

445-450-455-460W



High power

- Up to 460W front power and 20.8% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings.
- Lower resistance of half-cut MBB ensure high power.



High energy generation

- Up to 25% additional power gain from back side depending on the albedo ;
- Excellent IAM and low light performance validated by 3rd party with cell process and module material optimization
- Better anti-shading performance and lower operating temperature



Easy to install

- Frame design makes module compatible with all racking and installation methods
- Easy to handle and install as normal framed module during transportation



High Reliability

- Ensured PID resistance through cell process and module material control
- Resistant to salt, acid and ammonia
- Proven to be reliable in high temperature and humidity areas
- Minimizes micro-crack and snail trails
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative load



Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716

ISO9001:Quality Management System

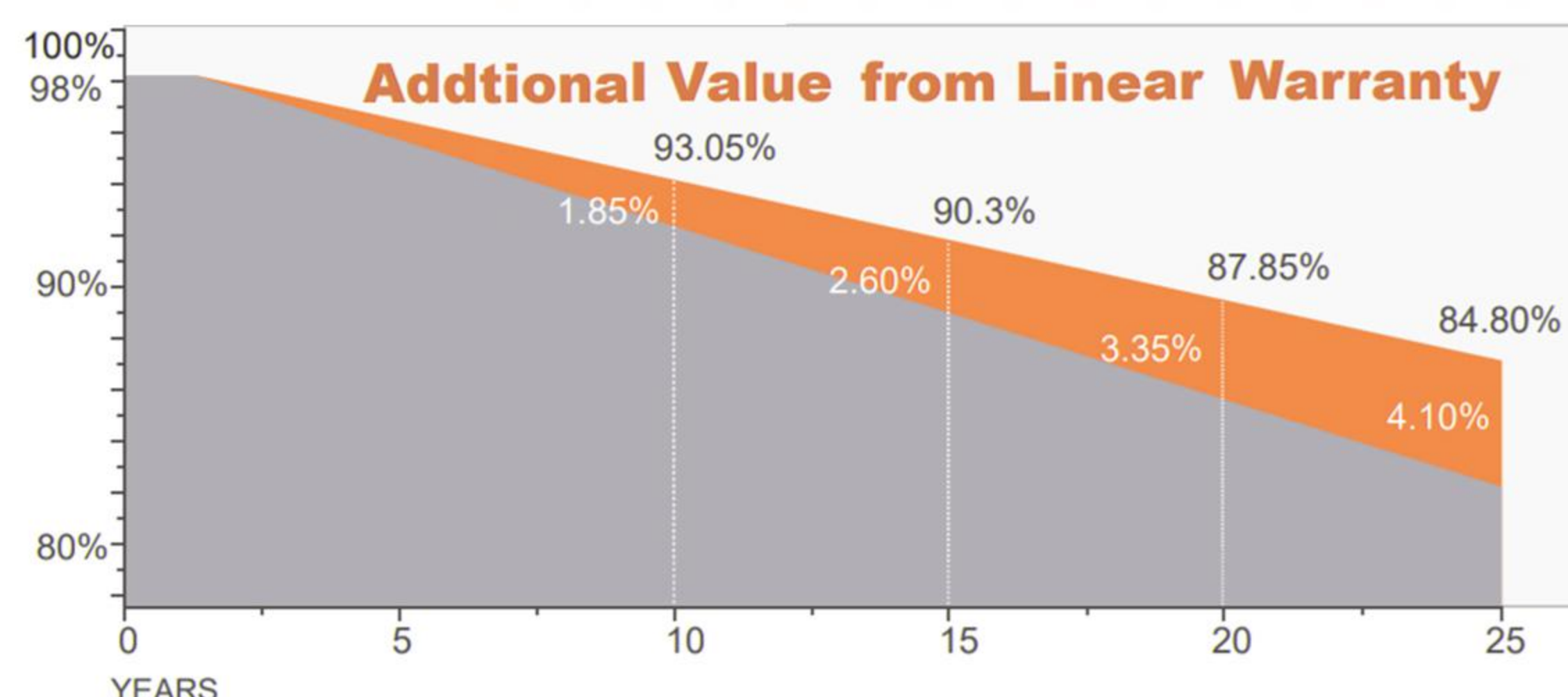
ISO14001:Environmental Management System

