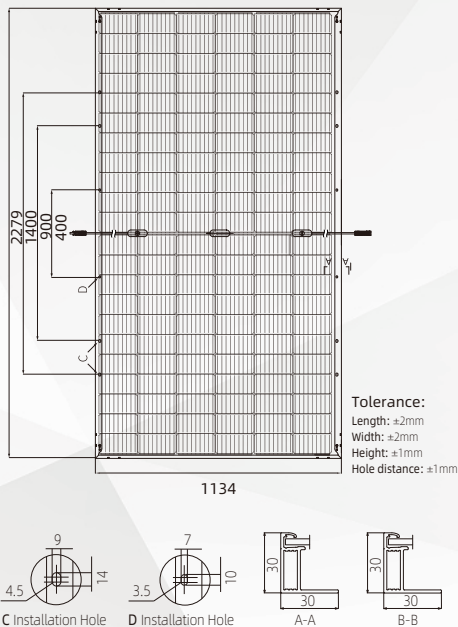
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	30A

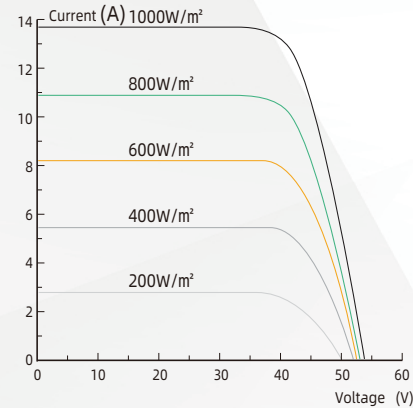
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	720pcs/40HQ

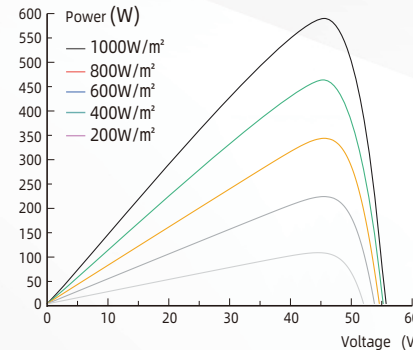
Module Dimension(mm)



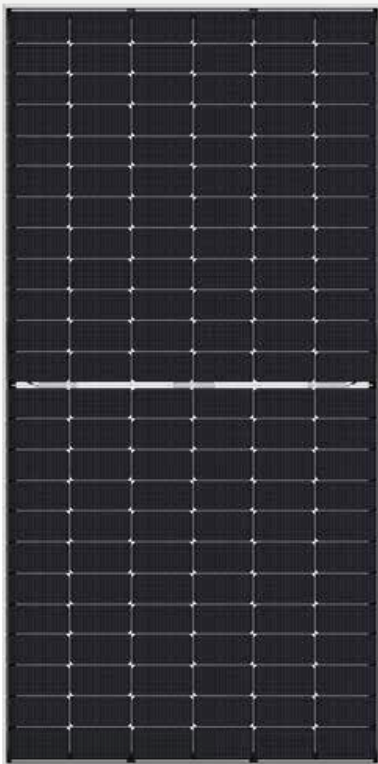
Current-Voltage Curve (580W)



Power-Voltage Curve (580W)



**144cells Monocrystalline Bifacial
Dual Glass Module**



**HRAP-144HBD
N565-N580M10**

N-TOPCon Technology

22.45%

Maximum Module Efficiency

580W

Maximum Power Output

Power Shorting Tolerance:0-3W

2279×1134×30mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

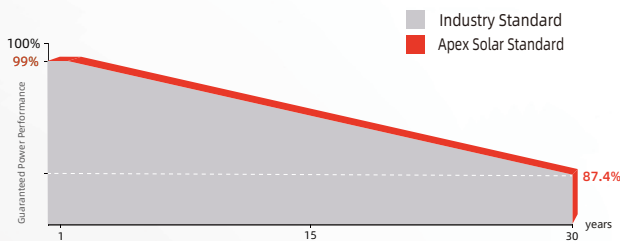
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty



0-3w

Guaranteed 0-3w positive tolerance ensures the power output reliability



High customer value

Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations



Highly reliable due to stringent quality control

Three times strict EL testing beyond certification requirements



Fusion of MBB and half-cut cells technology

The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability



Excellent Anti-PID performance

Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process



Outstanding low light performance

The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

HRAP-144HBD-N565-N580M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	565	570	575	580
Maximum Power Voltage(Vmp) [V]	41.92	42.07	42.22	42.37
Maximum Power Current(Imp) [A]	13.48	13.55	13.62	13.69
Open Circuit Voltage(Voc) [V]	50.60	50.74	50.88	51.02
Short Circuit Current(Isc) [A]	14.23	14.31	14.39	14.47
Module Efficiency [%]	21.87	22.07	22.26	22.45

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	425	429	432	436
Maximum Power Voltage(Vmp) [V]	39.38	39.51	39.60	39.69
Maximum Power Current(Imp) [A]	10.79	10.85	10.92	10.99
Open Circuit Voltage(Voc) [V]	48.06	48.20	48.33	48.46
Short Circuit Current(Isc) [A]	11.49	11.55	11.62	11.68

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
C ell Dimensions	182×182mm
Cell Arrangement	144(2×72)
Weight	28kg(±3%)
Module Dimensions	2279×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

