

ULTRA BLACK DOUBLE GLASS



Ultra Black Module

Power Range: 435-450W
PREC P-Type Technology
MBB technology

Highlights of Ultra Black

Superior aesthetic and pleasing design performs outstanding profitability
Japanese quality control on ultra black color consistency
Double Glass suitable for Commercial & Residential installation

Warranty Offering

25 years products warranty
30 years performance warranty
Insurance covered by Chubb



Electrical Characteristics at Standard Test Conditions(STC)

Module Type	VSUN450-144BMH	VSUN445-144BMH	VSUN440-144BMH	VSUN435-144BMH
Maximum Power - Pmax (W)	450	445	440	435
Open Circuit Voltage - Voc (V)	49.4	49.2	49.0	48.8
Short Circuit Current - Isc (A)	11.52	11.44	11.36	11.28
Maximum Power Voltage - Vmpp (V)	41.2	41	40.8	40.6
Maximum Power Current - Impp (A)	10.93	10.86	10.79	10.72
Module Efficiency	20.37%	20.14%	19.92%	19.69%

Standard Test Conditions (STC): irradiance 1,000 W/m²; AM 1.5; module temperature 25°C. Pmax Sorting : 0~5W. Measuring Tolerance: ±3%.

Remark: Electrical data do not refer to a single module and they are not part of the offer. They only serve for comparison among different module types.

Electrical Characteristics with different rear side power gain(reference to 445 front)

Pmax (W)	Voc (V)	Isc (A)	Vmpp (V)	Impp (A)	Pmax gain
468	49.2	12.01	41	11.40	5%
490	49.2	12.58	41	11.95	10%
533	49.30	13.73	40.90	13.03	20%
555	49.30	14.30	40.90	13.58	25%

Material Characteristics

Dimensions	2108×1048×35mm (L×W×H)
Weight	24.4kg
Frame	Black anodized aluminum profile
Front Glass	White toughened safety glass, 3.2 mm
Cell Encapsulation	EVA (Ethylene-Vinyl-Acetate) or POE
Back Sheet	Transparent black - mesh backsheet
Cells	12×12 pieces bifacial monocrystalline solar cells series strings
Junction Box	IP68, 3 diodes
Cable&Connector	Potrait: 500 mm (cable length can be customized) , 1×4 mm ² , compatible with MC4

Temperature Characteristics

NOCT	45°C(±2°C)
Voltage Temperature Coefficient	-0.27%/°C
Current Temperature Coefficient	+0.048%/°C
Power Temperature Coefficient	-0.32%/°C

Maximum Ratings

Maximum System Voltage [V]	1000/1500
Series Fuse Rating [A]	20
Bifaciality	70%±10%

Packaging

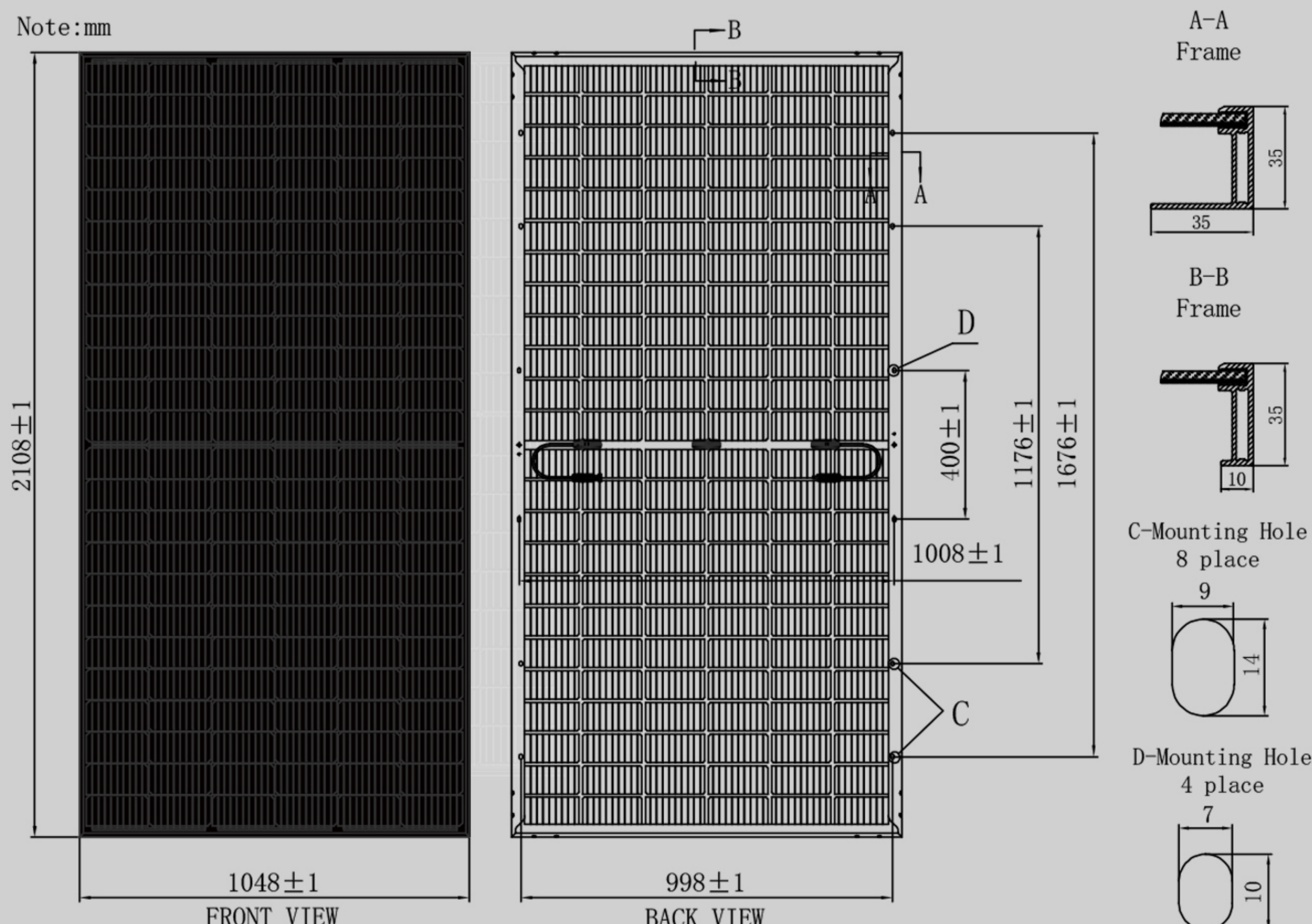
Dimensions(L×W×H)	2140×1125×1181mm
Container 20'	155
Container 40'	341
Container 40'HC	682

