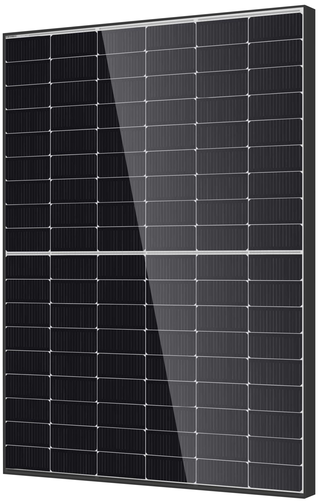
ESP-470-HC.M.B SW7

N Type Black Frame Module 108 cells 450W-470W



Mono Solar Panel Features

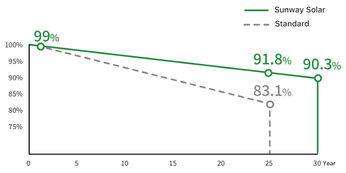
- Widely using of the most popular and mature type of modules for solar system
- High power output and highest conversion efficiency of 23.40%
- Anti-reflective and anti-soiling surface reduces power loss from dirt and dust
- Outstanding Performance in low-light irradiance environments
- 5400Pa — Excellent mechanical load resistance: Certified to withstand high wind loads (2400Pa) and Snow loads (5400Pa)
- 0~+5W — Positive power tolerance: 0~+5W

Warranty

- 12 years for product defects in materials & workmanship
- 12 years for 90% of warranted minimum power output
- 30 years for 80% of warranted minimum power output
- 30 years liner warranty

Reliable Quality

- Positive power tolerance: 0~+5W
- 100% EL Double-inspection ensures modules are defects free
- Modules Binned by Current to improve system performance
- Potential induced Degradation (PID) Resistant



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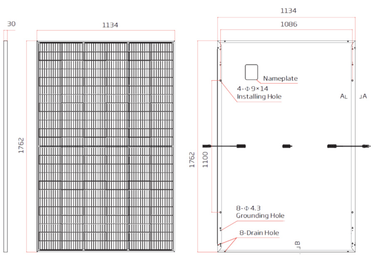
Mechanical parameters

Cell(mm)	N Type 182*105mm
Weight(kg)	21.8kg
Glass Thickness	2.0mm
Dimensions (L*W*H)(mm)	1762*1134*30mm
Cable Cross Section Size (mm²)	4
Cable Cross Section Length (mm)	300
No.of Cells and Connections	108(6*18)
Junction Box	IP68,3 Bypass Diodes
Connector	MC4 Compatiple

Engineering Drawings



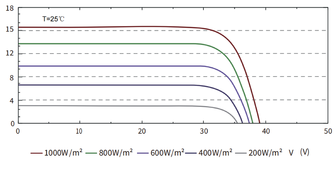
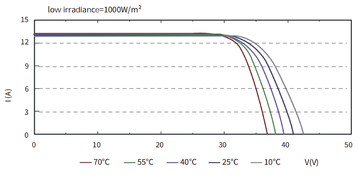
Working Conditions

Maximum System Voltage	DC 1500V
Operating Temperature	-40℃~+85℃
Maximum Series Fuse	25A
Maximum Static Load,Front (e.g.,snow and wind)	5400Pa (112 lb/ft²)
Maximum Static Load,Back (e.g.,wind)	2400Pa (50 lb/ft²)
NOCT	42±2℃
Positive power tolerance	0~+5W
Application Class	Class A

Packing Configuration

Modules Per Pallet	36Pcs
Modules Per 40HQ	936Pcs

Electrical Parameters

Modul	ESP-450-HC.M.B SW7-108 ~ ESP-470-HC.M.B SW7			
Encapsulation	Class/Eva/Cell/Eva/Backsheet			
Maximum Power Pmax (W)	450	455	460	470
Maximum Power Voltage (Vmp/V)	34.29	34.39	34.49	34.69
Maximum Power Current (Imp/A)	13.13	13.24	13.35	13.57
Open Circuit Voltage (Voc/V)	40.83	40.96	41.09	41.35
Short Circuit Current (Isc/A)	13.52	13.57	13.62	13.72
Module Efficiency (%)	22.50	22.80	23.00	23.40
Power Tolerance (W)	0～+5W			
Temperature Coefficient of Isc (αIsc)	+0.047%/℃			
Temperature Coefficient of Voc (βVoc)	-0.22%/℃			
Temperature Coefficient of Pmax (γPmp)	-0.26%/℃			
STC	Irradiance 1000W/㎡, Cell Temperature 25℃, Air Mass 1.5			

I-V Curve