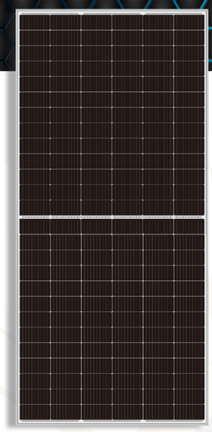


HCM78X9 440~460W
Half-Cell High Efficiency PV Module

21,14 %
Max Module Efficiency

Benchmark MWT PV Module

Half-cell & High eff.
9BB Half-cell technology, Higher output power

Less Shading Effect
Unique circuit design, Minimize shading effect

Lower Temperature
Lower temperature coefficient, Lower hot spot temperature

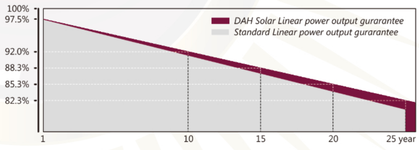
Weather Resistance
Pass Anti PID test. %100 double EL test, Minimizes micro-cracks

T6 Frame
T6 frame, better mechani- cal load, safer and more stable

Quality Guarantee

12 year
Material & technology warranty

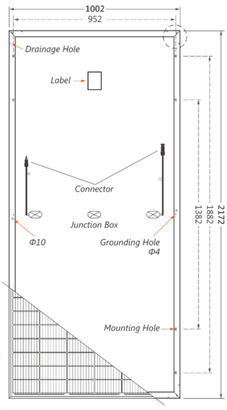
25 year
Linear power output warranty

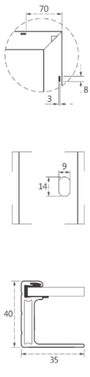


Comprehensive - Products and System Certificates

- IEC 61215 / IEC 61730 / CE / JPEA / FIDE / INMETRO
- ISO 9001: 2015 / Quality management system
- ISO 14001: 2015 / Standards for environmental management system
- OHSAS 18001: 2007 / International standards for occupational health & safety

Design





Mechanical Specification

Cells Type	Mono 158.75×79.375mm
Weight	24.3kg
Dimension (L×W×T)	2172×1002×40mm
Cable	4.0mm2, Portrait: 300mm(+)/400mm(-)
(Including connector)	Landscape: 1300mm(+)/1300mm(-)
No.of Cells	156(6×26)
Packing	27pcs/pallet, 270pcs/20GP, 580pcs/40HQ
Glass	3.2 mm High Transmission, Antireflection Coating
Junction box	IP68, 3 Bypass Diodes
Connector	QC4 or MC4 Compatible

Operating Parameters

Maximum system voltage	1000V/1500V DC
Operating Temperature	-40 ~ +85°C
Maximum series fuse rating	20A
Snow load, frontside	5400Pa
Wind load, backside	2400Pa
Nominal operating cell temperature	45°C±2°C
Nominal operating cell temperature	Class A

Electrical Characteristics at Nominal Module Operating Temperature(NMOT)

Module Type	HCM78X9-440W	HCM78X9-445W	HCM78X9-450W	HCM78X9-455W	HCM78X9-460W
Max-Power (Pmax)	440W	445W	450W	455W	460W
Open-circuit Voltage (Voc)	53.1V	53.3V	53.5V	53.7V	53.9V
Maximum Power Voltage (Vmp)	44.5V	44.7V	44.9V	45.1V	45.3V
Short-circuit Current (Isc)	10.37A	10.42A	10.47A	10.54A	10.61A
Maximum Power Current (Imp)	9.89A	9.96A	10.03A	10.09A	10.16A
Module Efficiency (%)					

Power Tolerance	0~+5W
Temperature Coeffcient of Isc	0.05%/°C
Temperature Coeffcient of Voc	-0.29%/°C
Temperature Coeffcient of Pmax	-0.37%/°C
Standard Test Environment	Irradiance 1000W/m2, Cell temperature 25°C, Spectrum AM1.5

Electrical Characteristics(NOCT)

Module Type	HCM78X9-440W	HCM78X9-445W	HCM78X9-450W	HCM78X9-455W	HCM78X9-460W
Max-Power (Pmax)	332W	336W	339W	342W	346W
Open-circuit Voltage (Voc)	51.4V	51.6V	51.8V	52.0V	52.2V
Maximum Power Voltage (Vmp)	43.1V	4.3V	43.5V	43.7V	43.9V
Short-circuit Current (Isc)	8.21A	8.26A	8.30A	8.34A	8.39A
Maximum Power Current (Imp)	7.71A	7.76A	7.80A	7.83A	7.89A
Standard Test Environment	Irradiance 800W/m2, Cell temperature 20°C, Spectrum AM1.5, Wind speed 1m/s				