Products Brochure

A leading global provider of smart PV energy solutions

Yingli Solar Official Website

Yingli Energy Development Co., Ltd.

Add. : 2599 North Xiangyang Avenue, Baoding, China

P.C. :071051

Tel.: +86 312 8922 208 (International Sales)

+86 312 8631 950 (Chinese Sales)

E-mail: commerce@yingli.com (International Sales)

guoneixiaoshou@yingli.com (Chinese Sales)

Web.: www.yinglisolar.com

Yingli Energy Development Co., Ltd.

CONTENT

Company Profile

The world's leading provider of smart energy solutions for photovoltaics

Yingli Energy Development Co., Ltd., known as "Yingli Solar", which is one of the earliest Chinese companies that involved in the photovoltaic industry, has now developed into a provider of smart photovoltaic energy solutions which focuses on R&D, smart manufacturing, and development and operations of power plants. Yingli Solar has always focused on high-efficiency photovoltaic modules and power plants business. Since entering the photovoltaic industry in 1998, Yingli Solar's photovoltaic products have been providing continuous green electricity to users in over 150 countries and regions around the world, including Germany, Spain, Italy, Greece, France, South Korea, Japan, Brazil, Australia, South Africa, Mexico, etc.

Quality Strength

High-Level Technology Innovation Platform

Relying on Chinese national innovation platforms, academician workstation and post-doctoral workstation, Yingli Solar has made continuous efforts in independent innovation to improve its core competitiveness.

Yingli Solar's PV Technology Laboratory is qualified by the China National Accreditation Service for Conformity Assessment (CNAS). It can tests more than 200 items related to the entire industry chain, including silicon wafers, cells, modules and power plants. while, it can meets the requirements of many international standards such as IEC61215 and IEC61730.

- National Technical Standards Innovation Base of Photovoltaic
- State Key Laboratory of Photovoltaic Materials and Cells
- National Energy Multi-mode Industrial Energy Storage Technology Research and Development Center
- National Intellectual Property Advantage Enterprises

Authoritative Quality Certification

- Best Performance Award
- Best Performance Award
- Rhine Star Module Power Generation Award
- Bloomberg New Energy Finance Tier 1 Module Manufacturer
- No.1 in brand awareness in the photovoltaic industry
- No.1 in global module brand awareness
- RETC Best Performance Award

Smart Manufacturing

Focus on High-Efficiency Modules

Yingli Solar is headquartered in Baoding City, Hebei Province, China, with four smart manufacturing bases in Tianjin City, Hengshui City, Li County and Mancheng District in Baoding City. Yingli Solar adopts advanced process equipment and technology to achieve a high level automation of manufacturing, quality control and energy management in order to create a "smart factorty". All these are for delivering higher quality products to customers with shorter delivery time and lower price.

