

XMA SOLAR PANEL

XPV-450BI-30M

Monocrystalline PV Bifacial Solar Panel

Bifacial Monocrystal Solar Panel

450W / 96 cells / 30V

High efficiency monocrystalline solar cells.

N-Type With TOPCon technology

High performance with low light conditions.

For severe environmental conditions.

Manufactured with high quality components.

Doble tempered-glass Bifacial design



Monocrystall + TOPCon - Max. Power 450W (Top Face):
High efficiency Monocrystal cells



Voltage at Maximum Power



96 Cells in Series: 2x(6x8) 182*105mm type



Outstandings Features



5 Layers Lamination:

- (1) Low-Iron Tempered Glass + (2) EVA +
- (3) PV Cells + (4) EVA +
- (5) Low-Iron Tempered Glass



Bifacial Panel, doble 2mm Low Iron Tempered Glass:

- Max. Solar production, Minimal sun light reflection
- Max. mechanical and environmental strength



Anodized Aluminum Frame:

- Corrosion-resistance and structural strength



Connection:

- 4mm2 Cables with MC4 (+) (-) connectors



High temperature resistant:

- Operation Range: -40 to +85°C



Guaranteed Output Power: 88%

- During first 30 years



Guaranteed Output Power: 94%

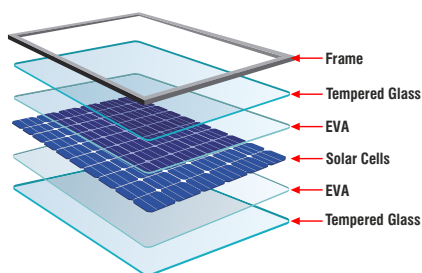
- During first 10 years

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Main Features: Technology

Bifacial Solar Panel



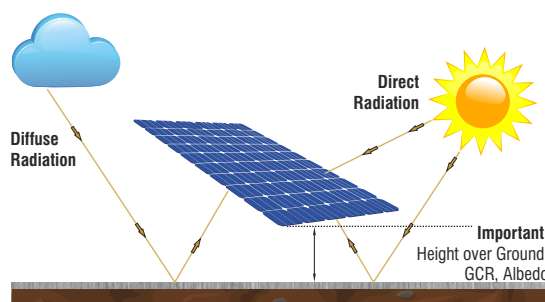
Bifacial solar panels can capture sunlight on both sides, unlike mono-facial panels, which have a back sheet covering the rear side. This allows them to generate electricity from solar radiation received on both the front and rear surfaces. With sunlight on the front side alone, this model can produce up to 430W (STC*), while the rear side can contribute up to 30% additional power.

Our bifacial panels are protected on both sides by low-reflection tempered glass, which enhances photovoltaic conversion efficiency and significantly improves mechanical strength and rigidity. The dual-glass construction also provides superior resistance to humidity and UV radiation, preventing degradation over time and ensuring long-lasting durability without yellowing or aging.

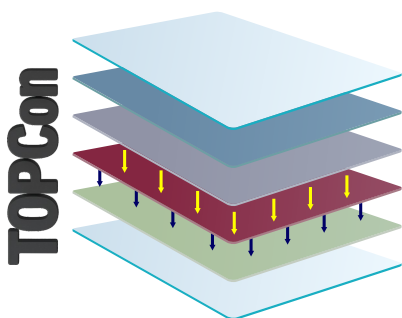
Our solar panels convert sunlight into electricity on both the front and rear sides, using both direct and diffuse radiation. This allows for highly efficient dual-side energy generation, making them ideal for optimized solar cogeneration.

These favorable conditions can be further enhanced by installation parameters such as the GCR (Ground Coverage Ratio) and panel height above ground, among other factors that we will detail later on.

In addition, N-Type cell structure and advanced TOPCon technology provide excellent resistance to Potential Induced Degradation (PID), ensuring a long service life and a high level of reliability in energy production.



TOPCon Technology. Cutting-Edge Photovoltaic Technology



TOPCon technology features an innovative rear-side cell architecture made up of ultra-thin layers that work together to boost panel performance and efficiency.

One of these layers acts as a passive shield, minimizing energy loss, while another functions as an electron filter, allowing electricity to flow more easily and with less resistance.

Although TOPCon was originally developed to enhance solar cell efficiency by replacing the traditional rear metal contact with a passivated polysilicon layer to reduce electrical loss, leaving the rear side exposed to light opened the door to bifacial cell architecture—enabling the design of our high-efficiency bifacial panels.

TOPCon significantly increases energy output, especially under real-world conditions, by reducing internal losses that limit conventional technologies. It also improves thermal behavior, maintaining higher efficiency even in hot climates or under low solar irradiance.

TOPCon transforms the panel's rear side into an active, intelligent surface, capable of harnessing light from both directions—maximizing solar capture and making bifacial panels a high-performance solution.

In addition, our cells show lower susceptibility to Light Induced Degradation (LID) and Light and Elevated Temperature Induced Degradation (LETID) compared to conventional technologies like PERC. Thanks to this enhanced durability, our solar panels feature an annual degradation rate of just 0.4%, retaining up to 88% of their original power output after 30 years.

