KOSOL ENERGIE

Saturn Bifacial PV Module Series

Monocrystalline Perc Bifacial Solar PV Module Framed 144 Half-Cell

State-of-the-Art European Manufacturing technology

144-Cell
MONOCRYSTALLINE MODULE

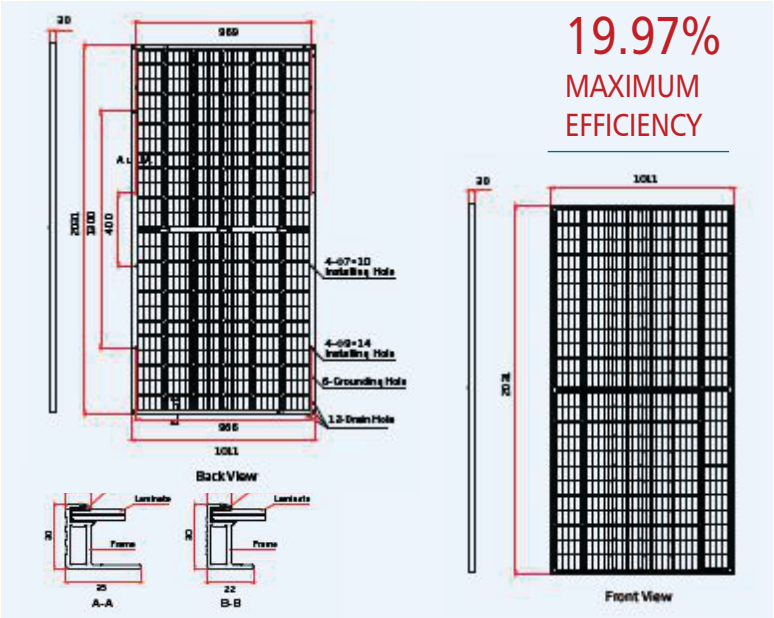
510 Wp
MAXIMUM POWER OUTPUT

19.97%
MAXIMUM EFFICIENCY

+Wp
TOLERANCE

CERTIFICATIONS

IEC · UL · c UL us LISTED · P.I.D. · CE · CEC · Additional Environmental tests Salt Mist Corrosion IEC 61701 · MNRE Approved · ISO 9001 · ISO 14001 · OHSAS 18001



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Bifacial Module Function

- PV module generates energy when light falls on its surface.
- For a bifacial module, solar power generate through front as well as back glass where it absorbed sun radiations.
- Some of the radiations which does not observed by front surface is being reflected (albedo) and adsorbed from the back surface of module which gain the additional power, with respectively different surface.
- Once both light falls on the module, its efficiency and bifacial come in to play.
- The rear side of module does not always generate the same power exactly equals front side so, the ratio between rear side and front side power generation is known as module bifaciality.
- Bifaciality further varies with the kind of cell utilized in a solar module.

ELECTRICAL DATA (STC)

Pmp/W*	380	385	390	395	400*	405	410
Vmpp/V	40.3	40.4	40.5	40.6	40.7	40.8	40.9
Impp/A	9.43	9.53	9.63	9.73	9.83	9.93	10.03
Voc/V	49.2	49.4	49.6	49.7	49.9	50.1	50.3
Isc/A	9.99	10.09	10.19	10.29	10.39	10.49	10.59
Eff. %	18.5	18.7	19.0	19.2	19.5	19.7	19.97

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5
*Measurement tolerance: ±3%

ELECTRICAL CHARACTERISTICS 400* Wp front

Pmax(Wp)	420	440	460	480	500
Vmpp/V	40.7	40.7	40.7	40.7	40.7
Impp/A	10.32	10.81	11.3	11.8	12.29
Voc/V	49.9	50.0	50.0	50.0	50.1
Isc/A	10.91	11.43	11.95	12.47	12.99
Pmax gain	5%	10%	15%	20%	25%

Electrical characteristics with different rear side power gains (referenced specific to 400 Wp front)**
Bifaciality Factor: 70±5%.
** Back-side power gain varies depending upon the specific project albedo

MECHANICAL DATA

Solar Cells	Monofacial-PERC Crystalline
Cell Orientation	144 cells (6 x 24)/ 72 cell (6 x 12)
Module Dimensions	2031 × 1011× 30 mm (79.96×39.80 × 1.18 inches)
Weight	26.8 kg (Glass to Glass)/ 23.0 kg (Glass to Backsheet)
Front Glass	2.0 mm (Glass to Glass)/ 3.2mm (Glass to Backsheet) ARC low iron, High transmission
Encapsulant Material	EVA/POE
Back Glass/ Back Sheet	2.0 mm (Glass to Glass) / transparent PET Backsheet (Glass to Backsheet)
Frame	30 mm (1.18 inches) Anodized Aluminium Alloy
J-Box	Split / Standard Photovoltaic Technology IP67
Cables	4.0 mm2 Landscape: 1900/1900 mm (74.80/74.80 inches)

TEMPERATURE RATING

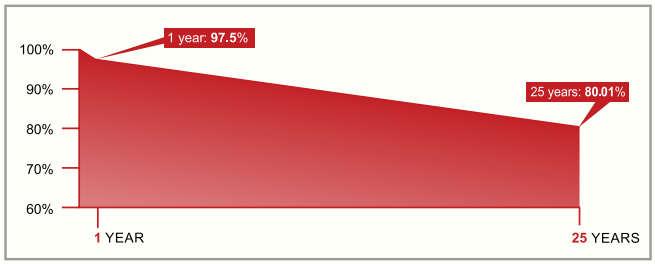
NMOT (Nominal Module Operating Temperature)	41 °C (± 3 °C)
Temperature Co-efficient of Pmax	-0.35%/ °C
Temperature Co-efficient of Voc	-0.25%/ °C
Temperature Co-efficient of Isc	0.04%/ °C

MAXIMUM RATING

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

$$\text{Bifaciality} = \frac{\text{Amount of power generated by the rear side}}{\text{Amount of power generated by the front side}}$$

PERFORMANCE WARRANTY



IV CURVES OF PV MODULE (400W)