

120cells Monocrystalline Bifacial Dual Glass Module



HRAP-120HBD-N460-N490M10

N-TOPCon Technology

22.63%

Maximum Module Efficiency

490W

Maximum Power Output

Power Shorting Tolerance:0-3W

1909x1134x30mm

Module Dimensions

IEC 61215 / IEC 61730

Fire safty class:Class C according to UL790

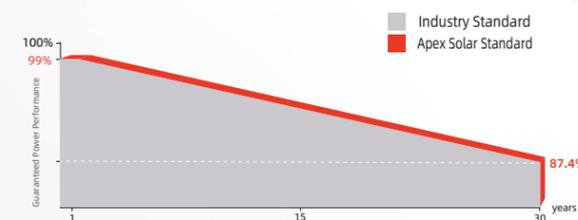
ISO 9001 :Quality Management System

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-120HBD-N460-N490M10

ELECTRICAL PARAMETERS AT STC

| | | | | | | | |
|---------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Rated Maximum Power(Pmax) [W] | 460 | 465 | 470 | 475 | 480 | 485 | 490 |
| Maximum Power Voltage(Vmp) [V] | 34.72 | 34.89 | 35.05 | 35.21 | 35.38 | 35.54 | 35.64 |
| Maximum Power Current(Impp) [A] | 13.25 | 13.33 | 13.41 | 13.49 | 13.57 | 13.65 | 13.75 |
| Open Circuit Voltage(Voc) [V] | 42.05 | 42.22 | 42.38 | 42.54 | 42.71 | 42.88 | 43.12 |
| Short Circuit Current(Isc) [A] | 13.99 | 14.07 | 14.15 | 14.23 | 14.31 | 14.39 | 14.51 |
| Module Efficiency [%] | 21.32 | 21.55 | 21.78 | 22.01 | 22.20 | 22.40 | 22.63 |

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 | 365 | 369 |
| Maximum Power Voltage(Vmp) [V] | 32.60 | 32.77 | 32.94 | 33.10 | 33.27 | 33.44 | 34.00 |
| Maximum Power Current(Impp) [A] | 10.61 | 10.67 | 10.73 | 10.79 | 10.85 | 10.80 | 10.86 |
| Open Circuit Voltage(Voc) [V] | 39.94 | 40.10 | 40.25 | 40.41 | 40.57 | 41.57 | 41.71 |
| Short Circuit Current(Isc) [A] | 11.29 | 11.36 | 11.42 | 11.49 | 11.55 | 11.24 | 11.31 |

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

BIFACIAL OUTPUT-REAR SIDE POWER GAIN

| | | | | | | | | |
|-----|--------------------------|-------|-------|-------|-------|-------|-------|-------|
| 5% | Maximum Power (Pmax) [W] | 483 | 488 | 494 | 499 | 504 | 509 | 515 |
| | Module Efficiency STC[%] | 22.31 | 22.55 | 22.80 | 23.04 | 23.28 | 23.52 | 23.77 |
| 10% | Maximum Power (Pmax) [W] | 506 | 512 | 517 | 523 | 528 | 534 | 539 |
| | Module Efficiency STC[%] | 23.37 | 23.63 | 23.88 | 24.14 | 24.39 | 24.64 | 24.89 |
| 20% | Maximum Power (Pmax) [W] | 552 | 558 | 564 | 570 | 576 | 582 | 588 |
| | Module Efficiency STC[%] | 25.50 | 25.78 | 26.05 | 26.33 | 26.61 | 26.88 | 27.16 |

MECHANICAL SPECIFICATION

| | |
|-------------------|---|
| Cell Type | N-Type Monocrystalline |
| Cell Dimensions | 182x182mm |
| Cell Arrangement | 120(6x20) |
| Weight | 26.2kg(±3%) |
| Module Dimensions | 1909x1134x30mm |
| 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 |

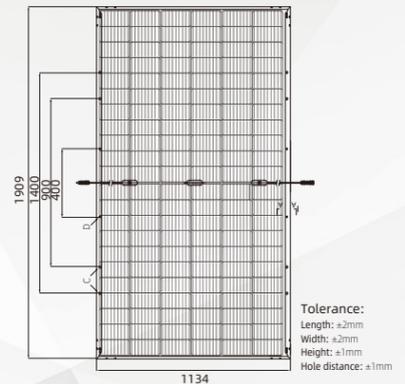
OPERATING CONDITIONS

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

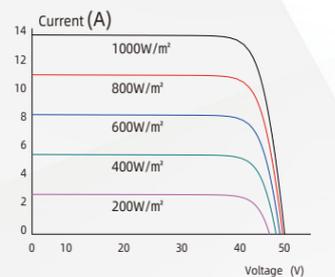
PPACKING CONFIGURATION

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

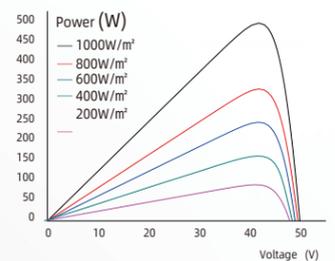
Module Dimension(mm)



Current-Voltage Curve (490W)



Power-Voltage Curve (490W)



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