

LIGHT UP THE WORLD WITH GREEN ENERGY



AURON  **N**
N-type TOPCon Modules

**PRODUCT
BROCHURE**



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The logo for AURON, featuring the word "AURON" in a bold, sans-serif font. The "A" is red, "U" is blue, "R" is dark blue, "O" is a circular icon with concentric lines, and "N" is white inside a red square.

AURON

N-type TOPCon Modules



23.25%
Efficiency

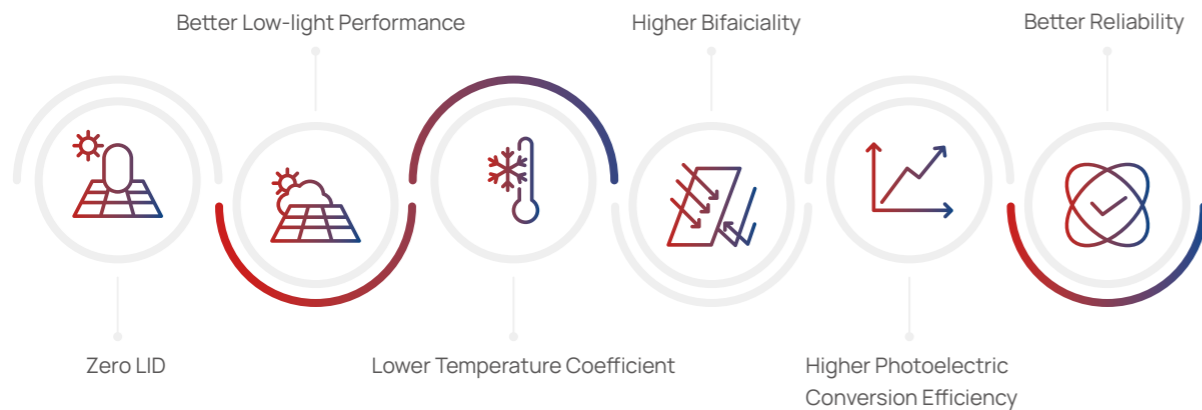
- 0.30%/°C
Temperature Coefficient

80%
Bifaciality

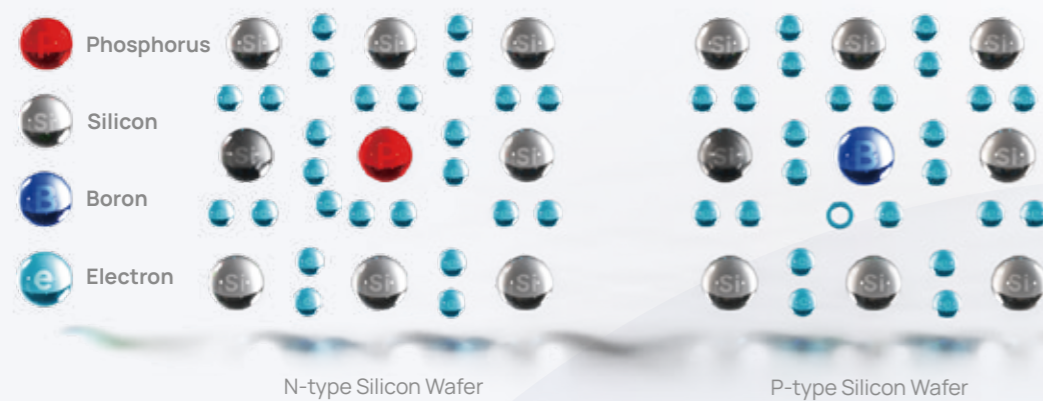
≤1%
First Year Degradation

30years
Power Warranty

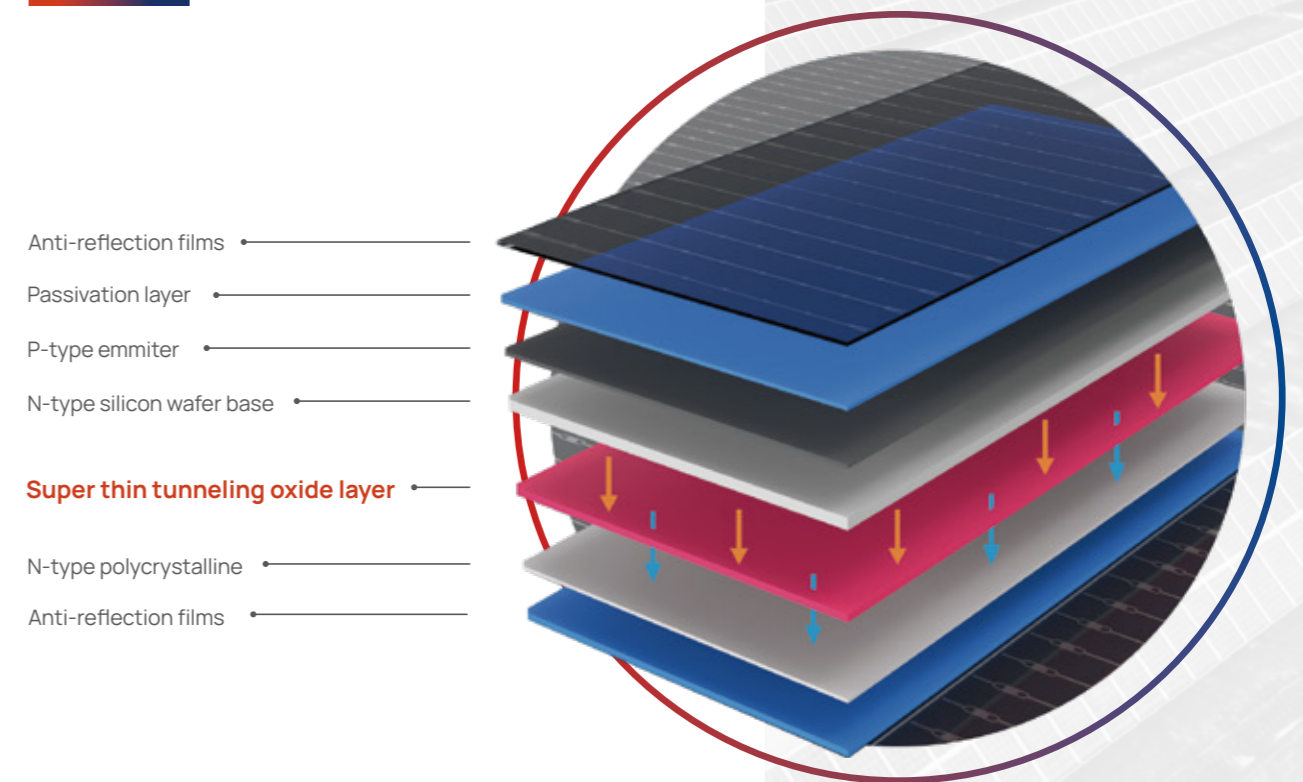