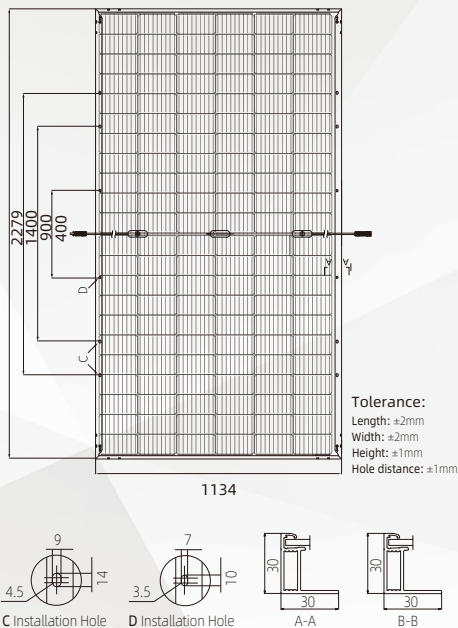
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

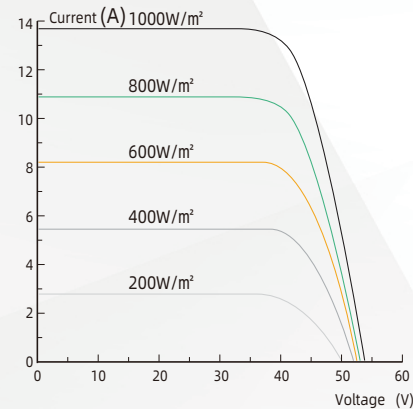
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	620pcs/40HQ

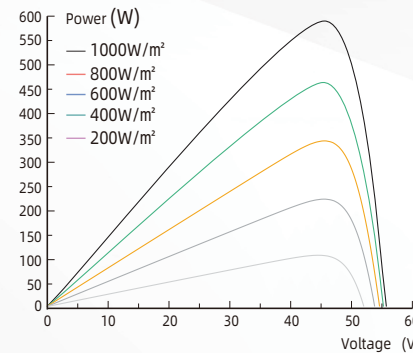
Module Dimension(mm)



Current-Voltage Curve (580W)



Power-Voltage Curve (580W)





HRAP-144H- N565-N585M10

N-TOPCon Technology

22.65%
Maximum Module Efficiency

585W
Maximum Power Output

Power Shorting Tolerance:0-3W

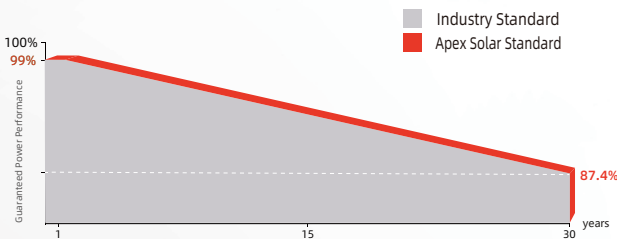
2279×1134×35mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

HRAP-144H-N565-N585M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	565	570	575	580	585
Maximum Power Voltage(Vmp) [V]	41.92	42.07	42.22	42.37	42.52
Maximum Power Current(Imp) [A]	13.48	13.55	13.62	13.69	13.76
Open Circuit Voltage(Voc) [V]	50.60	50.74	50.88	51.02	51.16
Short Circuit Current(Isc) [A]	14.23	14.31	14.39	14.47	14.55
Module Efficiency [%]	21.87	22.07	22.26	22.45	22.65

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	425	429	432	436	440
Maximum Power Voltage(Vmp) [V]	39.38	39.51	39.60	39.69	39.81
Maximum Power Current(Imp) [A]	10.79	10.85	10.92	10.99	11.05
Open Circuit Voltage(Voc) [V]	48.06	48.20	48.33	48.46	48.60
Short Circuit Current(Isc) [A]	11.49	11.55	11.62	11.68	11.75

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	144(2×72)
Weight	28kg(±3%)
Module Dimensions	2279×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

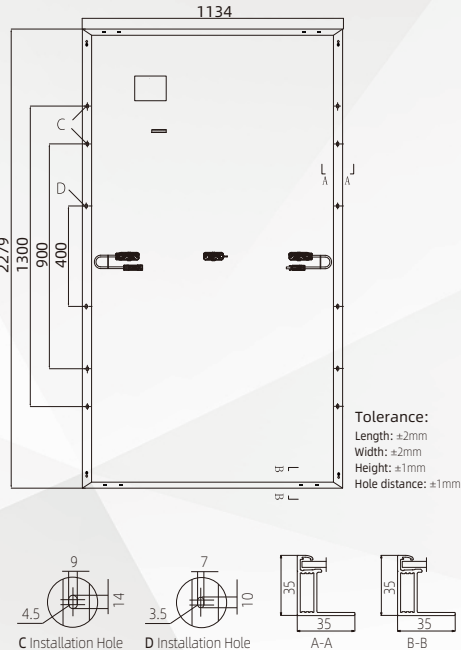
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

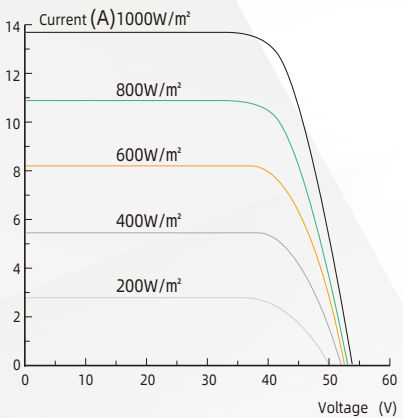
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	620pcs/40HQ

