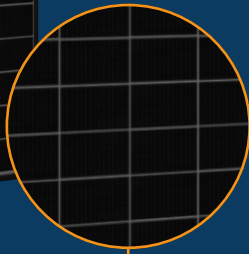


BIFACIAL 640 - 650 Watt Total Black



Key features

- ✔ Passed IEC 5400 Pa mechanical loading test.
- ✔ The modules can withstand high wind-pressure, snow loads and extreme temperatures.
- ✔ Our high performing modules have an industry low tolerance of 0±5%.
- ✔ Our solar cells offer high conversion efficiency to ensure the highest quality.
- ✔ Highest quality with our cells.



Highest quality with our cells.
16MBB Half Cut Technology

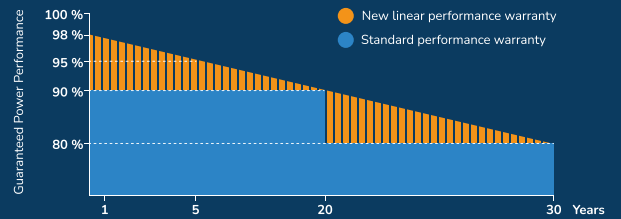


Quality and safety

- ✔ Industry leading power output warranty
20 years / 90%
30 years / 80%
- ✔ 30-year warranty on materials & workmanship
- ✔ Fire test: Class 1



Premium performance warranty



Applications



On-grid residential roof-tops



On-grid commercial-industrial roof-tops

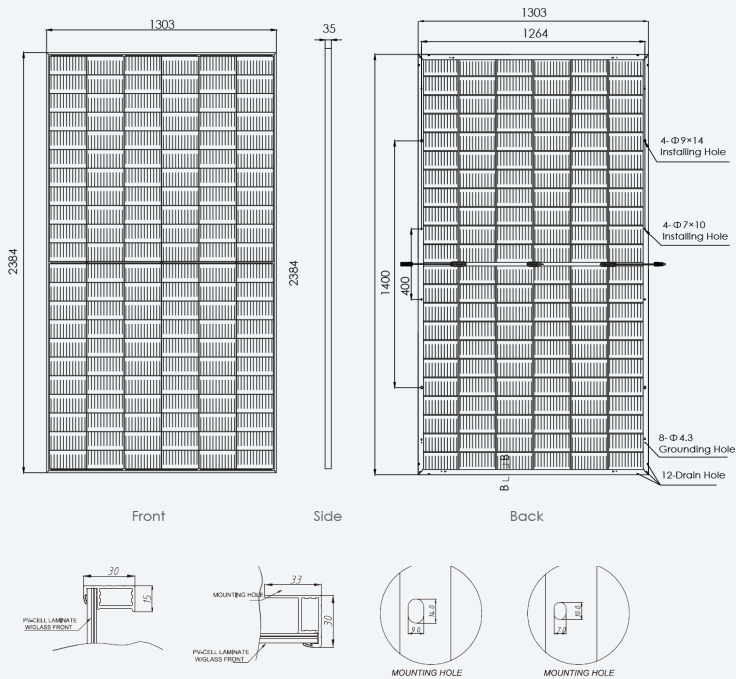


Solar power plants



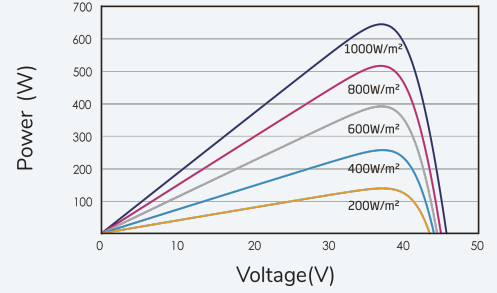
Off-grid systems

Engineering drawings

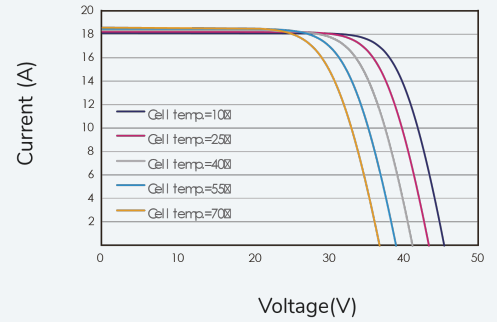


Electrical performance & temperature dependence

P-V CURVES OF PV MODULE(645W)



I-V CURVES OF PV MODULE(645 W)



Electrical characteristics

Module Type	SNG640M-132	SNG645M-132	SNG650M-132
TESTING CONDITION⁽¹⁾	STC⁽²⁾/NMOT⁽³⁾	STC⁽²⁾/NMOT⁽³⁾	STC⁽²⁾/NMOT⁽³⁾
Maximum Power at STC (Pmax)	640Wp/486Wp	645Wp/490Wp	650Wp/494Wp
Maximum Power Voltage (Vmp)	37.30V/33.71V	37.50V/33.89V	37.70V/34.07V
Maximum Power Current (Imp)	17.19A/14.42A	17.23A/14.46A	17.27A/14.5A
Open-circuit Voltage (Voc)	45.10V/40.54V	45.30V/40.82V	45.50V/41.10V
Short-circuit Current (Isc)	18.26A/15.42A	18.31A/15.46A	18.35A/15.50A
Module Efficiency (%)	20.6%	20.76%	20.92%
Operating Temperature OC	-40°C± ~ +85°C		
Maximum system voltage	1500V		
Maximum series fuse rating	35A		
Power tolerance	0±5%		
Temperature coefficients of Pmax	-0.35%/°C		
Temperature coefficients of Voc	-0.28%/°C		
Temperature coefficients of Isc	0.048%/°C		
Nominal operating cell temperature (NOCT)	45±2°C		

Mechanical data

Cell type	Top Con Technology 210x210mm
No. of cells	132 (2x66)
Dimensions	2384x1303x35mm
Weight	33.5 kg
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Anti-Reflection Coating
Frame	Anodized Aluminium Alloy Total Black
Junction Box	IP68 Rated
Output Cables	TUV: 1x4.0mm ² / UL 12AWG Length: 400/1400mm or customized length
Connectors	Copper, Silver Plated, MC 4

Packaging configuration

Dimensions	35mm
No. of pieces per pallet	31
Total number of pallets	17
Module quantity per 40' container	527

(1) Measurement Tolerances: Pmax (+/- 5%), Isc & Voc (+/- 5%) - Power Classification 0/+5%
 (2) STC (Standard Testing Condition): Irradiance 1000w/m², Cell Temperature 25°C, AM 1.5
 (3) NMOT (Nominal Operating Module Temperature): Irradiance 800m², NMOT: Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

Bifacial output-rearside power gain

5%	672Wp	677Wp	682Wp
15%	736Wp	741Wp	747Wp
25%	672Wp	806Wp	812Wp

STC/NMOT



Irradiance 1000W/m² / 800W/m²



Module Temperature 25°C



AM = 1.5