Four smart manufacturing bases

Tianjin

Li county

Hengshui

Mancheng

Big Data | Smart Analysis | Digital Connections | Cloud | Zero Carbon

Products Introduction

Products overview

Product Details

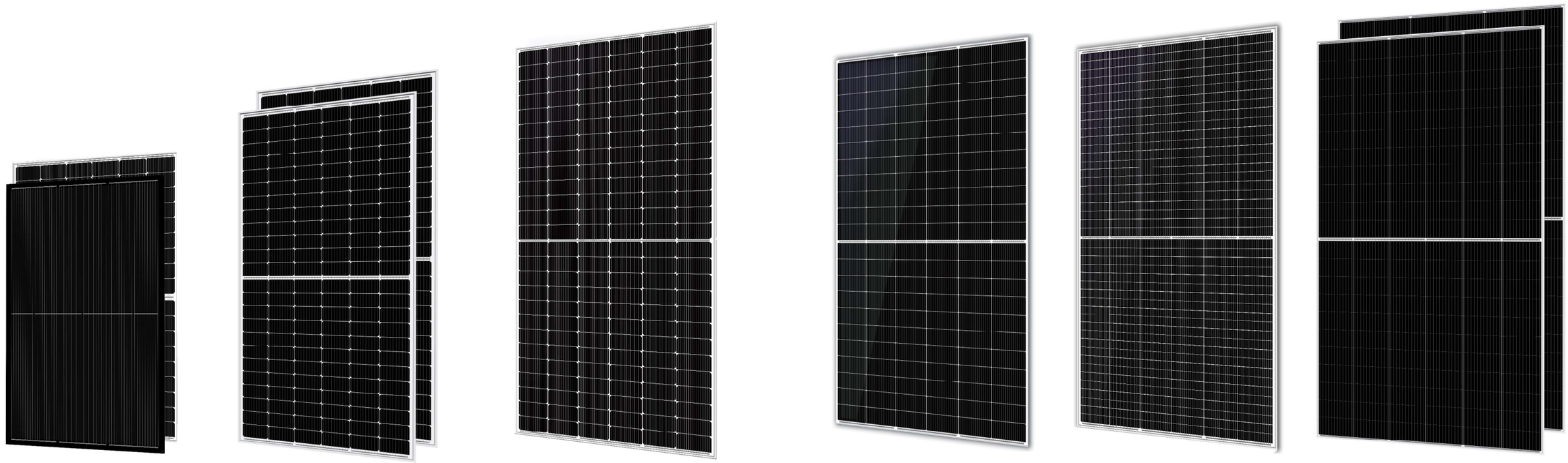
Mini Series	Pro Series	Plus Series
96-cells module: Pmax = 440 W-465 W	Multi-cut module 264-cells module: Pmax = 645 W-670 W	120-cells module: Pmax = 640 W-665 W 132-cells module: Pmax = 710 W-735 W
Black module 96-cells module: Pmax = 435 W-460 W	132-cells module: Pmax = 620 W-645 W 144-cells module: Pmax = 585 W-610 W 156片电池组件: Pmax = 635 W-660 W	
	Anti-dust module 132-cells module: Pmax = 620 W-645 W Anti-glare module 132-cells module: Pmax = 610 W-635 W	

Our Products

Wide power range from 435 to 735 W.

Suitable for residential, commercial and industrial, ground mounted plants, special applications.

Authoritative third-party reliability certification for applications such as salt mist, ammonia, dust and sand.



435 W-465 W

Residential, commercial and industrial.

585 W-610 W

635 W-660 W

Suitable for commercial and industrial, ground mounted plants, special applications.

620 W-645 W

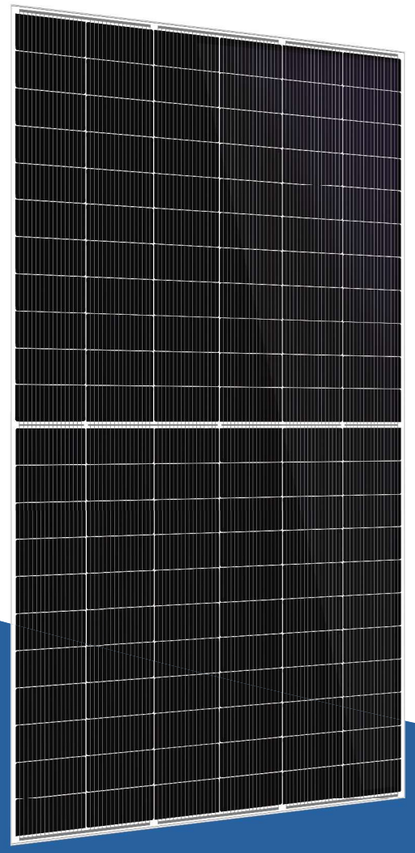
645 W-670 W

640 W-735 W

Suitable for commercial and industrial, ground mounted plants, special applications.

