

# MOTECH

POWER UP NOW



## HALF CUT 144 CELL

MONOCRYSTALLINE MODULE

## 435-460W

POWER OUTPUT RANGE

## 21.1%

MAXIMUM EFFICIENCY

## 0~+5W

BINNING TOLERANCE

## 9BB

MULTI BUSBAR

PERC CELL TECHNOLOGY

PRODUCTS

Berlin Series

POWER RANGE

435-460W



### High power Mono Perc

- Up to 460W front power and 21.1% module efficiency with half cut tech
- MBB (Multi Busbar) technology bringing more BOS savings
- Lower resistance and good reflection effect of MBB ensure high power



### 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
- Certified to fire class A
- Minimizes micro-crack and snail trails
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative



### High energy generation

- Up to 25% additional power gain from back side depending on the design
- Excellent current and low light performance validated by 3rd party
- Perfect cell process and module material optimization
- Lower temp coefficient (-0.35%) and NMOT bring more energy
- 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

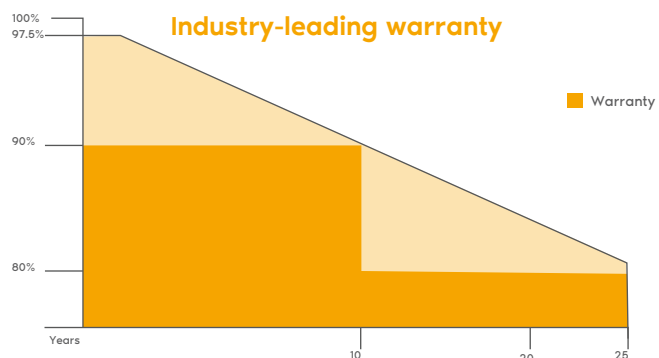
### SYSTEM CERTIFICATES

IEC61215/IEC61730/IEC61701/IEC62716

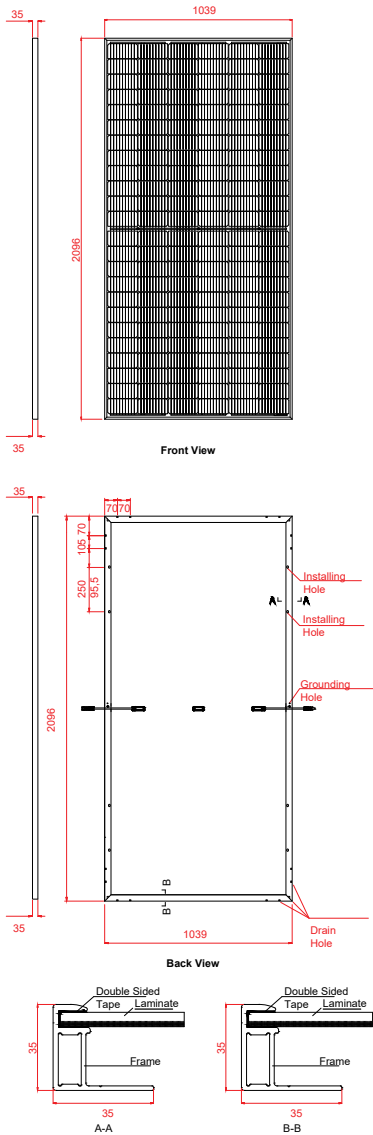
ISO 9001: Quality Management System

ISO 14001: Environmental Management

ISO45001: Occupational Health and Safety



DIMENSIONS OF PV MODULE(mm)



ELECTRICAL DATA (STC)

Peak Power Watts-PMAX (Wp)*	435	440	445	450	455	460
Power Tolerance Range-PMAX (W)	0 - +5					
Maximum Power Voltage-VMPP (V)	40,7	40,7	40,8	41,0	41,0	41,2
Maximum Power Current-IMPP (A)	10,69	10,82	10,90	10,98	11,10	11,17
Open Circuit Voltage-VOC (V)	49,0	49,2	49,4	49,6	49,6	49,8
Short Circuit Current-ISC (A)	11,35	11,39	11,46	11,53	11,58	11,74
Module Efficiency $\eta_m$ (%)	19,7	20,2	20,4	20,60	20,80	21,10

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\*Measuring tolerance: ±3%.

ELECTRICAL DATA (NMOT)

Maximum Power-PMAX (Wp)	321	326	331	336	341	346
Maximum Power Voltage-VMPP (V)	38,2	38,4	38,5	38,7	38,9	39,1
Maximum Power Current-IMPP (A)	8,40	8,48	8,59	8,68	8,76	8,85
Open Circuit Voltage-VOC (V)	45,9	46,1	46,3	46,5	46,7	46,9
Short Circuit Current-ISC (A)	8,95	9,01	12,79	9,11	9,15	9,21

NMOT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144 cells (6 × 24)
Module Dimensions	2096×1039×35 mm (±1%)
Weight	24,KG
Front Glass	3,2 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE/EVA
Back Glass	KPF Type
Frame	35mm Anodized Aluminium Alloy
J-Box	IP 68 rated and 30cm or (optional 120cm cable)
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup>
Connector	MC4 EVO2 / TS4

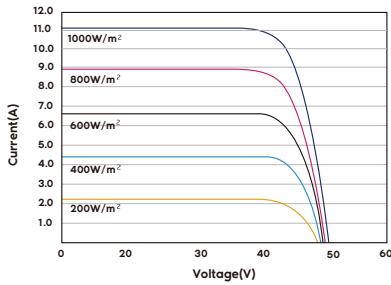
TEMPERATURE RATINGS

NMOT(Nominal Module Operating Temperature)	45°C (±2°C)
Temperature Coefficient of PMAX	-0.360 °C%
Temperature Coefficient of VOC	-0.304 °C%
Temperature Coefficient of ISC	+0.050%/°C

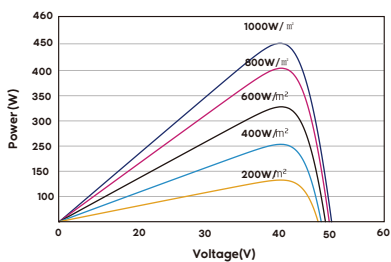
MAXIMUM RATINGS

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

I-V CURVES OF PV MODULE(450W)



P-V CURVES OF PV MODULE(450W)



WARRANTY

10 year Product Workmanship Warranty
25 year Power Warranty
2% first year degradation
0.45% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

Modules per box	32 pcs
Modules per 40' Container	832 pcs