System Design

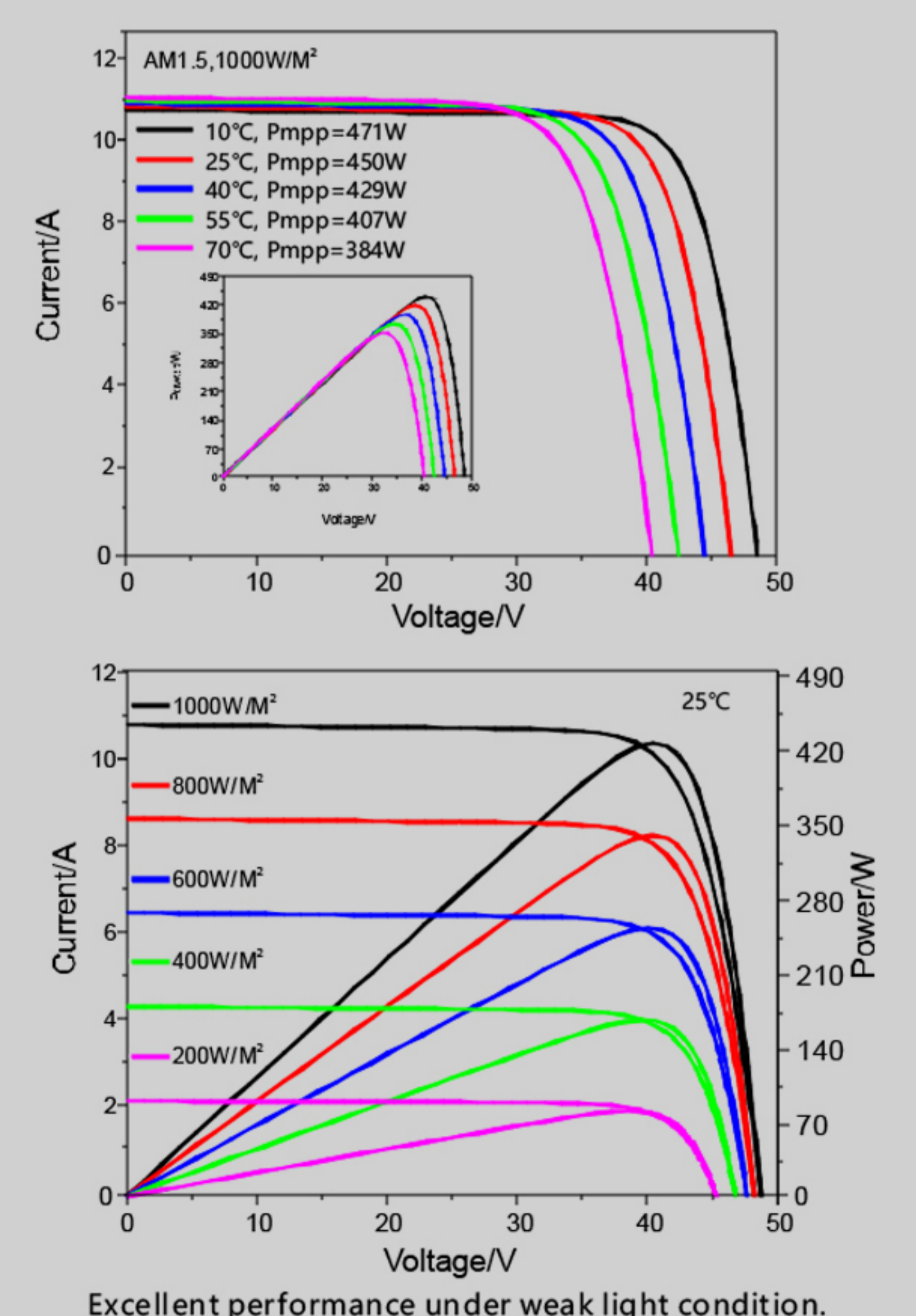
Temperature Range	-40 °C to + 85 °C
Withstanding Hail	Maximum diameter of 25 mm with impact speed of 23 m/s
Maximum Surface Load	5,400 Pa
Application class	class A

Dimensions

Note: mm



IV-Curves



Excellent performance under weak light condition.