N-type Silicon Wafer Advantages



N-type silicon wafers do not have boron-oxygen defects, have longer minority carriers lifetime and can achieve zero LID.

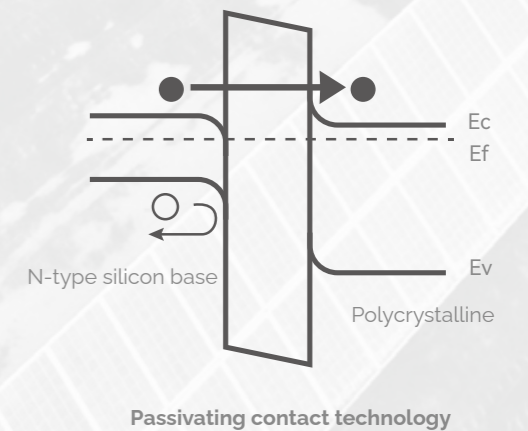


N-type TOPCon Cell Advantages



TOPCon Cell Structure

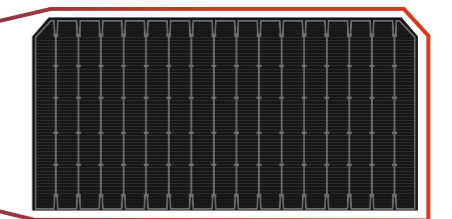
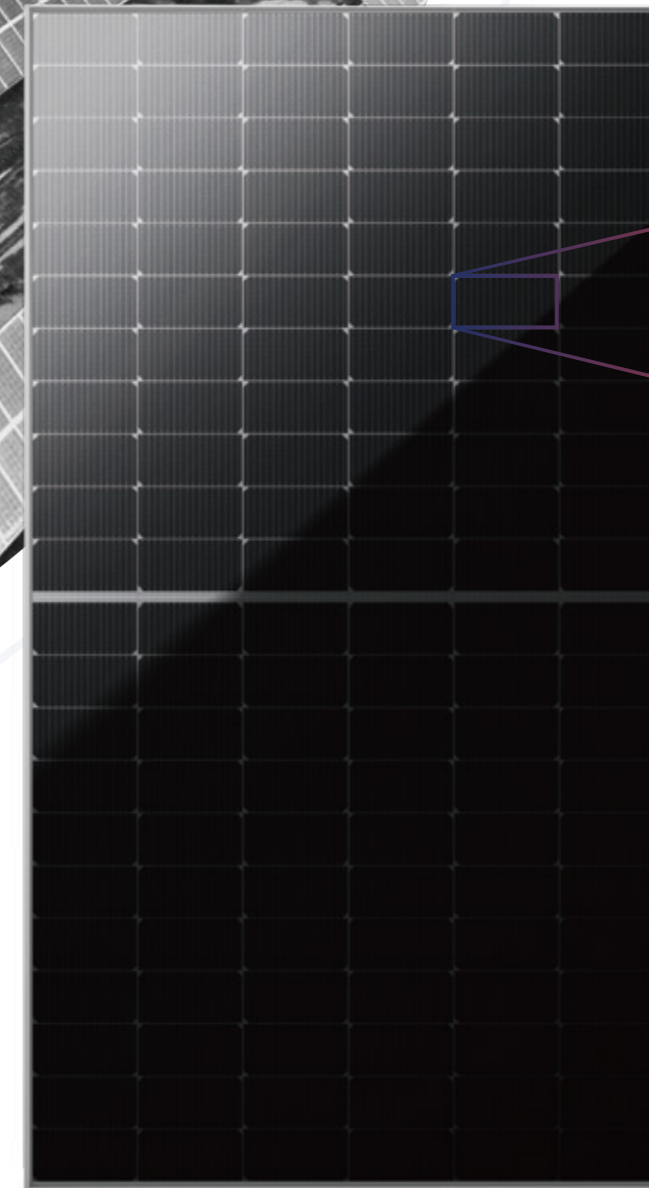
The modules use highly efficient passivating contact technology. The back side of the cell uses a super thin tunneling oxide layer with carrier selective transport and a doped polysilicon thin film structure, resulting in a significant increase in the photoelectric conversion efficiency of the cell.