panda 3.0 Series

The leader of N-type monocrystalline products



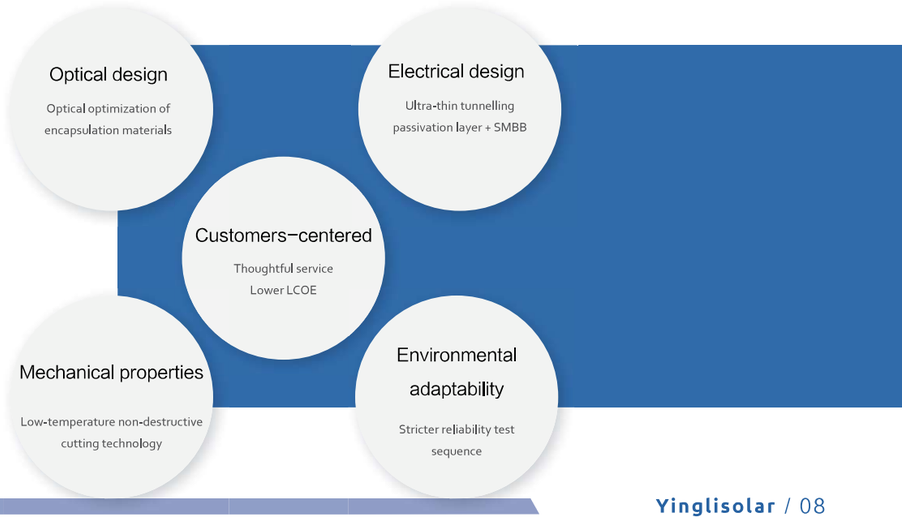
Series overview

The Leader of N-type Monocrystalline Products

PANDA 3.0 has been upgraded based on technological innovation.

Properties	PANDA 1.0	PANDA 2.0	PANDA 3.0		
	N-type PERT	N-type IIF	N-type TOPCon-SE	N-type TOPCon-LECO	N-type TOPCon-PF
Cell efficiency	20.5%	21.0%	24.6%	25.0%	26.3%
Bifaciality coefficients	78.0%	80.0%	80.0%	82.0%	85.0%
1st-year degradation	2.0%	2.0%	1.0%	1.0%	1.0%
Annual degradation	0.6%	0.5%	0.4%	0.4%	0.35%
Module power	17.3%	18.2%	22.3%	22.8%	24.8%

Multi-dimensional innovative design of **PANDA 3.0** series



panda 3.0 Series

The Pioneer of N-type Monocrystal Technology

Yingli Solar has been researching and industrialising N-type monocrystalline silicon bifacial cells and modules since 2009, and is a pioneer in the development and mass production of N-type technology. Yingli Solar was awarded the right to develop the 50 MW ground-mounted power plant project in Datong, Shanxi, the first national advanced technology PV demonstration base under the National "Leader" Program. Yingli Solar's self-developed Panda bifacial modules, which have the advantages of high power generation capacity, good weather resistance and wide range of applications, are the first bifacial power generation products in the world to be certified by CGC, UL and TÜV Rheinland.

The Pioneer of N-type Monocrystal Technology

Yingli Solar took the lead in publishing the "Test Methods for Electrical Parameters of Bifacial Power Generation PV Modules" standard, filling the gap of domestic bifacial power generation PV standards. Also Yingli Solar took the lead in completing the "Key Technology Research and Production Line Demonstration for the Industrialization of High Efficiency Homogeneous Junction N-type Monocrystalline Silicon Bifacial Power Generation Solar Cells (TOPCon Cells)" project during the chinese National 13th Five-Year Plan period, which improve technological progress of the PV industry and provided important guarantee and support for the industrialization of N-type TOPCon cells in the PV industry. The project has provided important support for the industrialization of N-type TOPCon cells in the photovoltaic industry.

2009
Cooperated with ECN, Tempress and others to research and develop N-type high-efficiency cell technology, and established PANDA project team.

2010
Achieved mass production of PANDA cells.

2011
Received the First-class Award of Science & Technology Progress Prize of China Renewable Energy Society
the Second-class Award of Science & Technology Progress Prize of National Energy Administration
The Third-class Award of Science & Technology Progress Prize of Hebei Province.

2014
Received the "2014 Innovative Technology Product of the Year" award.

2015
Acquired the right to develop bifacial PV plant projects in the first batch of national "Top Runner" advanced technology demonstration base.

2016
Received the industry's first bifacial power generation product certification (China General Certification Center).

2017
Received the " Dual Glass+" Bifacial Power Generation Technology Innovation Contribution Award at the 3rd "TOP Runner" Innovation Forum.

2018
Both received the first international TÜV Rheinland and UL bifacial power generation product certification.

2020
Released two group standards for bifacial photovoltaic power generation to fill the gap in China's bifacial power generation product testing standards.

2021
Supply and support the Middle East region-Oman Iberia II bifacial PV plant project grid-connected.

2022
Launched PANDA 3.0 series

2025
Awarded the Top 500 Global New Energy Enterprises, Leading Brand in Carbon Neutrality and Green Impact, Top 100 Global New Energy ESG Enterprises, Top 100 ESG Cases in Energy in 2025.