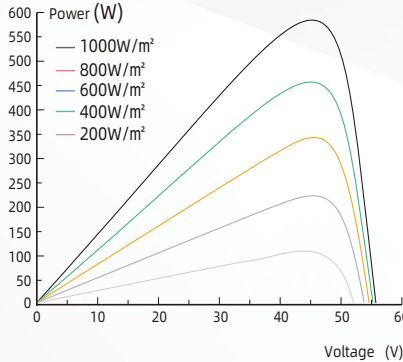
Module Dimension(mm)



Current-Voltage Curve (585W)



Power-Voltage Curve (585W)



HRAP-156H-N610-N630M10

N-TOPCon Technology

22.54%

Maximum Module Efficiency

630W

Maximum Power Output

Power Shorting Tolerance:0-3W

2465×1134×35mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

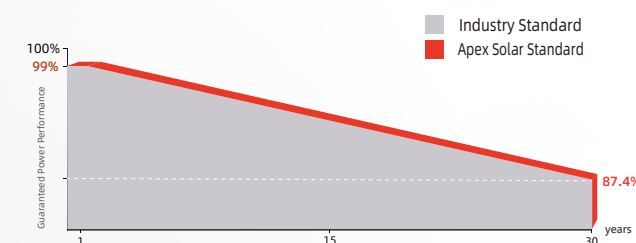
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 Process Warranty

30 Power Warranty

HRAP-156H-N610-N630M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	610	615	620	625	630
Maximum Power Voltage(Vmp) [V]	45.59	45.69	45.79	45.92	46.02
Maximum Power Current(Imp) [A]	13.38	13.46	13.54	13.61	13.69
Open Circuit Voltage(Voc) [V]	55.25	55.40	55.55	55.70	55.85
Short Circuit Current(Isc) [A]	14.11	14.18	14.25	14.32	14.39
Module Efficiency [%]	21.82	22.00	22.18	22.36	22.54

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	459	462	466	470	474
Maximum Power Voltage(Vmp) [V]	42.28	42.39	42.50	42.61	42.72
Maximum Power Current(Imp) [A]	10.85	10.91	10.97	11.03	11.09
Open Circuit Voltage(Voc) [V]	52.48	52.62	52.77	52.91	53.05
Short Circuit Current(Isc) [A]	11.39	11.45	11.50	11.56	11.62

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	156(2×78)
Weight	30.6kg(±3%)
Module Dimensions	2465×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

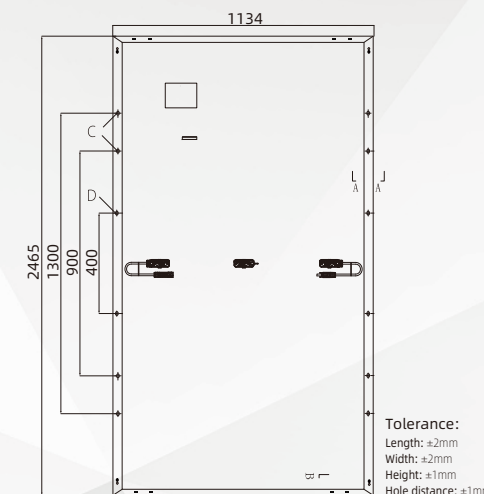
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

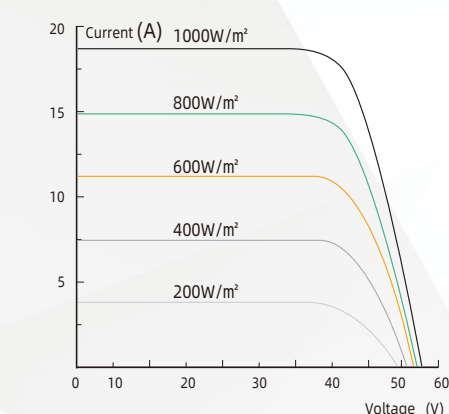
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	558pcs/40HQ

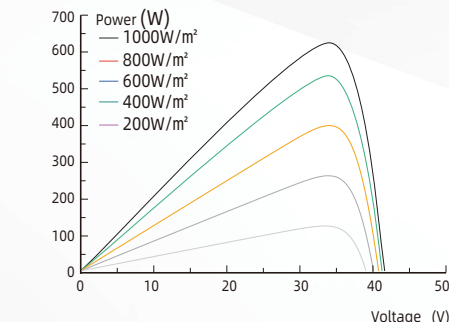
Module Dimension(mm)

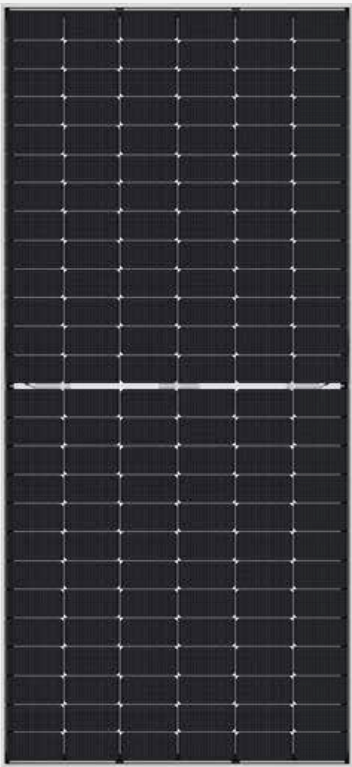


Current-Voltage Curve (630W)



Power-Voltage Curve (630W)