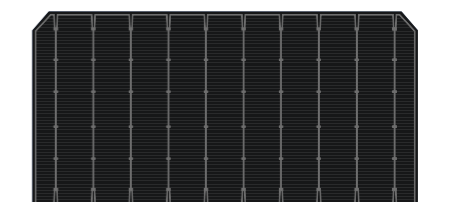


SMBB Technology

The superfine 16 busbars enable less shading and shorter current conduction distance. It has better power collection capability and effectively enhances the power output.



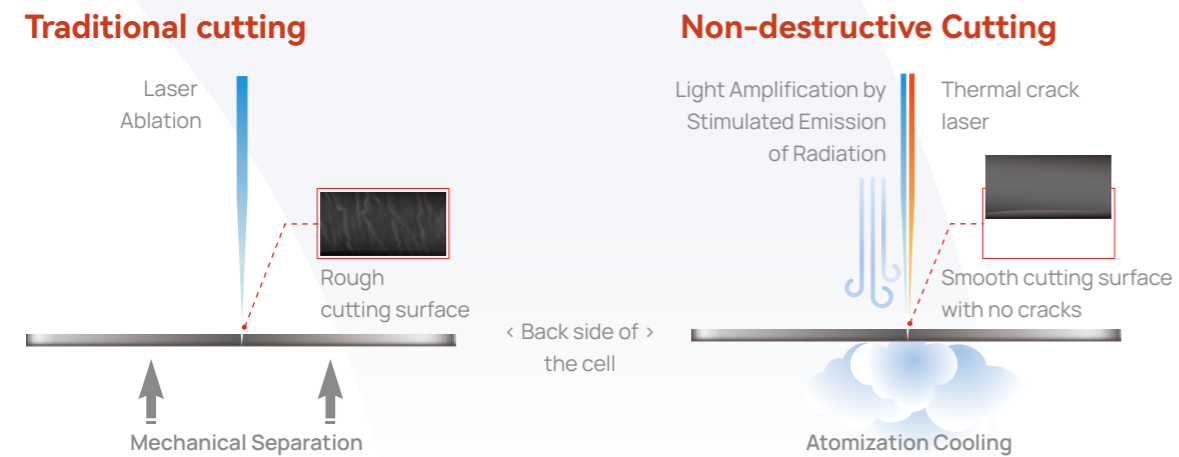
AURON
16BB



Traditional Module
10BB

Non-destructive Cutting Technology

The non-destructive cutting technology enables the cell to have smooth cutting surface and no cracks. It improves the parallel resistance of the cells, effectively reduces the risk of hidden cracks and ensures the best mechanical performance of cells.