Product Strength

TOPCon Module

panda 3.0 Series

Scientific circuit design

Multi-level series-parallel circuits
20% higher yield with partial shadow

Cutting-edge technology

Ultra-low resistance metallization
Area-selective reconstruction
Multidimensional passivation

Superior low light performance

Higher carrier collection efficiency under low light
Higher power yield under low-light

Substantial rear power generation

With bifaciality of 85%±5%
Rear power gain can reach 35%

Excellent durability

Power degradation of 1% for first year
and 0.35% for every subsequent year

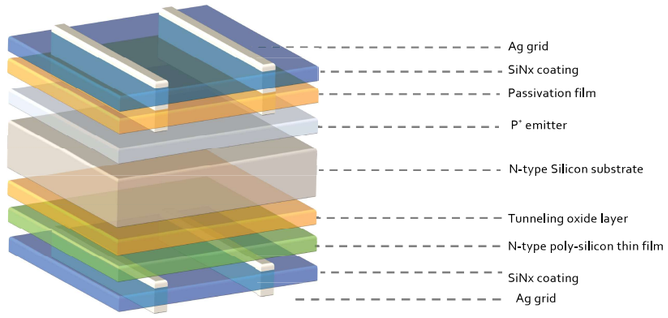
Wide applications

Suitable for large-scale base projects
Distributed scenarios

Product Strength

Better Cell Performance

Multi composite films passivation technology on the front side and tunnel oxide passivation contacts technology on the rear side to enhance the Voc of the cell with bifaciality coefficient up to 90%.



Lower Temperature Coefficient

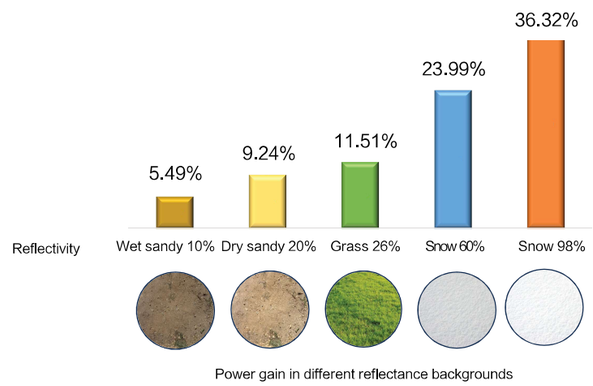
Temperature coefficient reaching –0.26%,more outstanding power generation in high temperature condition.

TOPCon modules

–0.26%/℃

Power —— Temperature
553 W [84.4%] —— 85℃
570 W [87.0%] —— 75℃
587 W [89.6%] —— 65℃
604 W [92.2%] —— 55℃
621 W [94.8%] —— 45℃
638 W [97.4%] —— 35℃
655 W [100%] —— 25℃

Higher Rear Power Generation in Typical Environments



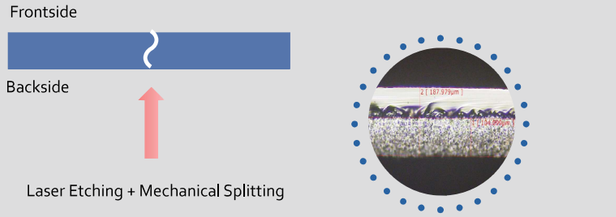
Power gain in different reflectance backgrounds

Case Information: Hebei Baoding, 100 MW, Fixed Tilt 2P
Module Information: TOPCon Module

Product Strength

Low Temperature Non-destructive Cutting Technology

Non-destructive cutting, smooth cut surface, no silicon body cutting damage, no micro-cracks.

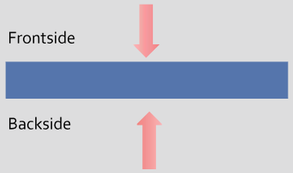


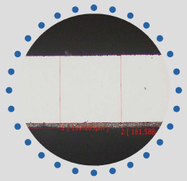
Cell cutting surface is prone to cracks or chips

Traditional laser cutting process

High micro-crack rate;

Serious laser damage, generating efficiency loss is 0.1% ~ 0.15%.