HRAP-156HBD N605-N625M10

N-TOPCon Technology

22.36%

Maximum Module Efficiency

625W

Maximum Power Output

Power Shorting Tolerance:0-3W

2465×1134×30mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

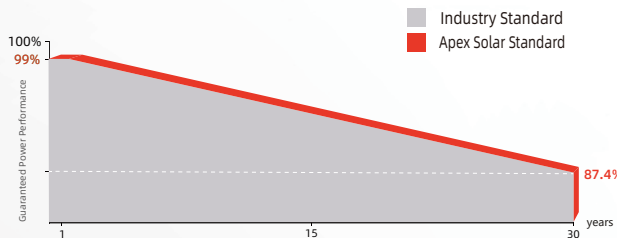
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

0-3w

0-3w

Guaranteed 0-3w positive tolerance ensures the power output reliability



High customer value

Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations



Highly reliable due to stringent quality control

Three times strict EL testing beyond certification requirements



Fusion of MBB and half-cut cells technology

The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability



Excellent Anti-PID performance

Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process



Outstanding low light performance

The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

HRAP-156HBD-N605-N625M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	605	610	615	620	625
Maximum Power Voltage(Vmp) [V]	45.42	45.60	45.77	45.93	46.10
Maximum Power Current(Imp) [A]	13.32	13.38	13.44	13.50	13.56
Open Circuit Voltage(Voc) [V]	55.17	55.31	55.44	55.58	55.72
Short Circuit Current(Isc) [A]	13.95	14.03	14.11	14.19	14.27
Module Efficiency [%]	21.64	21.82	22.00	22.18	22.36

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	455	459	462	466	470
Maximum Power Voltage(Vmp) [V]	42.23	42.35	42.46	42.57	42.68
Maximum Power Current(Imp) [A]	10.77	10.83	10.89	10.95	11.01
Open Circuit Voltage(Voc) [V]	52.41	52.54	52.66	52.79	52.93
Short Circuit Current(Isc) [A]	11.26	11.33	11.39	11.46	11.52

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
C ell Dimensions	182×182mm
Cell Arrangement	156(2×78)
Weight	34.6kg(±3%)
Module Dimensions	2465×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	2.0 mm (0.08 inches), High Transmission, ARCoated Heat Strengthened Glass
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Connector	Mc4 Compatible
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

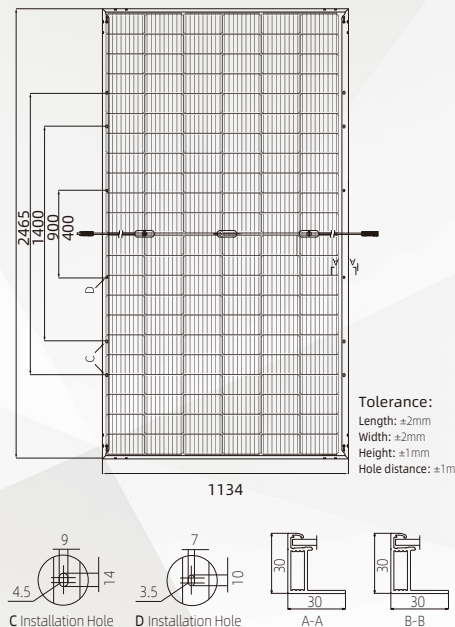
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	30A

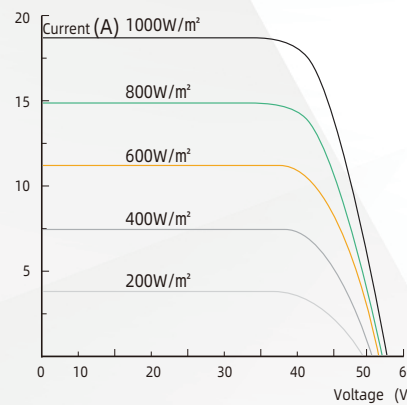
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	720pcs/40HQ

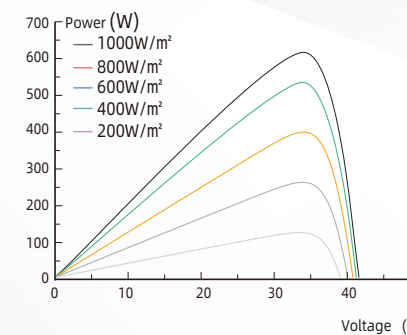
Module Dimension(mm)

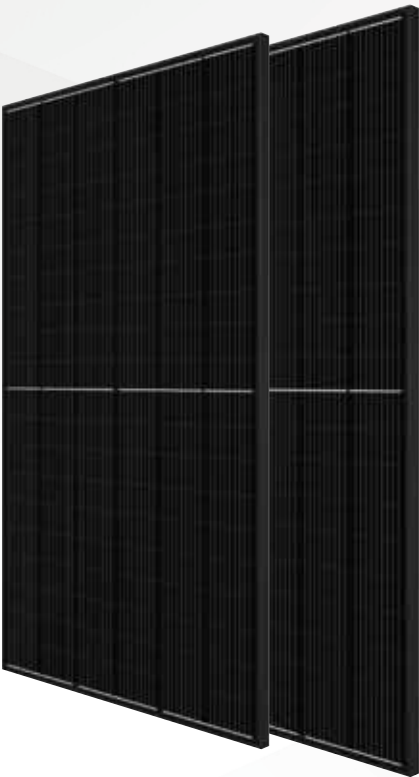


Current-Voltage Curve (625W)



Power-Voltage Curve (625W)