High-density Encapsulation Technology

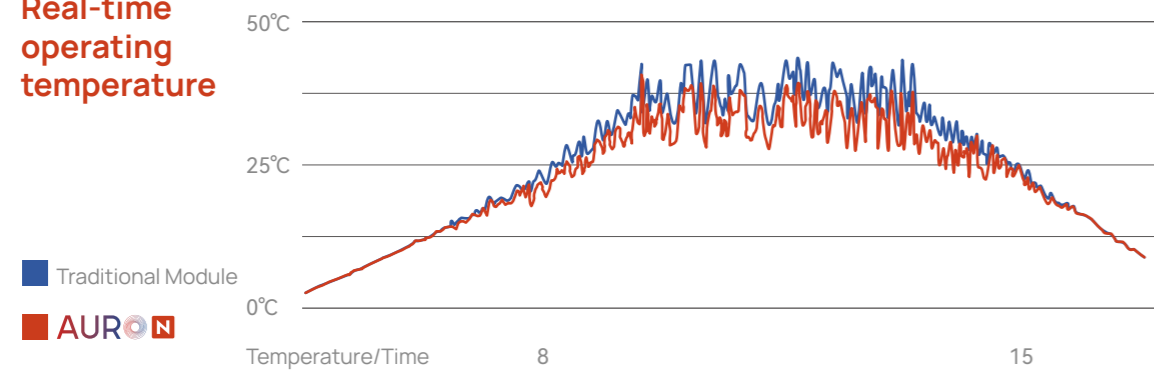
The high-density encapsulation technology reduces the spacing between cells. This enlarges the effective power generation area of the module and improves the energy density.



Better Temperature Coefficient

The temperature coefficient is $-0.30\%/^{\circ}\text{C}$, which results in better power generation performance in high temperature environment.

Real-time operating temperature



Better warranty

Compared to traditional modules, N-type TOPCon modules have a first-year module degradation of $\leq 1\%$ /year, a linear degradation of $\leq 0.4\%$ /year, and a 30-year power warranty.

30years

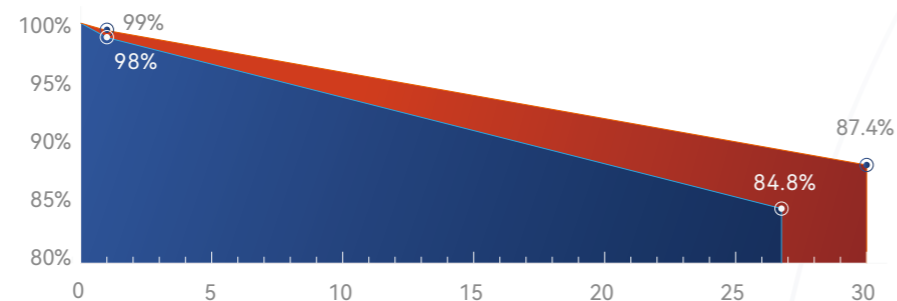
Power warranty

$\leq 1\%$
First year degradation

-0.4%
Annual power degradation

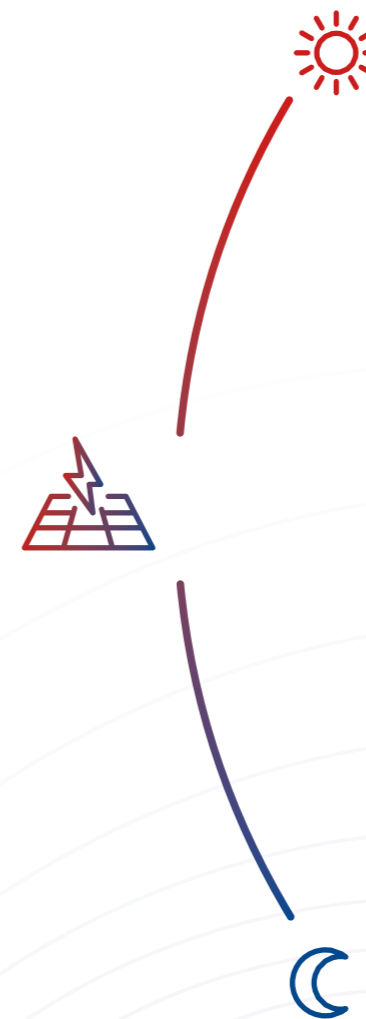
Traditional Module

AURON



Better Low-light Response

Compared to traditional modules, the N-type TOPCon modules have higher power output in low radiation conditions such as haze and cloudy days.