Bright cell cut surface, no mechanical damage

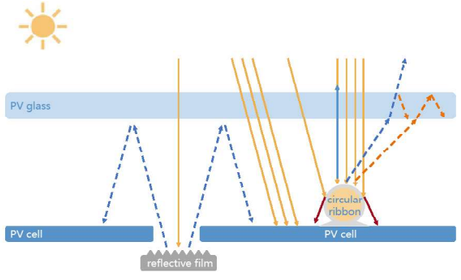
Non-destructive laser cutting process

The mechanical strength of the cell is improved by 12.2% to 35.4%;

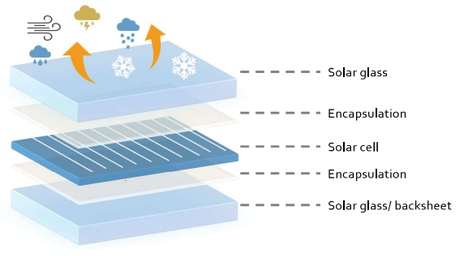
generating efficiency loss ⩽ 0.08%, and power can be increased by 1 W ~ 3 W.

High Power and High Reliability Encapsulation Technology

MBB cell technology reduces micro-crack and broken grids risks effectively. The use of circular ribbon instead of flat ribbon for metal interconnection can increase the optical utilization rate of the ribbon area by more than 30%. Combined with gap reflection film, the light utilization is further enhanced.



Special material compatibility, ultra-strong frames and high-reliability encapsulation technology enable module performances beyond the IEC standard test requirements, with the ability to resist risks such as salt mist, ammonia, dust and sand, and PID.



Product Strength

Yingli Solar focus on customers interests and needs. We launched PANDA 3.0 series products, which includes glass/glass modules. The performances of PANDA 3.0 series beyond the IEC standard test requirements, with the ability to resist risks such as salt mist, ammonia, dust and sand, and PID. PANDA 3.0 series products are suitable for residential, commercial and industrial, ground-mounted plants, special applications.

Complete System and Product Certifications

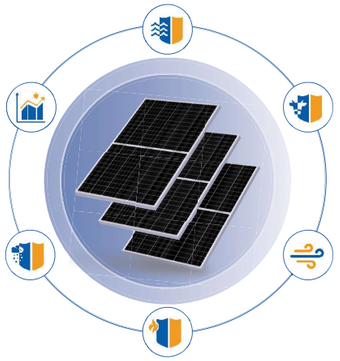
IEC 61215: 2021, IEC 61730: 2023

ISO 9001: 2015 (Quality management systems)

ISO 14001: 2015 (Environmental management systems)

ISO 45001: 2018 (Occupational health and safety management systems)

IEC 62941: 2019 (Terrestrial photovoltaic (PV) modules- Quality system for PV module manufacturing)



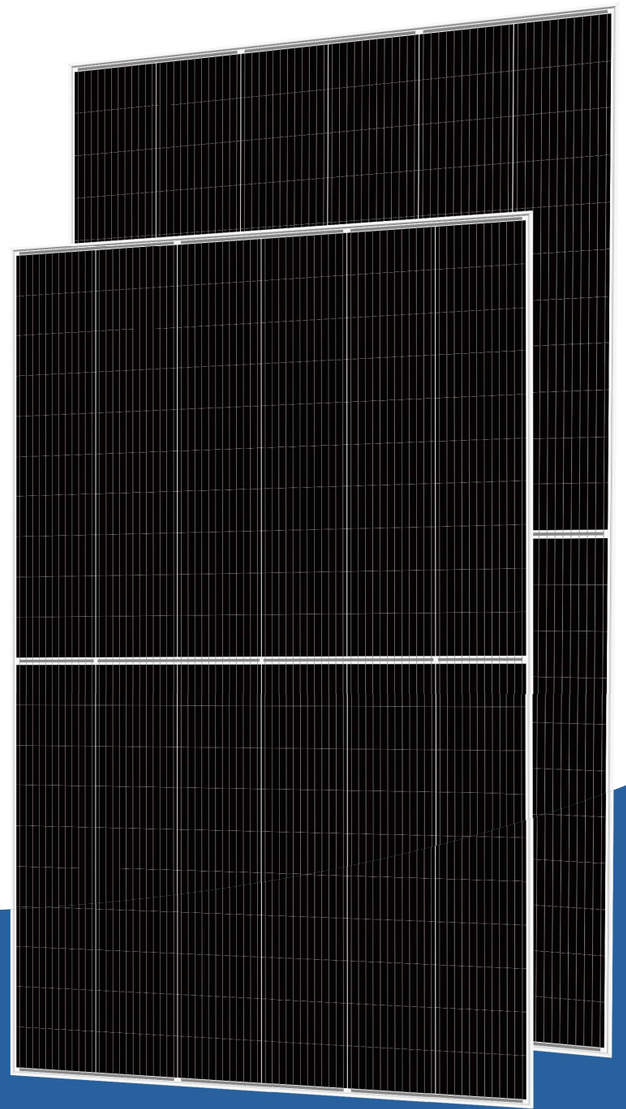
Basic certificate | Anti-PID 192 hours | Sand and Dust | Salt Mist and Ammonia Corrosion | LETID | Dynamic Mechanical Load