HRAP-108H-N410-N425M10

N-TOPCon Technology

21.76%
Maximum Module Efficiency

425W
Maximum Power Output

Power Shorting Tolerance:0-3W

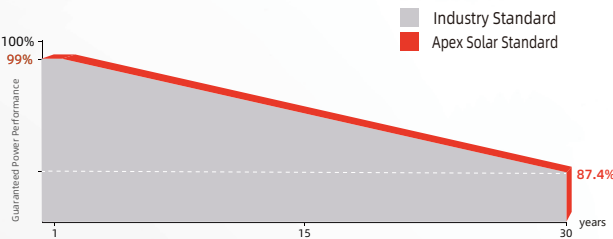
1722×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

HRAP-108H-N410-N425M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	410	415	420	425
Maximum Power Voltage(Vmp) [V]	31.13	31.32	31.51	31.70
Maximum Power Current(Imp) [A]	13.17	13.25	13.33	13.41
Open Circuit Voltage(Voc) [V]	37.73	37.92	38.11	38.30
Short Circuit Current(Isc) [A]	13.91	13.99	14.07	14.15
Module Efficiency [%]	21.00	21.25	21.51	21.76

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	308	312	316	320
Maximum Power Voltage(Vmp) [V]	29.06	29.21	29.34	29.50
Maximum Power Current(Imp) [A]	10.61	10.68	10.76	10.83
Open Circuit Voltage(Voc) [V]	35.84	36.02	36.20	36.38
Short Circuit Current(Isc) [A]	11.23	11.29	11.36	11.42

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	108(2×54)
Weight	22kg(±3%)
Module Dimensions	1722×1134×30mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltaic Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

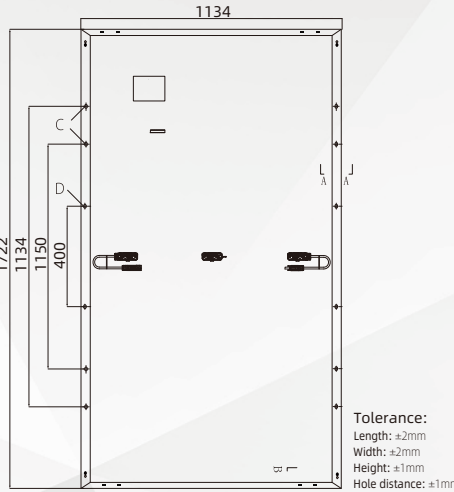
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

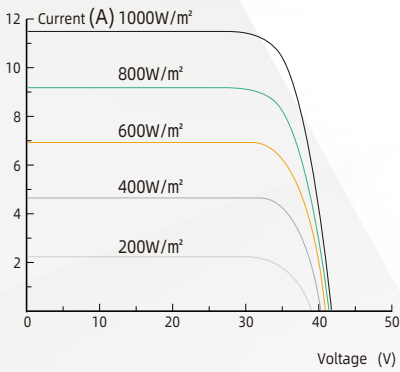
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	936pcs/40HQ

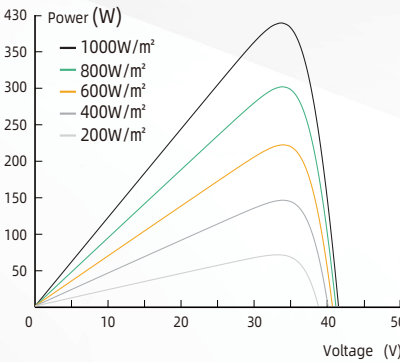
Module Dimension(mm)



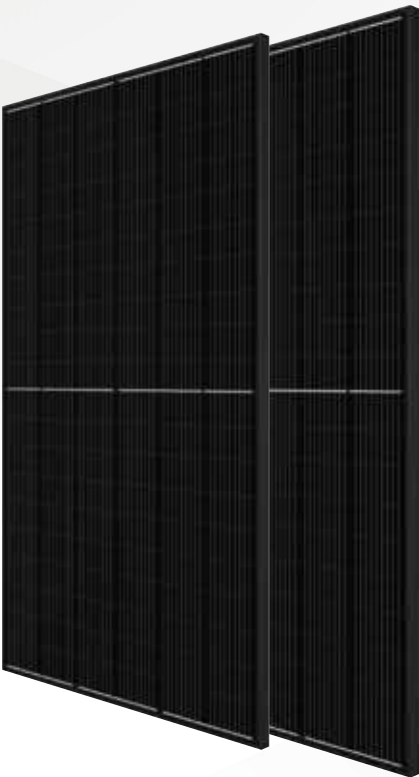
Current-Voltage Curve (425W)



Power-Voltage Curve (425W)



- 0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment



HRAP-120H-N460-N475M10

N-TOPCon Technology

22.01%
Maximum Module Efficiency

475W
Maximum Power Output

Power Shorting Tolerance:0-3W

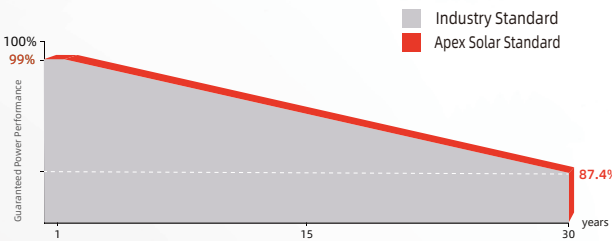
1909×1134×30mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 Process Warranty **30** Power Warranty

-  **0-3w**
Guaranteed 0-3w positive tolerance ensures the power output reliability
-  **High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
-  **Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
-  **Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
-  **Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
-  **Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment

HRAP-120H-N460-N475M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	460	465	470	475
Maximum Power Voltage(Vmp) [V]	34.72	34.89	35.05	35.21
Maximum Power Current(Impp) [A]	13.25	13.33	13.41	13.49
Open Circuit Voltage(Voc) [V]	42.05	42.22	42.38	42.54
Short Circuit Current(Isc) [A]	13.99	14.07	14.15	14.23
Module Efficiency [%]	21.32	21.55	21.78	22.01

STC: Irradiance 1000 W/m2 module temperature 25℃ AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	346	350	353	357
Maximum Power Voltage(Vmp) [V]	32.60	32.77	32.94	33.10
Maximum Power Current(Impp) [A]	10.61	10.67	10.73	10.79
Open Circuit Voltage(Voc) [V]	39.94	40.10	40.25	40.41
Short Circuit Current(Isc) [A]	11.29	11.36	11.42	11.49

NMOT: Irradiance 800 W/m2 ambient temperature 20℃ wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	120(2×60)
Weight	24.2kg(±3%)
Module Dimensions	1909×1134×30mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

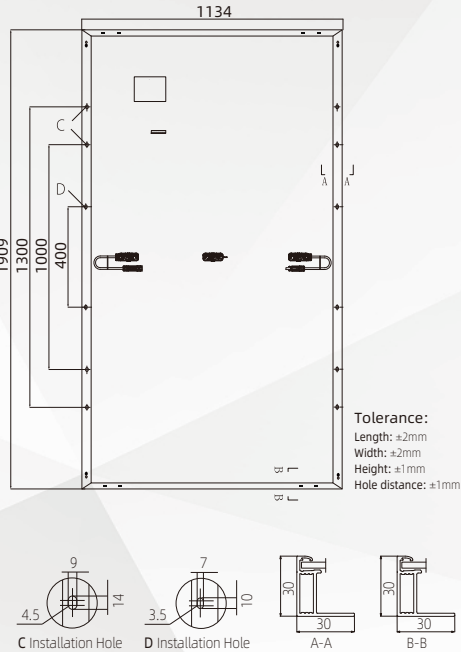
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/℃
Voc Temperature Coefficient	-0.25%/℃
ISC Temperature Coefficient	0.046%/℃
Nominal Operating Cell Temperature	45±2℃
Operating Temperature	-40℃~+85℃
Maximum Series Fuse	25A

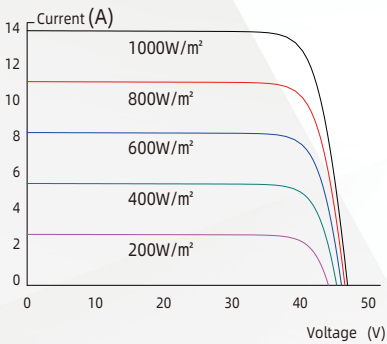
PPACKING CONFIGURATION

Quantity/Pallet	36pcs/pallet
Quantity/Container	864pcs/40HQ

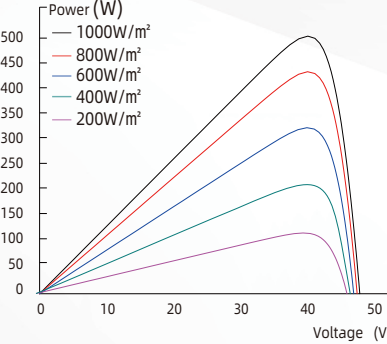
Module Dimension(mm)

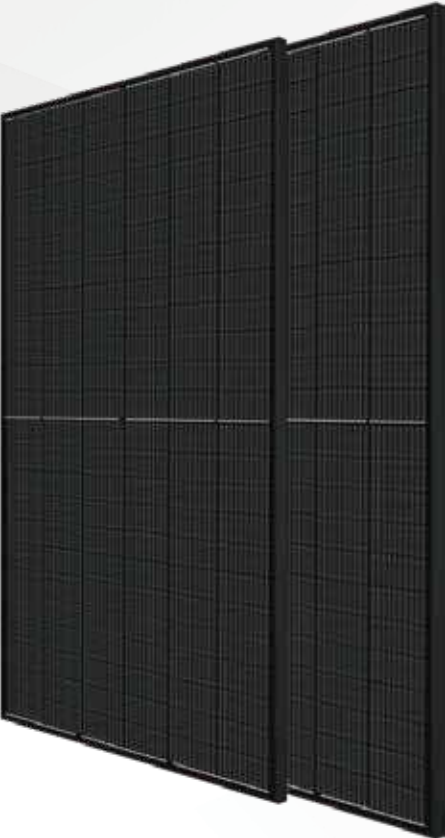


Current-Voltage Curve (475W)



Power-Voltage Curve (475W)





HRAP-144H-N565-N580M10

N-TOPCon Technology

22.45%
Maximum Module Efficiency

580W
Maximum Power Output

Power Shorting Tolerance:0-3W

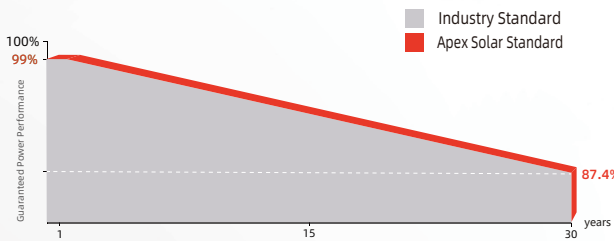
2279×1134×35mm
Module Dimensions

IEC 61215 / IEC 61730
Fire safty class:Class C according to UL790
ISO 9001 :Quality Management System
ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing ,30-year Warranty for Extra Linear Power Output