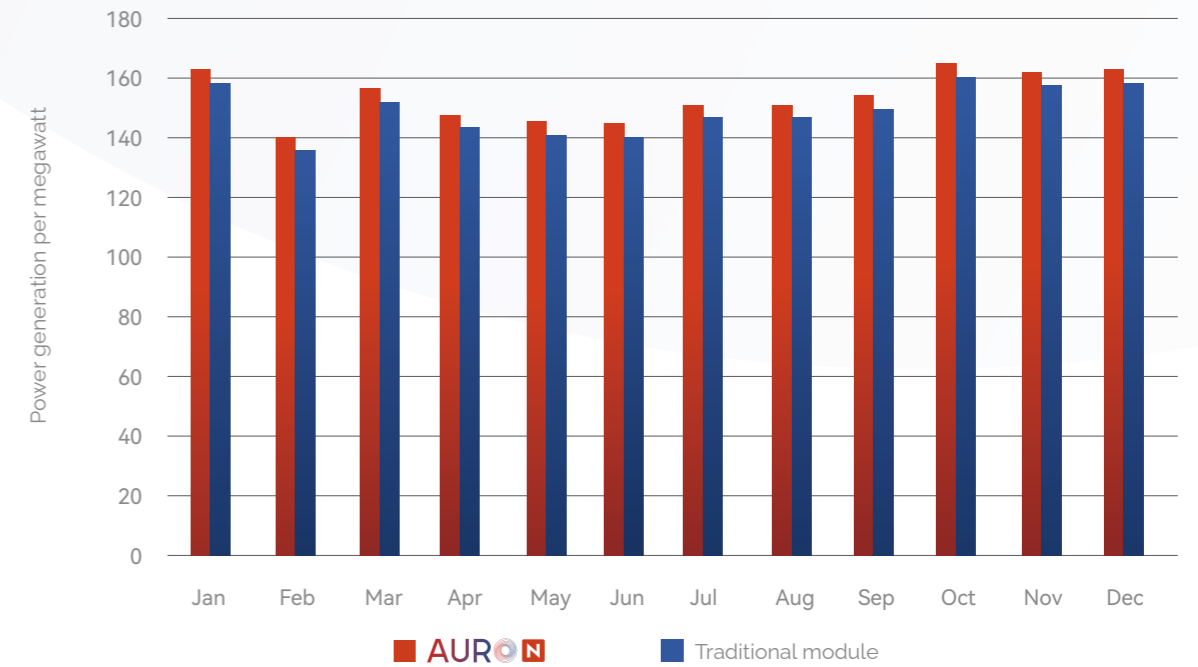


Higher power generation

The Bifaciality is 80%. Under the same radiation intensity received on the back side, the module's power generation gain is 5%-32%.

	Reflectivity	AURON Bifaciality 80%	Annual power generation per kilowatt kWh/kWp/year	Traditional module Bifaciality 70%	Annual power generation per kilowatt kWh/kWp/year
Desert	20%-40%	+3.26%	1894		1835
White Paint	70%	+3.63%	2018		1948
Meadow	15%-20%	+2.80%	1804		1755
Surface of Water	10%-15%	+2.51%	1757		1714
Cement	20%-40%	+3.05%	1850		1795
Snowfield	80%	+3.69%	2056		1983

AURO N module's power generation and the reliability of long-term application contribute to effective and stable power generation in the life cycle.



In Conakry, Guinea, 100MW AURO N bifacial module project has power generation gain about 3.05%, compared to traditional P-type module.



Geographical location of the project in Conakry, Guinea

Main characteristics



High conversion efficiency

Module conversion efficiency up to 23.25%



Better low-light performance

More power generation in the low radiation conditions like the haze and cloudy days



SMBB technology

The 16 busbars have better power generation capability to improve module power output effectively



Better temperature coefficient

Peak temperature coefficient $-0.30\%/^{\circ}\text{C}$
Excellent power generation at high temperature



Bifacial power generation

Module power generation on both sides
Power gain 5%-32%



Zero LID

Excellent LID resistance performance
Achieve "Zero LID"