PANDA 3.0 Series

Product Name	Module Type	Power (w)	Cell number (pcs)	Module dimensions (mm)	Weight (kg)	Bifaciality Coefficient (%)
PANDA 3.0 Mini 2	YLxxxCF48 i/2	435–460	96	1762*1134*30	21.0	80 ± 5
	YLxxxCF48 i/2	440–465	96	1762*1134*30	21.0	80 ± 5
PANDA 3.0 PRO 2	YLxxxCF66 i/4	645–670	264	2382*1134*30	32.6	80 ± 5
	YLxxxCF66 i/2	620–645	132	2382*1134*30	35.0	80 ± 5
PANDA 3.0 PRO 1	YLxxxCF72 e/2	585–610	144	2278*1134*30	31.6	80 ± 5
	YLxxxCF78 e/2	635–660	156	2465*1134*30	34.5	80 ± 5
PANDA 3.0 PLUS	YLxxxCF60 f/2	640–665	120	2172*1303*33	34.2	80 ± 5
	YLxxxCF66 f/2	710–735	132	2384*1303*33	36.9	80 ± 5

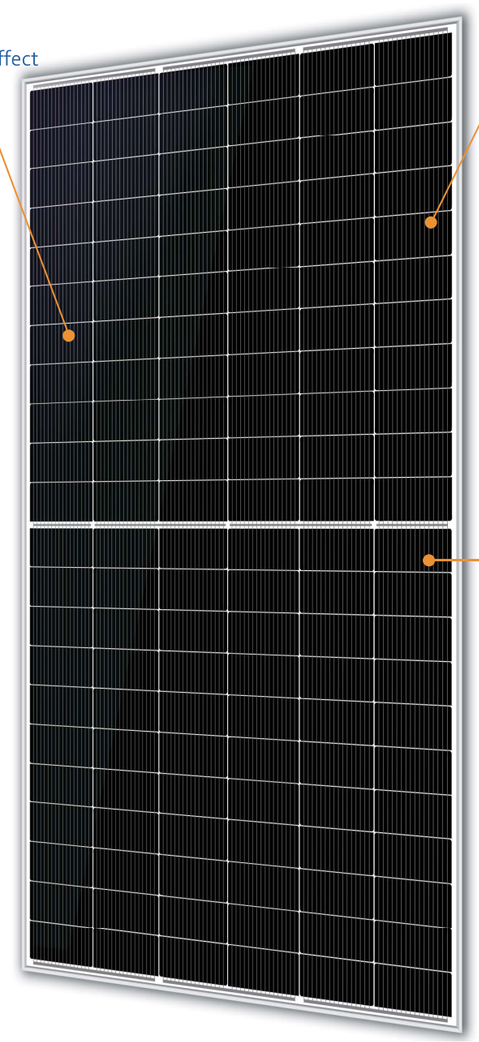
Note: The datesheets of the above products may be updated irregularly, and you can consult or download them through the contact information provided on the back cover of the brochure. In addition, our company can provide customized products for customers.