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Main Features: Performance

Higher Operational Yield Compared to Monofacial Panels (Depending on Installation Conditions)

Bifacial Gain	Max. Panel Generation (W)	Reflection Index	Structure Type & Mounting	Details	Additional Conditions
≈5%	473	0.2–0.3	1-Axis Tracker	Moderate GCR height ≈ 0.8–1.0m	Partial rear shading, natural ground
≈10%	495	≈ 0.25	Elevated Fixed	GCR ≈ 0.3m height ≈ 1.0–1.2m	Good spacing (Low GCR), clear terrain
≈15%	518	≈ 0.35	Tracker or Fixed	Clear ground (gravel, sand) Height ≈ 1.2–1.5m	Clear gravel or reflective surface
≈20%	540	≈ 0.50	Elevated Fixed or 1-Axis Tracker	Height ≈ 1.5–1.8m	Treated ground (light cement, reflective membrane)
25-30%	563 - 585	≈ 0.50	Fixed or Optimized Tracker	Requires good optimization and cleaning Height ≈ 1.5–2.0m	Requires good cleaning, precise design (Low GCR)
>30%	> 585	≈ 0.50	2-Axis Tracker or Vertical Structures	Cold latitudes / top-tier configurations. Variable height	Extreme conditions: snow, mirrors, high latitude

Notes:

- 1. Approximate values depending on irradiation, surface type and condition, structure, mounting configuration, and other variables.
 - 2. The reflectivity index (Albedo) must be maintained through regular cleaning, especially on artificially treated surfaces (painted areas, membranes, white concrete).
 - 3. GCR: Ground Coverage Ratio – Proportion of land covered by solar modules.
- TOPCon technology in our bifacial panels enables more efficient electricity generation than traditional PERC technology, representing a clear advancement over most monofacial panels.
- In addition, the energy generated on the panel’s rear side is added to the front-side output, significantly increasing total power generation—and therefore maximizing the benefits of our bifacial modules.
- When combined with factors such as surface albedo, mounting height, GCR (Ground Coverage Ratio), or the use of single- or dual-axis trackers, the overall energy yield can improve even further—making our bifacial panels the best-performing and most advantageous solution on the market.

Standards and Directives

- IEC 61215
- IEC 61730
- ISO 9001: 2023 - Quality Management Systems
- ISO 14001: 2023 - Environmental Management Systems
- ISO 45001: 2023 - Occupational Health and Safety Management Systems

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Electric Specifications (STC*)

Peak power / Potencia máxima (Pmax)	450W
Cell efficiency / Eficiencia	22.70%
Max. power voltage / Voltaje a potencia max. (Vmp)	30.93V
Max. power current / Corriente a potencia max.	14.55A
Open circuit voltage / Voltaje en abierto (Voc)	35.01V
Short circuit current / Corriente de corto circuito (Isc)	15.47A
Power tolerance / Tolerancia de potencia	0 to +3%
Max. system voltage / Voltaje max. del sistema	1.000V
Max. Over Current / Sobre-Corriente Máxima	25A
Application Class	Class A

(*) Irradiance: 1000W/m² / AM1.5G, Module T: 25°C

Temperature Characteristics

Nominal Operating Temperature / Temp. de operación (NMOT)	42 +/- 2°C
Operating range / Rango de operación	-40 to 85°C
Isc coefficient / Coeficiente (a _{Isc})	+0.045%/°C
Voc coefficient / Coeficiente Temp (b _{Voc})	-0.250%/°C
Pmax coefficient / Coeficiente (g _{Pmax})	-0.290%/°C

Connections

Junction Box / Caja de conexiones	IP68, 3 bypass diodes
Connectors / Conectores	(+) & (-) MC4 compatible
Cables	4mm ² Solar Cable

Physical Specifications

Dimensions / Tamaño	1762*1134*30mm (± 2mm)
Weight / Peso	24.5Kg
Solar Cells Arrangement / Cantidad de celdas	96 : 2*(6*8)
Panel Construcción / Estructura del Panel	5 layers
Tempered Glass / Cristal Templado (EN 1096-4:2004)	Doble high transmission, low-iron Solar Glass / Doble Cristal Solar anti-reflectivo bajo en hierro (2x 2mm)
High Mechanical Strength / Alta Resistencia Mecánica	Against Wind (2.400 Pascal), Snow (5.400 Pascal) / Contra Viento (2.400 Pascales), Nieve (5.400 Pascales)
EVA: Ethylene Vinyl Acetate (First - UL)	High light transmission + High UV Block / De alta transmisión de luz + alto bloqueo UV (0.45mm)
Solar Cells / Celdas solares (Taiwan # 1 Manufacturer)	"A" grade manufactured / Grado "A"
Junction Box / Caja de Conexión	IP68
Frame / Marco	High corrosion resistance anodized aluminium / Aluminio anodizado resistente a corrosión

Packing

Carton: 1pc
Pallet: 36pcs
HQ 40': 26 pallets = 936pcs

Cross-sections