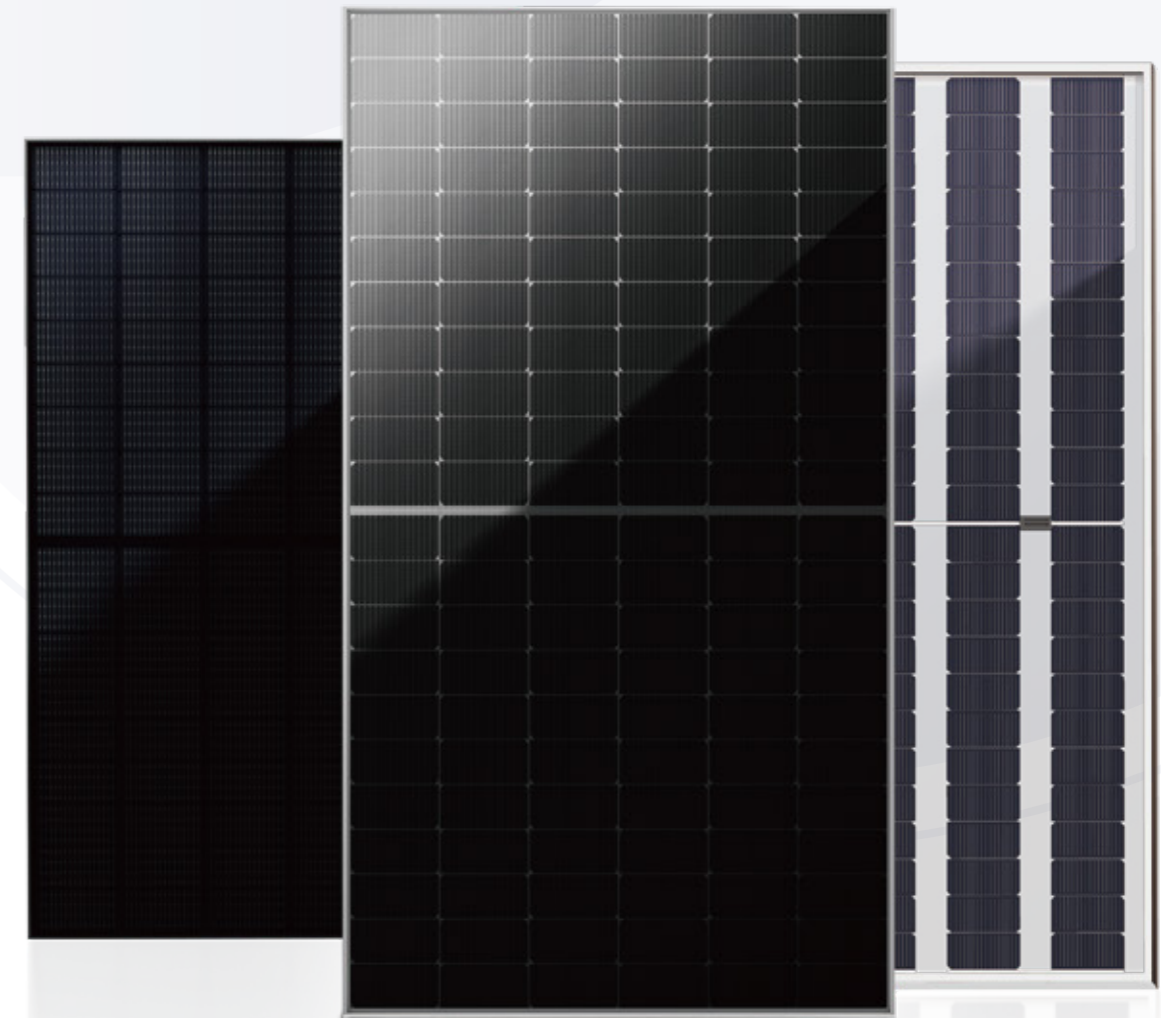
PID resistance

Optimize cells production technology and material control
Enhance PID resistance performance and reduce degradation



Low LCOE

Effectively reduce BOS cost
Increase project ROI

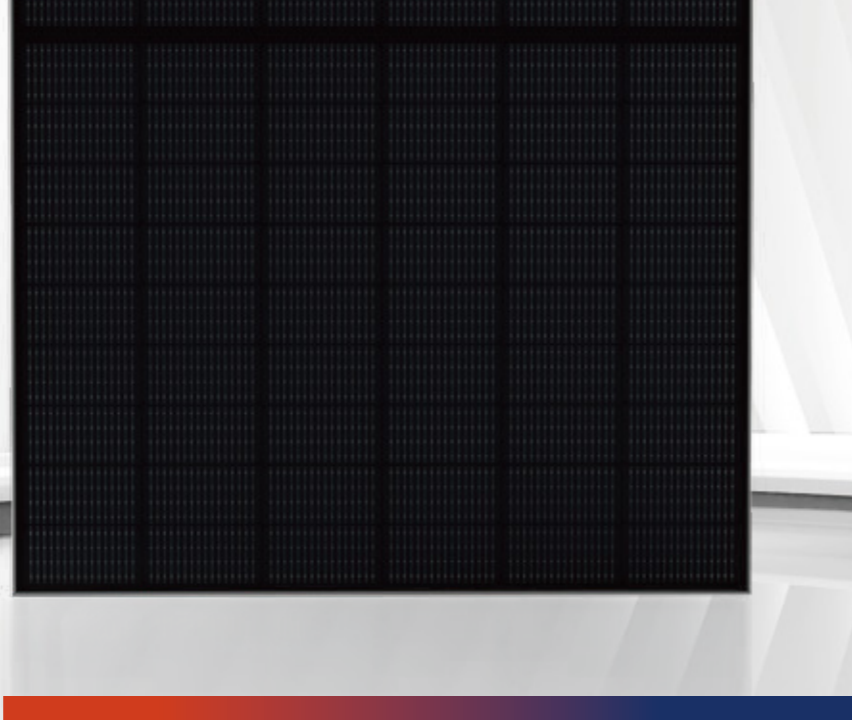


All-black series

High efficient series

Transparent series

Power	450W	650W	400W
Efficiency	23.04%	23.25%	15.48%
Dimension	1722*1134*35mm	2465*1134*30mm	2278*1134*30mm
Weight	20.6kg±5%	32.4kg±5%	30.0kg±5%



Key product features



Architectural Aesthetics

Elegant black module appearance fits architectural aesthetics design



Better Low-light Performance

More power generation in the low radiation conditions like the haze and cloudy days



SMBB Technology

The 16 busbars have better power generation capacity to improve module power output effectively



Better Temperature Coefficient

Peak temperature coefficient $-0.30\%/^{\circ}\text{C}$
Excellent power generation at high temperature