12 YEARS Process Warranty

30 YEARS Power Warranty

HRAP-144H-N565-N580M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	565	570	575	580
Maximum Power Voltage(Vmp) [V]	41.92	42.07	42.22	42.37
Maximum Power Current(Impp) [A]	13.48	13.55	13.62	13.69
Open Circuit Voltage(Voc) [V]	50.60	50.74	50.88	51.02
Short Circuit Current(Isc) [A]	14.23	14.31	14.39	14.47
Module Efficiency [%]	21.87	22.07	22.26	22.45

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	425	429	432	436
Maximum Power Voltage(Vmp) [V]	39.38	39.51	39.60	39.69
Maximum Power Current(Impp) [A]	10.79	10.85	10.92	10.99
Open Circuit Voltage(Voc) [V]	48.06	48.20	48.33	48.46
Short Circuit Current(Isc) [A]	11.49	11.55	11.62	11.68

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	144(2×72)
Weight	28kg(±3%)
Module Dimensions	2279×1134×35mm
Cable	4.0 mm² positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

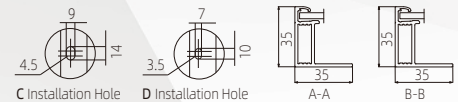
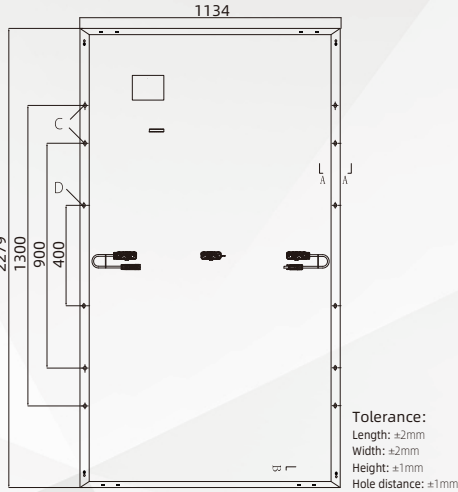
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

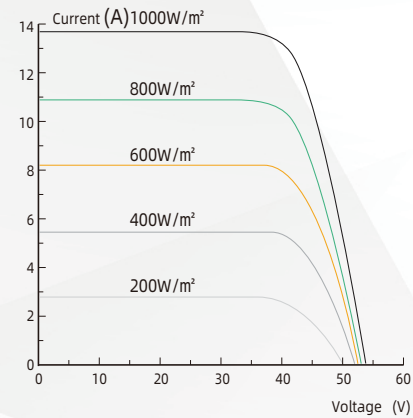
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	620pcs/40HQ

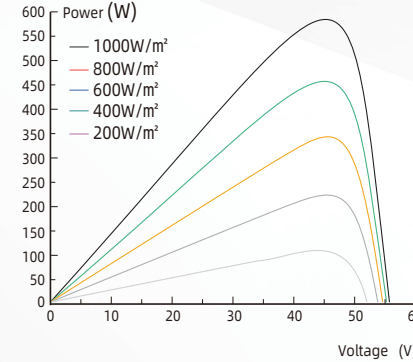
Module Dimension(mm)

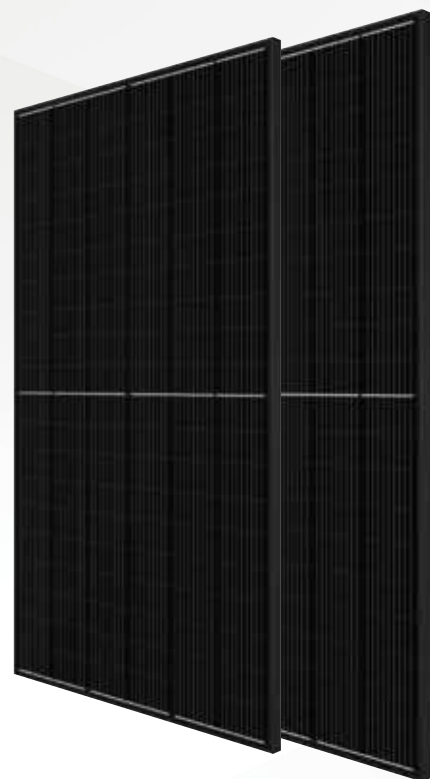


Current-Voltage Curve (580W)



Power-Voltage Curve (580W)





HRAP-156H-N610-N625M10

N-TOPCon Technology

22.36%

Maximum Module Efficiency

625W

Maximum Power Output

Power Shorting Tolerance:0-3W

2465×1134×35mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

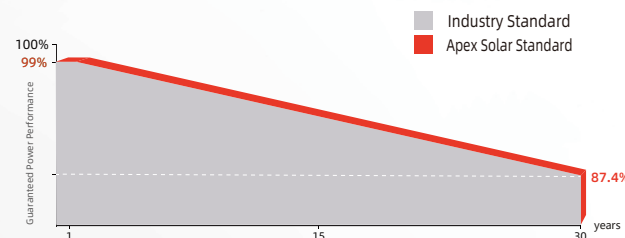
ISO 9001 :Quality Management System

ISO 14001 :Environment Management



Industry Leading Linear Power Warranty

12-year Warranty for Materials and Processing .30-year Warranty for Extra Linear Power Output



