

# 445-470W

## POWER RANGE

# Houнен Solar

## HNM7-SHDB120 Series

Houнен Solar 10BB HALF-CELL Bifacial Monocrystalline P - TYPE Solar Module

### KEY FEATURES



#### Excellent Cells Efficiency

MBB technology reduce the distance between busbars and finger grid line which is benefit to power increase.



#### Anti PID

Ensured PID resistance through the quality control of cell manufacturing process and raw materials.



#### Bifacial Technology

Up to 25% additional power gain from back side depending on albedo.



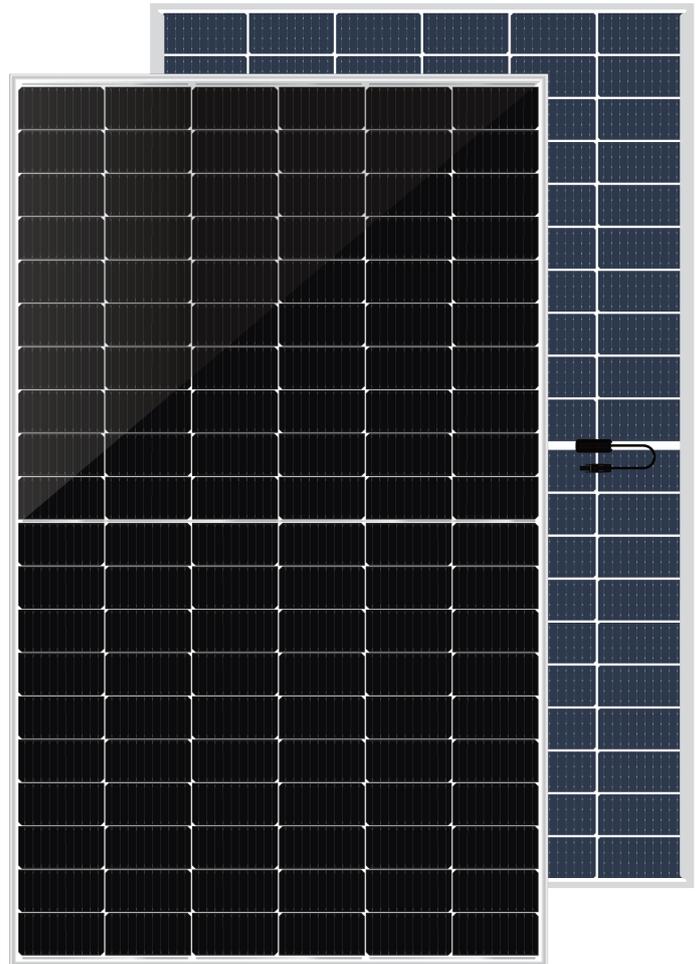
#### Better Weak Illumination Response

More power output in weak light condition, such as haze, cloudy, and early morning.

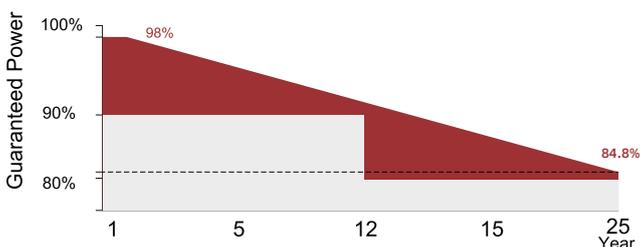


#### Adapt To Harsh Outdoor Environment

Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity environment.



### LINEAR PERFORMANCE WARRANTY



IEC61730, UL61730  
ISO9001:2015: Quality Management System  
ISO14001:2015: Environment Management System  
ISO45001:2018 Occupational health and safety management systems