Light Weight Design

Easy to handle and reduce installation costs



Zero LID

Excellent LID resistance performance
Achieve "Zero LID"



PID FREE

Optimize cells production technology and material control. Enhance PID resistance performance and reduce degradation



Low LCOE

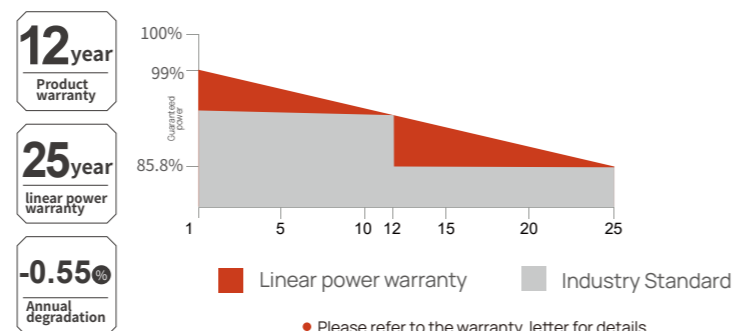
Effectively reduce BOS cost
Increase project ROI

Comprehensive product certification

- IEC61215-1(ed.1)
- IEC61215-1-1(ed.1)
- IEC61215-2(ed.1)
- IEC61730-1(ed.2)
- IEC61730-2(ed.1)
- UL 61730-1 1st Edition
- UL 61730-2 1st Edition



Industry-leading Quality Assurance



Electrical Data(STC*)

Module Type: NLK-27	425	430	435	440	445	450
Rate Maximum Power(Pmax) (W)	425	430	435	440	445	450
Open Circuit Voltage(Voc) (V)	38.75	38.95	39.16	39.38	39.59	39.80
Short Circuit Current(Isc) (A)	13.66	13.73	13.80	13.86	13.93	14.00
Maximum Power Voltage(Vmp) (V)	32.18	32.38	32.59	32.81	33.02	33.23
Maximum Power Current (Imp) (A)	13.21	13.28	13.35	13.41	13.48	13.55
Module Efficiency (%)	21.76	22.02	22.28	22.53	22.79	23.04

*Standard Test Conditions (STC) : irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C

Electrical Data(NMOT*)

Module Type: NLK-27	425	430	435	440	445	450
Rate Maximum Power(Pmax) (W)	320.3	323.9	327.7	331.3	335.1	338.9
Open Circuit Voltage(Voc) (V)	36.4	36.6	36.8	37.0	37.2	37.4
Short Circuit Current(Isc) (A)	11.03	11.09	11.14	11.19	11.25	11.31
Maximum Power Voltage(Vmp) (V)	30.5	30.7	30.9	31.1	31.3	31.5
Maximum Power Current (Imp) (A)	10.48	10.54	10.60	10.65	10.70	10.76

*Nominal Module Operating Temperature (NMOT): irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

Operational Parameter

Operating Temperature	-40°C~+85°C
NMOT (Nominal Module Operating Temperature)	45±2°C
Maximum System Voltage(V)	1500V DC
Maximum Fuse Current Rating(A)	25A
Fire Safety	Class C
Power Tolerance	0~+5W

Mechanical Properties

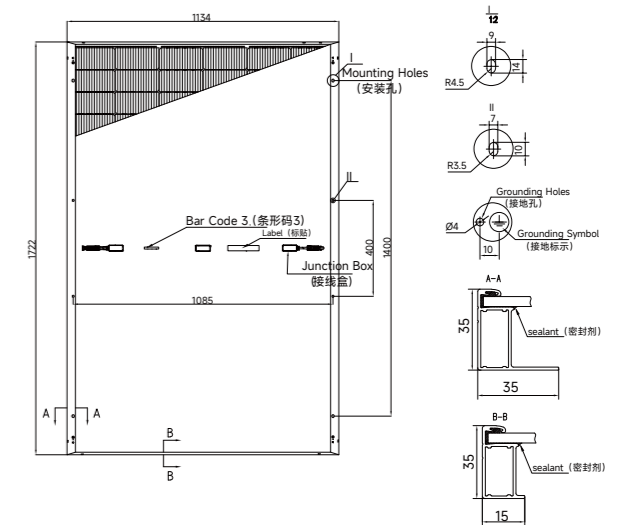
Cell Type	182mm*91mm
Number of Cells	108
Dimension of Module	1722*1134*35mm
Weight	20.6kg±5%
Front Glass	3.2mm semi-tempered coated glass
Frame	Anodized aluminum alloy
Junction Box	IP68(3 Diodes)
Cable Length	+320mm, -260mm(4.0mm ²); or Customized Length
Packing Information	806 (31*26) pcs per 40'HQ