ISO14064:Greenhouse Gases Emissions Verification

ISO45001:Occupational Health and Safety Management System



Warranty

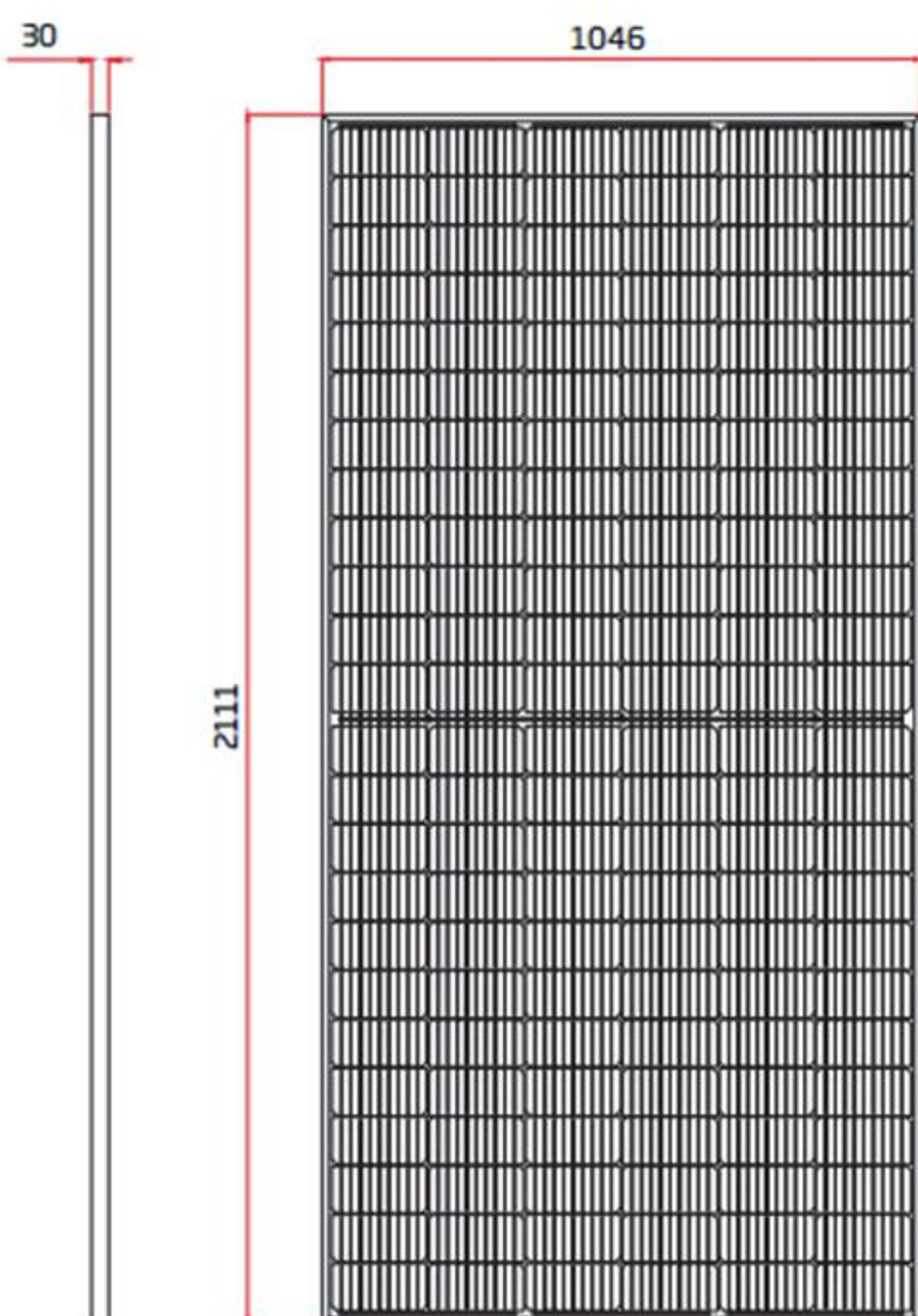