 **12 YEARS PRODUCT WARRANTY**

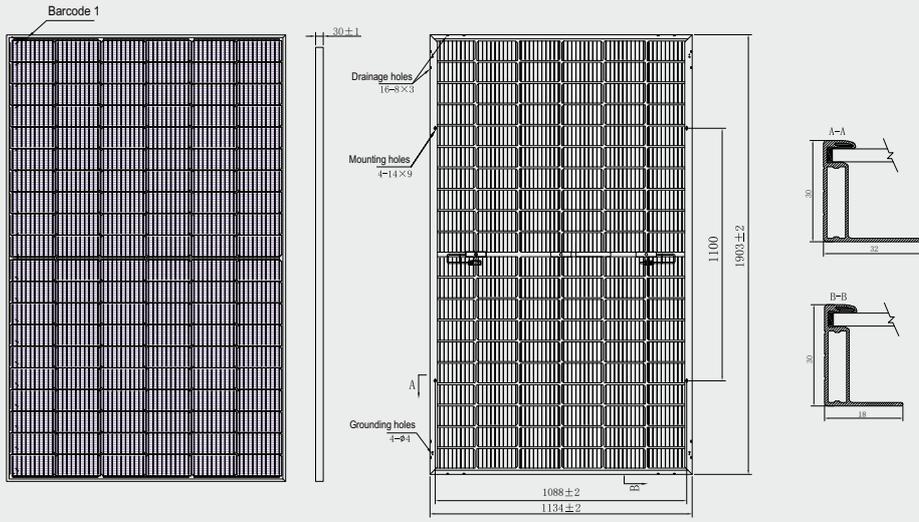
 **25 YEARS OUTPUT GUARANTEE**

**470W**  
MAXIMUM POWER OUTPUT

**21.78%**  
MAXIMUM EFFICIENCY

**70±5%**  
BIFACIALITY

**DIMENSIONS OF PV MODULE(mm)**



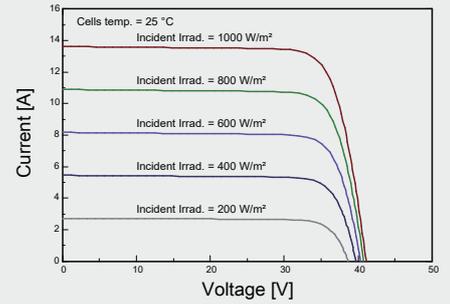
Front View

Side

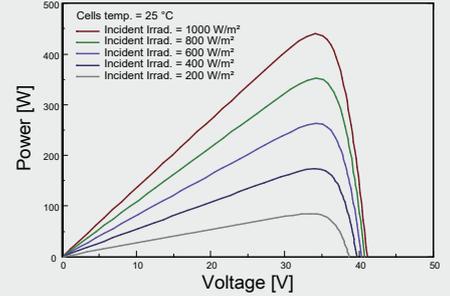
Back View

\*Remark: customized frame color and cable length available upon request.

**I-V CURVES OF PV MODULE(440W)**



**P-V CURVES OF PV MODULE(440W)**



**ELECTRICAL CHARACTERISTICS**

Module Type	HNM7-SHDB120-445/M		HNM7-SHDB120-450/M		HNM7-SHDB120-455/M		HNM7-SHDB120-460/M		HNM7-SHDB120-465/M		HNM7-SHDB120-470/M	
STC/NMOT	STC	NMOT										
Nominal Power Watt Pmax(W)*	445	332.60	450	336.30	455	340.10	460	343.80	465	347.60	470	351.10
Maximum Power Voltage Vmp(V)	34.40	32.00	34.60	32.10	34.80	32.30	35.00	32.50	35.20	32.70	35.40	32.90
Maximum Power Current Imp(A)	12.94	10.40	13.01	10.46	13.08	10.52	13.15	10.58	13.22	10.63	13.28	10.68
Open Circuit Voltage Voc(V)	41.30	38.60	41.50	38.80	41.70	39.00	41.90	39.10	42.10	39.30	42.30	39.50
Short Circuit Current Isc(A)	13.69	11.06	13.76	11.11	13.83	11.17	13.90	11.23	13.97	11.28	14.04	11.34
Module Efficiency (%)	20.62		20.85		21.08		21.32		21.55		21.78	

\*STC (Standard Test Condition): Irradiance 1000W/m², Module Temperature 25±2°C, AM 1.5.  
\*NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s.

**BIFACIAL OUTPUT-REARSIDE POWER GAIN**

Maximum Power (Pmax) 5%	467Wp	473Wp	478Wp	483Wp	488Wp	494Wp
Maximum Efficiency STC (%)	21.65%	21.90%	22.14%	22.38%	22.63%	22.87%
Maximum Power (Pmax) 15%	512Wp	518Wp	523Wp	529Wp	535Wp	541Wp
Maximum Efficiency STC (%)	23.71%	23.98%	24.25%	24.51%	24.78%	25.05%
Maximum Power (Pmax) 25%	556Wp	563Wp	569Wp	575Wp	581Wp	588Wp
Maximum Efficiency STC (%)	25.78%	26.07%	26.36%	26.65%	26.93%	27.22%

**WORKING CONDITIONS**

Maximum System Voltage	1500VDC
Operating Temperature	-40°C~+85°C
Maximum Fuse Rating	30A
Rear Side Mechanical Load	2400Pa
Front Side Mechanical Load	5400Pa
Safety Class	Class II

**TEMPERATURE RATINGS**

NMOT	44°C±2°C
Temperature coefficient of Pmax	-0.35%/°C
Temperature coefficient of Voc	-0.29%/°C
Temperature coefficient of Isc	0.05%/°C
Refer. Bifacial Factor	70±5%

**MECHANICAL DATA**

Solar cells	Mono P-Type
Cells orientation	120 (6x20)
Module dimension	1903x1134x30 (With Frame)
Weight	23.0±1Kg
Glass	3.2mm, High Transmission, AR Coated Tempered Glass
Junction Box	IP68, 3 diodes
Cables	4 mm², 400
Connectors	MC4 or MC4-compatible

**PACKAGING CONFIGURATION**

Container	40'HQ
Piece/Box	36
Piece/Container	864

\*Customized packaging is available upon request.

Revised in Sep 2023 1st Edition.  
Specifications included in this datasheet are subject to change without notice.  
Hounen Solar reserves the right of final interpretation.

\*Please refer to regional datasheet for specified connector.