12 Process Warranty

30 Power Warranty

HRAP-156H-N610-N625M10

ELECTRICAL PARAMETERS AT STC

Rated Maximum Power(Pmax) [W]	610	615	620	625
Maximum Power Voltage(Vmp) [V]	45.59	45.69	45.79	45.92
Maximum Power Current(Imp) [A]	13.38	13.46	13.54	13.61
Open Circuit Voltage(Voc) [V]	55.25	55.40	55.55	55.70
Short Circuit Current(Isc) [A]	14.11	14.18	14.25	14.32
Module Efficiency [%]	21.82	22.00	22.18	22.36

STC: Irradiance 1000 W/m2 module temperature 25°C AM=1.5

ELECTRICAL PARAMETERS AT NMOT

Rated Maximum Power(Pmax)[W]	459	462	466	470
Maximum Power Voltage(Vmp) [V]	42.28	42.39	42.50	42.61
Maximum Power Current(Imp) [A]	10.85	10.91	10.97	11.03
Open Circuit Voltage(Voc) [V]	52.48	52.62	52.77	52.91
Short Circuit Current(Isc) [A]	11.39	11.45	11.50	11.56

NMOT: Irradiance 800 W/m2 ambient temperature 20°C wind speed: 1m/s

MECHANICAL SPECIFICATION

Cell Type	N-Type Monocrystalline
Cell Dimensions	182×182mm
Cell Arrangement	156(2×78)
Weight	30.6kg(±3%)
Module Dimensions	2465×1134×35mm
Cable	4.0 mm²positive/negative:300mm(11.8inches),length Can be customized
Front Glass	3.2 mm high transmittance,AR coating tempered glass
Frame	Anodized aluminium alloy
Junction Box	Protection class IP68
Type of Connector	PV-XT101.1 (Suzhou Xtong Photovoltage Technology Co., Ltd)
Mechanical Load	Front side 5400Pa/Rear side 2400Pa

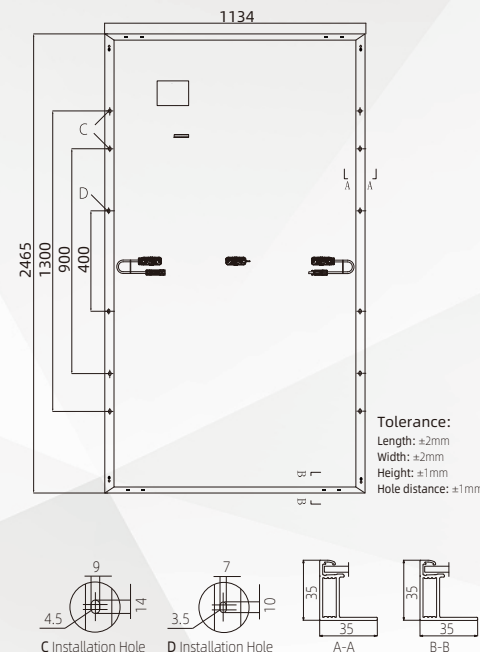
OPERATING CONDITIONS

Maximum System Voltage (V)	1000/1500VDC (IEC)
Pmax Temperature Coefficient	-0.30%/°C
Voc Temperature Coefficient	-0.25%/°C
ISC Temperature Coefficient	0.046%/°C
Nominal Operating Cell Temperature	45±2°C
Operating Temperature	-40°C~+85°C
Maximum Series Fuse	25A

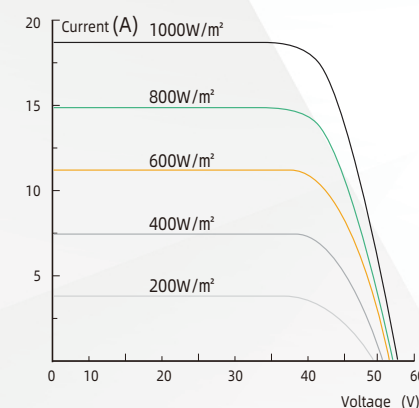
PPACKING CONFIGURATION

Quantity/Pallet	31pcs/pallet
Quantity/Container	558pcs/40HQ

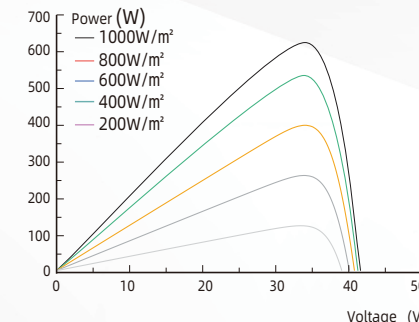
Module Dimension(mm)



Current-Voltage Curve (625W)



Power-Voltage Curve (625W)



- 0-3W**
Guaranteed 0-3W positive tolerance ensures the power output reliability
- High customer value**
Lower cost per kilowatt hour.High quality silicon wafer guarantee, high power module output, excellent cost performance advantage, is an ideal choice for solar power stations
- Highly reliable due to stringent quality control**
Three times strict EL testing beyond certification requirements
- Fusion of MBB and half-cut cells technology**
The new circuit design, minimizes the impact of shadow on the power generation of solar module.Excellent light utilization and current collection capacity, effectively improve product power output and reliability
- Excellent Anti-PID performance**
Ensure that the scale production passes the PID test, and greatly reduce the attenuation caused by PID by optimizing the wafer process
- Outstanding low light performance**
The coated glass with high transmittance and the surface technology of the wafer are used to achieve excellent performance in low light environment