

## HRAP-120H 590-610M12

**21.57%**  
Maximum Module Efficiency

**610W**  
Maximum Power Output

Power Shorting Tolerance:0~+3W

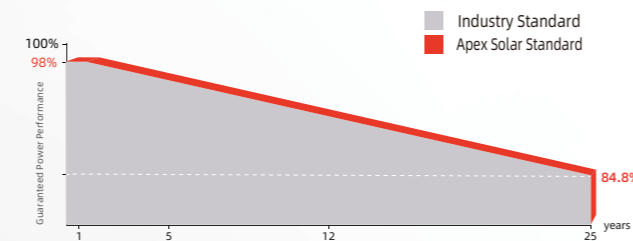
**2172×1303×35mm**  
Module Dimensions

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

**0-±3%**  
Guaranteed 0-±3% 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

### 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(Imp) [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/m<sup>2</sup> 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(Imp) [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/m<sup>2</sup> 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 mm <sup>2</sup> 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

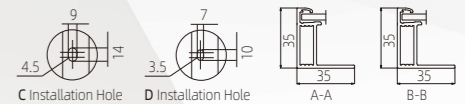
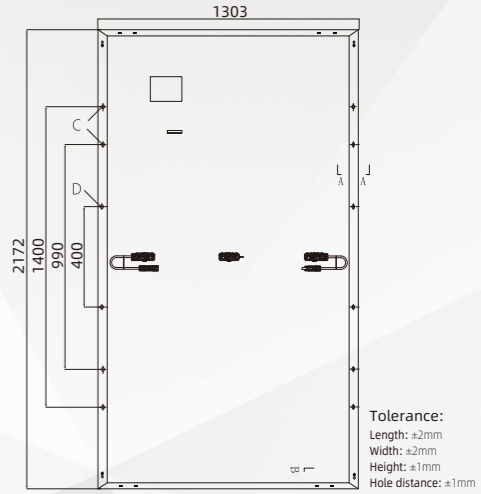
### OPERATING CONDITIONS

Maximum System Voltage (V)	1500VDC
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

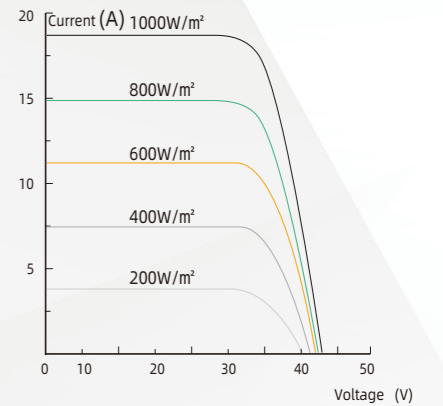
### PPACKING CONFIGURATION

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

### Module Dimension(mm)



### Current-Voltage Curve (610W)



### Power-Voltage Curve (610W)