Guarantee on product material and workmanship

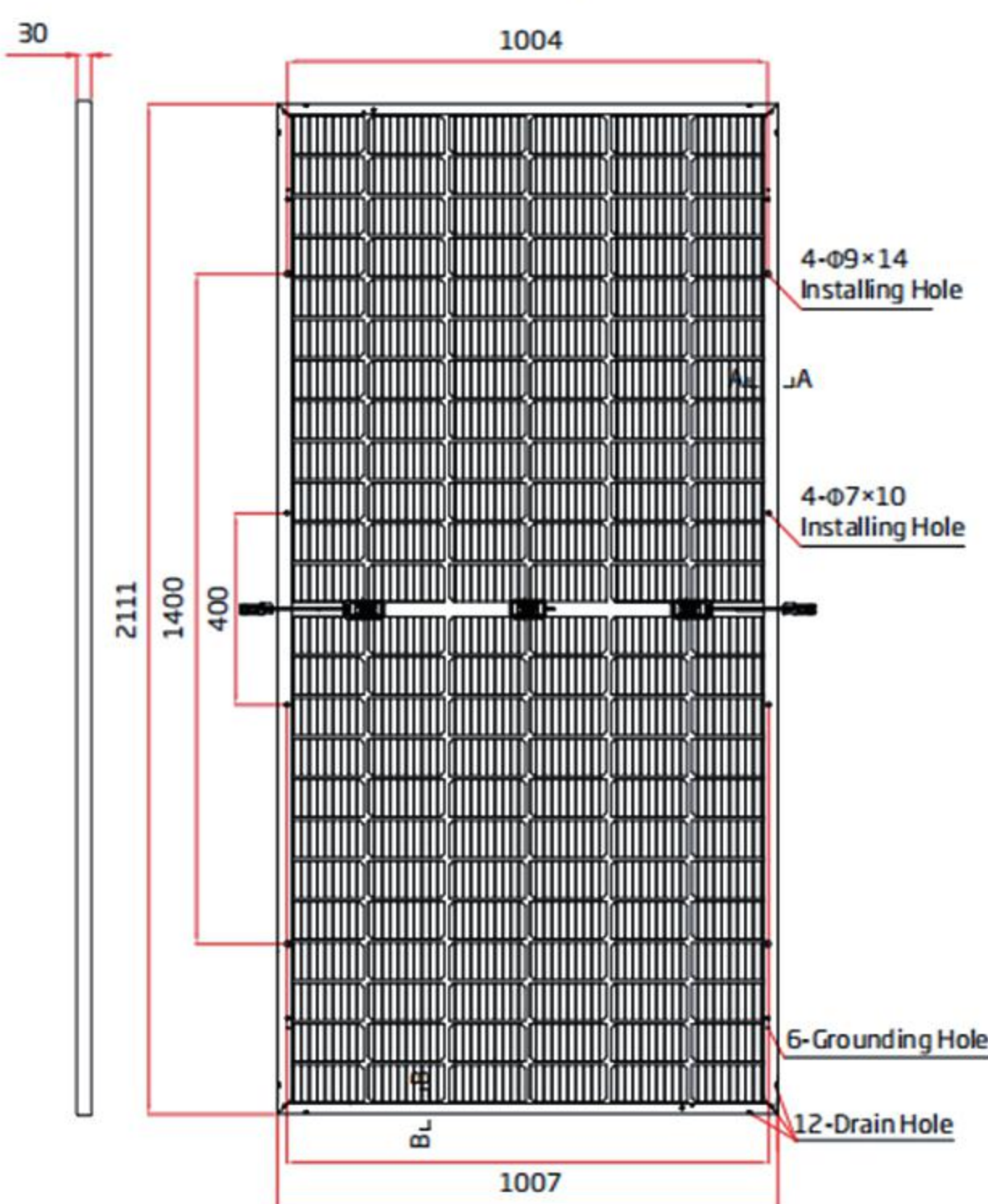


linear power output warranty

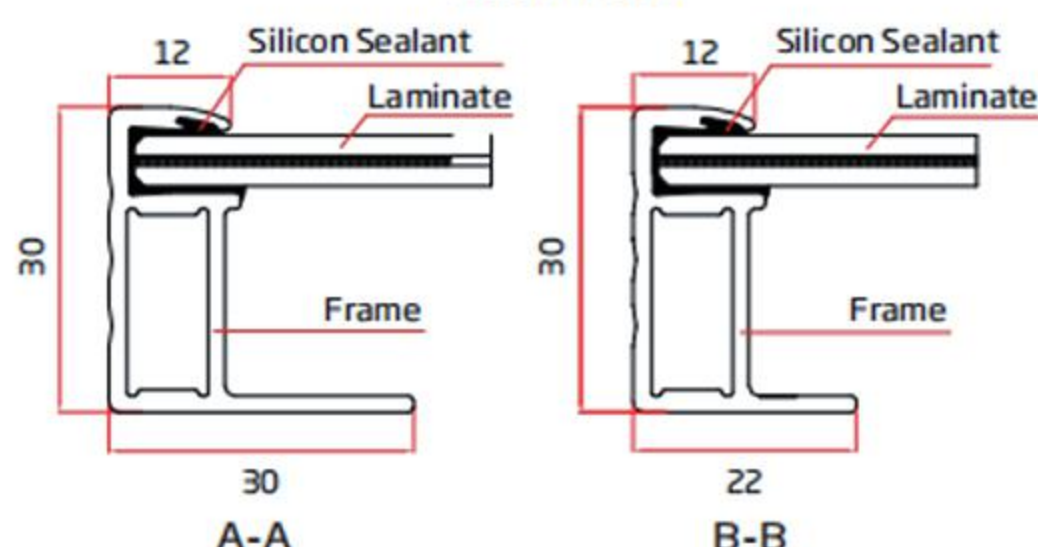
DIMENSIONS OF PV MODULE(mm)