Scenario-based series



Product Strength

Anti-glare Module



Excellent anti-glare effect

Over 78% lower reflective brightness
Over 65% lower mirror reflectivity

Lower losses

Reflectivity from 0° to 80° is no more than 2.5%

Adaptation to PV + transportation

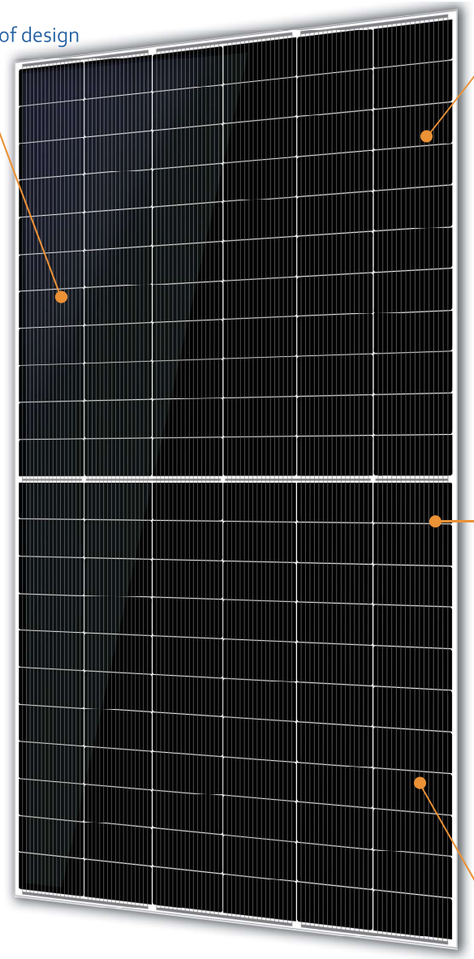
Suitable for scenarios such as airports, highways, etc
Suitable for BIPV scenarios

Product Strength

Anti-dust module

Ultra-sealed dust-proof design

Exclusive micro-A-side design Reduced dust accumulation at edges
Enhanced mechanical load stability
Compatible with horizontal installation



Excellent self-cleaning performance

Anti-static technology
Photocatalyst technology
PV glass with harder film

Outstanding power generation

Power yield increased by 5% - 7%
LCOE decreased by 2.6%

Reliable O&M experience

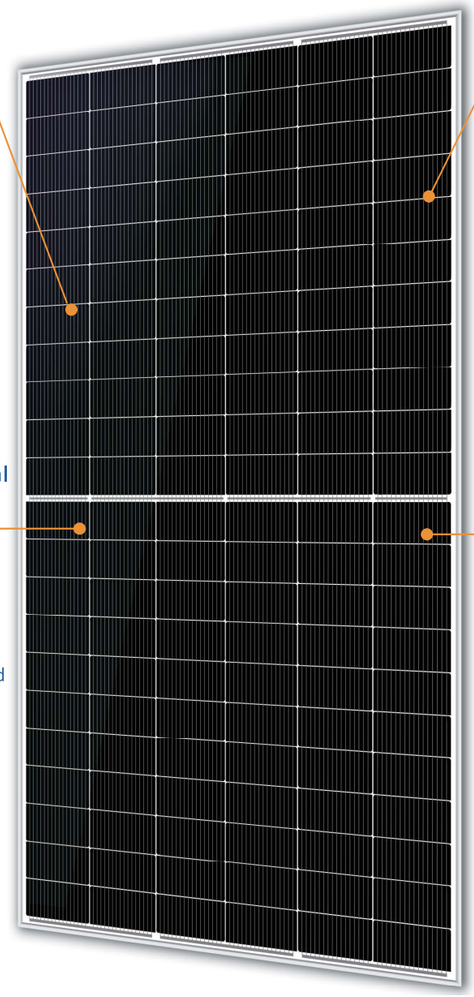
Extended cleaning cycle
Reduced maintenance costs

Product Strength

Anti-hail module

Excellent anti-hail performance

Can withstand up to 55mm diameter hail impact



Adapted for severe hail scenarios

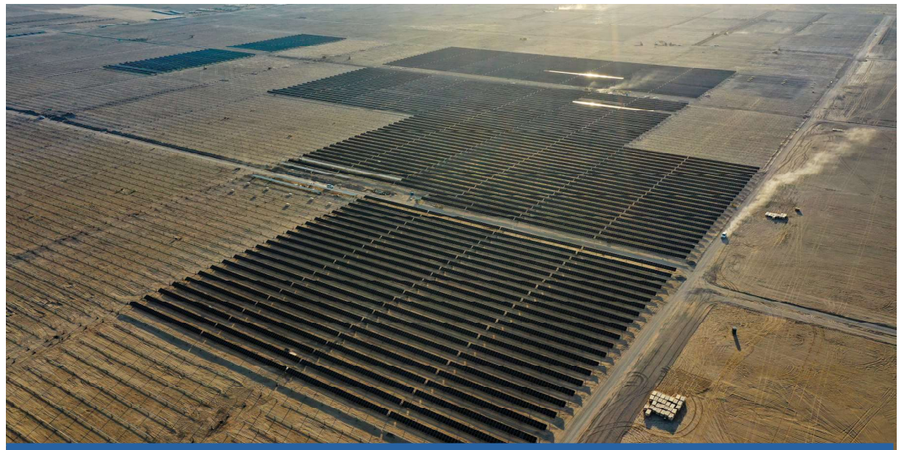
Special reinforcement for areas with frequent hail occurrences

