



## 144cells Monocrystalline Bifacial Dual Glass Module

## HRAP-144HBD-N570-N590M10



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### N-TOPCon Technology

**22.82%**

Maximum Module Efficiency

**590W**

Maximum Power Output

Power Shorting Tolerance:0-3W

**2279×1134×30mm**

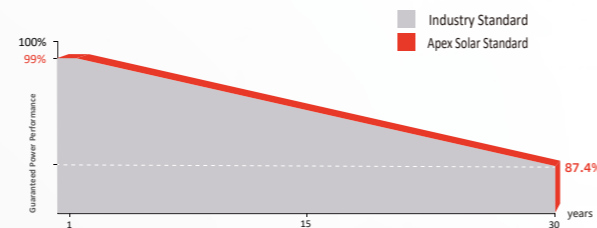
Module Dimensions

IEC 61215 / IEC 61730  
 Fire safety 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

### ELECTRICAL PARAMETERS AT STC

|                                |       |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|-------|
| Rated Maximum Power(Pmax) [W]  | 570   | 575   | 580   | 585   | 590   |
| Maximum Power Voltage(Vmp) [V] | 42.07 | 42.22 | 42.37 | 42.52 | 42.67 |
| Maximum Power Current(Imp) [A] | 13.55 | 13.62 | 13.69 | 13.76 | 13.83 |
| Open Circuit Voltage(Voc) [V]  | 50.74 | 51.88 | 51.02 | 52.16 | 52.37 |
| Short Circuit Current(Isc) [A] | 14.31 | 14.39 | 14.47 | 14.89 | 14.94 |
| Module Efficiency [%]          | 22.05 | 22.24 | 22.45 | 22.63 | 22.82 |

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

### ELECTRICAL PARAMETERS AT NMOT

|                                |       |       |       |       |       |
|--------------------------------|-------|-------|-------|-------|-------|
| Rated Maximum Power(Pmax)[W]   | 429   | 432   | 436   | 441   | 445   |
| Maximum Power Voltage(Vmp) [V] | 39.65 | 39.78 | 39.87 | 41.05 | 41.21 |
| Maximum Power Current(Imp) [A] | 10.81 | 10.87 | 10.94 | 10.74 | 10.79 |
| Open Circuit Voltage(Voc) [V]  | 48.51 | 48.70 | 48.89 | 50.06 | 50.25 |
| Short Circuit Current(Isc) [A] | 11.50 | 11.55 | 11.60 | 11.30 | 11.36 |

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

### BIFACIAL OUTPUT-REAR SIDE POWER GAIN

|     |                          |       |       |       |       |       |
|-----|--------------------------|-------|-------|-------|-------|-------|
| 5%  | Maximum Power (Pmax) [W] | 599   | 604   | 609   | 614   | 620   |
|     | Module Efficiency STC[%] | 23.16 | 23.36 | 23.56 | 23.77 | 23.97 |
| 10% | Maximum Power (Pmax) [W] | 627   | 633   | 638   | 644   | 649   |
|     | Module Efficiency STC[%] | 24.26 | 24.47 | 24.69 | 24.90 | 25.11 |
| 20% | Maximum Power (Pmax) [W] | 684   | 690   | 696   | 702   | 708   |
|     | Module Efficiency STC[%] | 26.47 | 26.70 | 26.93 | 27.16 | 27.40 |

### MECHANICAL SPECIFICATION

|                   |   |
|-------------------|---|
| Cell Type         | N-Type Monocrystalline  |
| Cell Dimensions   | 182×182mm   |
| Cell Arrangement  | 144(6×24)   |
| Weight            | 32kg(±3%)   |
| Module Dimensions | 2279×1134×30mm  |
| Cable             | 4.0 mm <sup>2</sup> 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  |

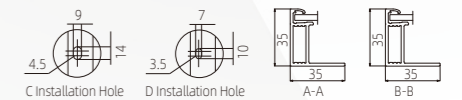
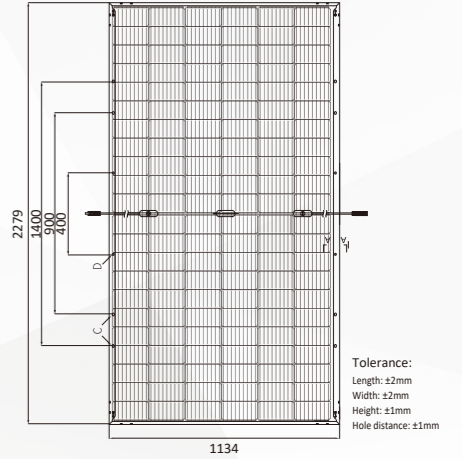
### OPERATING CONDITIONS

|                                    |                    |
|------------------------------------|--------------------|
| 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                |

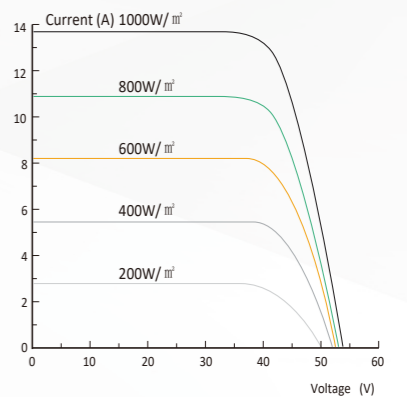
### PPACKING CONFIGURATION

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

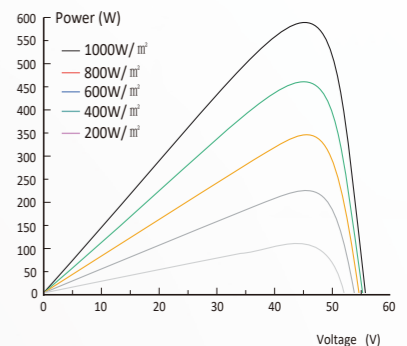
### Module Dimension(mm)



### Current-Voltage Curve (590W)



### Power-Voltage Curve (590W)



**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