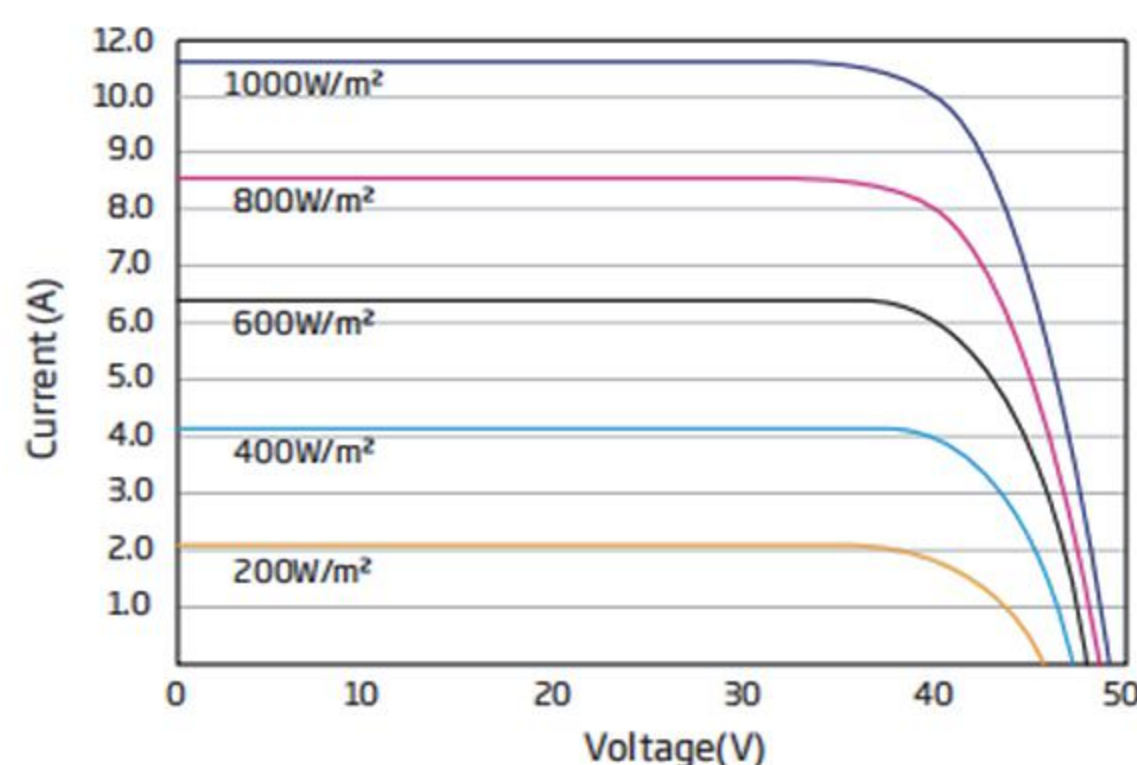
Front View



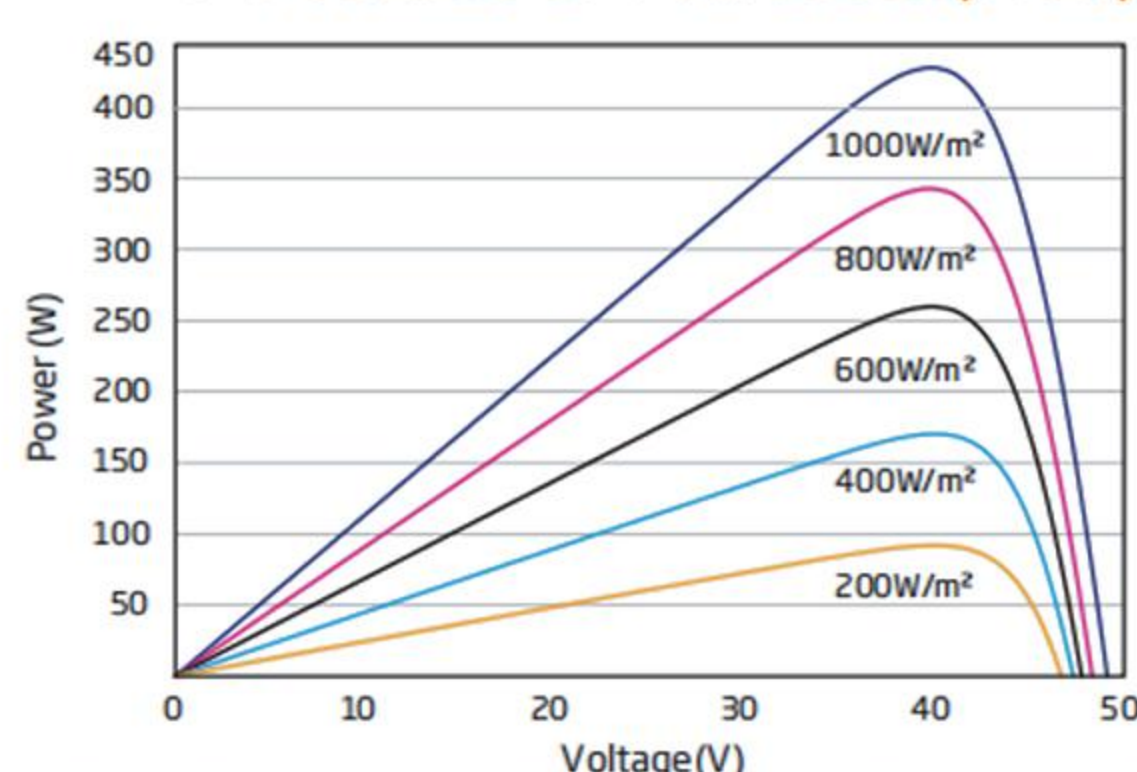
Back View



I-V CURVES OF PV MODULE(440W)



P-V CURVES OF PV MODULE(440W)



ELECTRICAL DATA(STC)

Part Number	OP445M72-P2-BF	OP450M72-P2-BF	OP455M72-P2-BF	OP460M72-P2-BF
Peak Power Watts- $P_{MAX}(W_p)^*$	445	450	455	460
Power Output Tolerance- $P_{MAX}(W)$	0 ~ +5			
Maximum Power Voltage- $V_{MPP}(V)$	40.5	40.8	41.1	41.4
Maximum Power Current- $I_{MPP}(A)$	10.62	10.67	10.71	10.75
Open Circuit Voltage- $V_{oc}(V)$	48.7	48.9	49.1	49.3
Short Circuit Current- $I_{sc}(A)$	11.20	11.24	11.28	11.32
Module Efficiency (%)	20.1	20.3	20.6	20.8

STC:Irradiance 1000w/m², Cell Temperature 25°C, Air Mass AM1.5

*Measuring tolerance:±3%.

ELECTRICAL DATA(NOCT)

Maximum Power- $P_{MAX}(W_p)$	324	328	331	335
Maximum Power Voltage- $V_{MPP}(V)$	37.9	38.1	38.4	38.6
Maximum Power Current- $I_{MPP}(A)$	8.55	8.60	8.64	8.67
Open Circuit Voltage- $V_{oc}(V)$	45.8	46.0	46.2	46.4
Short Circuit Current- $I_{sc}(A)$	9.02	9.06	9.09	9.12

NMOT:Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144 cells(6 x 24)
Module Dimensions	2111 x 1046 x 30mm (83.11 x 41.18 x 1.18 inches)
Weight	28.6kg(63.1lb)
Glass	2.0mm(0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE/EVA
Backsheet	2.0mm(0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	30 mm(1.18 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²), Portrait:N 280mm/P 280mm(11.02/11.02inches) Landscape:1900 mm/1900 mm (74.80/74.80 inches)
Connector	MC4 EV02 / TS4*

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NMOT(Nominal Module Operating Temperature)	43°C(±2°C)
Temperature Coefficient of P_{MAX}	-0.34%/°C
Temperature Coefficient of V_{oc}	-0.25%/°C
Temperature Coefficient of I_{sc}	-0.04%/°C

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

20 year Product Workmanship Warranty

25 year Power Warranty

2% first year degradation

0.45% Annual Power Attenuation

(Please refer to product warranty for details)

MAXIMUM RATINGS

Operational Temperature	-40~±85°C
Maximum System Voltage	1500V DC(IEC)
Max Series Fuse Rating	20A

PACKAGING CONFIGURATION

Modules per box:36 pieces

Modules per 40' container:792 pieces