Reliable mechanical performance

+ 6000Pa / – 4000Pa for static mechanical load
± 1500Pa for dynamic mechanical load

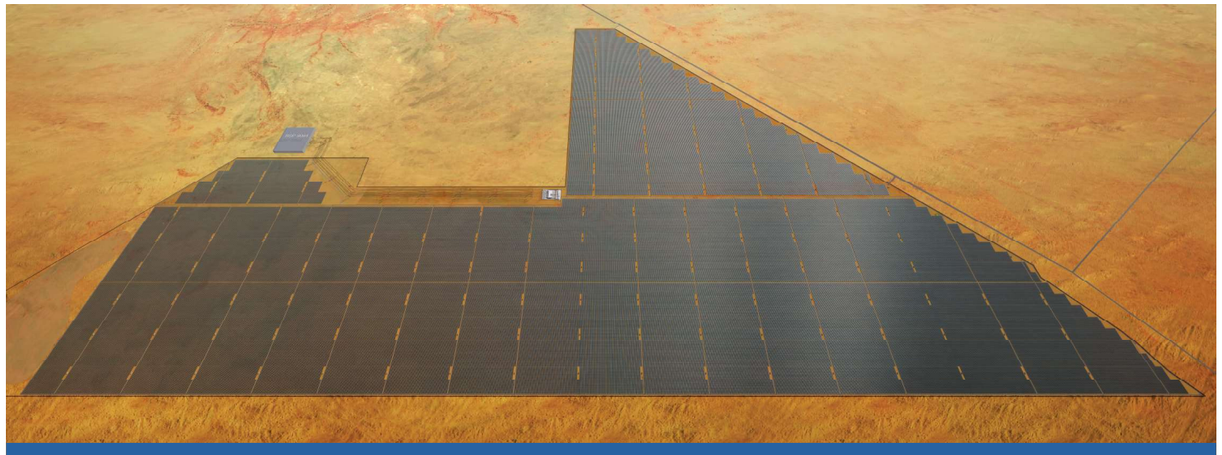
Superior low light performance

Higher carrier collection efficiency under low light
Higher power yield under low-light



117 MW N-Type bifacial PV plant in Iberia, Oman

233 MW ground-mounted PV plant in Algeria - "Energy Oasis" in the Sahara Desert



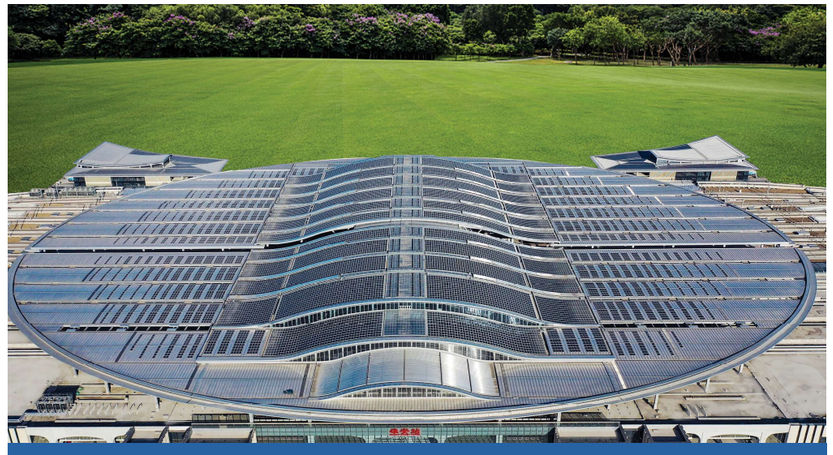
1.25 GW PV plant for ACWA Power in Saad, Saudi

Trust

Delivery

Growth

Sharing



6 MW rooftop distributed plant at High-speed Railway Station in Xiongan, China

47MW integration of animal husbandry and photovoltaics project in Tiandeng County, Guangxi Province, China

50 MW N-Type bifacial PV plant of national "Top Runner" advanced technology demonstration base in Datong, Shanxi Province, China