



HRAP-120HBD-
N460-N490M10

N-TOPCon Technology

22.63%

Maximum Module Efficiency

490W

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

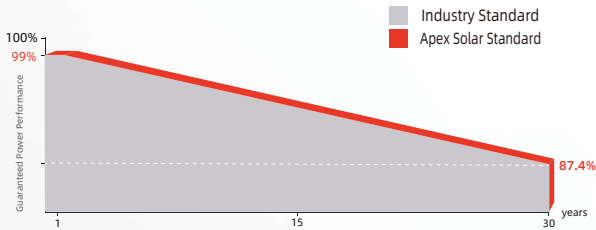
ISO 9001 :Quality Management System

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-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	33.84	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	182×182mm
Cell Arrangement	120(6×20)
Weight	26.2kg(±3%)
Module Dimensions	1909×1134×30mm
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

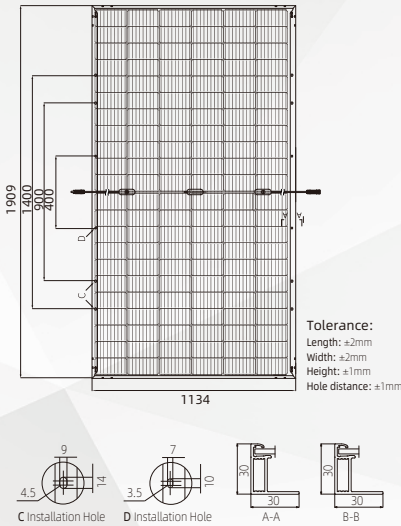
OPERATING CONDITIONS

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

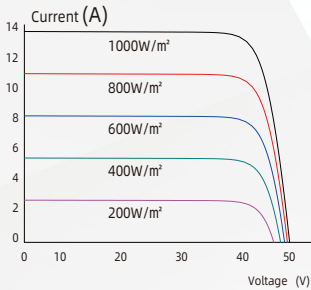
PPACKING CONFIGURATION

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

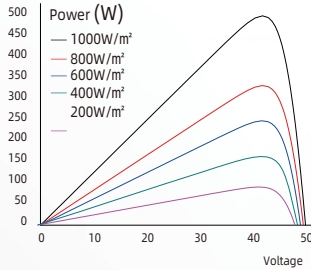
Module Dimension(mm)



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