Temperature Coefficient

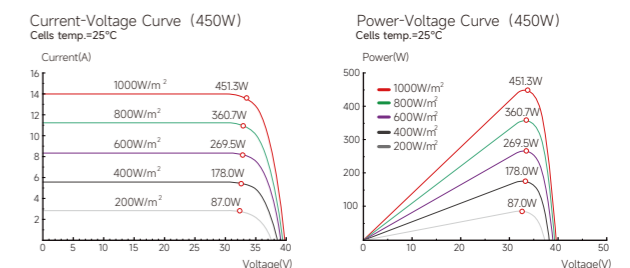
Peak Power Temperature Coefficient	-0.30%/°C
Open-Circuit Voltage Temperature Coefficient	-0.25%/°C
Short-Circuit Current Temperature Coefficient	0.046%/°C

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Drawing



I-V Curve





Electrical Data(STC*)

Module Type: NLBK-27	425	430	435	440	445	450
Rate Maximum Power(Pmax) (W)	425	430	435	440	445	450
Open Circuit Voltage(Voc) (V)	38.75	38.95	39.16	39.38	39.59	39.80
Short Circuit Current(Isc) (A)	13.66	13.73	13.80	13.86	13.93	14.00
Maximum Power Voltage(Vmp) (V)	32.18	32.38	32.59	32.81	33.02	33.23
Maximum Power Current (Imp) (A)	13.21	13.28	13.35	13.41	13.48	13.55
Module Efficiency (%)	21.76	22.02	22.28	22.53	22.79	23.04

*Standard Test Conditions (STC) : irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C

Electrical Data(NMOT*)

Module Type: NLBK-27	425	430	435	440	445	450
Rate Maximum Power(Pmax) (W)	320.3	323.9	327.7	331.3	335.1	338.9
Open Circuit Voltage(Voc) (V)	36.4	36.6	36.8	37.0	37.2	37.4
Short Circuit Current(Isc) (A)	11.03	11.09	11.14	11.19	11.25	11.31
Maximum Power Voltage(Vmp) (V)	30.5	30.7	30.9	31.1	31.3	31.5
Maximum Power Current (Imp) (A)	10.48	10.54	10.60	10.65	10.70	10.76

*Nominal Module Operating Temperature (NMOT):irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

Key product features

High power output
Module efficiency increase to 23.04%

PID Resistance
Optimize cells production technology and material control.Enhance PID resistance performance, reduce degradation

SMBB technology
The 16 busbars have better power generation ability to improve module power output effectively

Low temperature coefficient
Peak temperature coefficient -0.30%/°C
Excellent power generation at a high temperature

Zero LID
Excellent LID resistance performance
Achieve zero light induced degradation

Better low-light performance
More power generation in the low radiation environment like the haze and cloudy sky

Bifacial power generation
Module power generation on both sides
Power gain 5%-32%

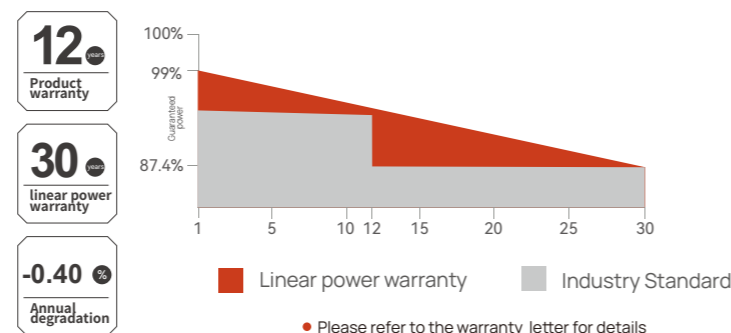
Low LCOE
Effectively reduce BOS cost
Increase project ROI

Comprehensive product certification

- IEC61215-1(ed.1)
- IEC61215-1-1(ed.1)
- IEC61215-2(ed.1)
- IEC61730-1(ed.2)
- IEC61730-2(ed.1)
- UL 61730-1 1st Edition
- UL 61730-2 1st Edition



Industry-leading Quality Assurance



Operational Parameter

Operating Temperature	-40°C~+85°C
NMOT (Nominal Module Operating Temperature)	45±2°C
Maximum System Voltage(V)	1500V DC
Maximum Fuse Current Rating(A)	30A
Fire Safety	Class C
Power Tolerance	0~+5W
Bifacial Factor	80±5%
PG.450W	5% 10% 15% 20% 25% 30%
Rate Maximum Power(Pmax) (W)	473 495 518 540 563 585
Open Circuit Voltage(Voc) (V)	39.8 39.8 39.8 39.8 39.8 39.8
Short Circuit Current (Isc) (A)	14.70 15.40 16.10 16.80 17.50 18.20
Maximum Power Voltage(Vmp) (V)	33.23 33.23 33.23 33.23 33.23 33.23
Maximum Power Current (Imp) (A)	14.23 14.91 15.58 16.26 16.94 17.62

Mechanical Properties

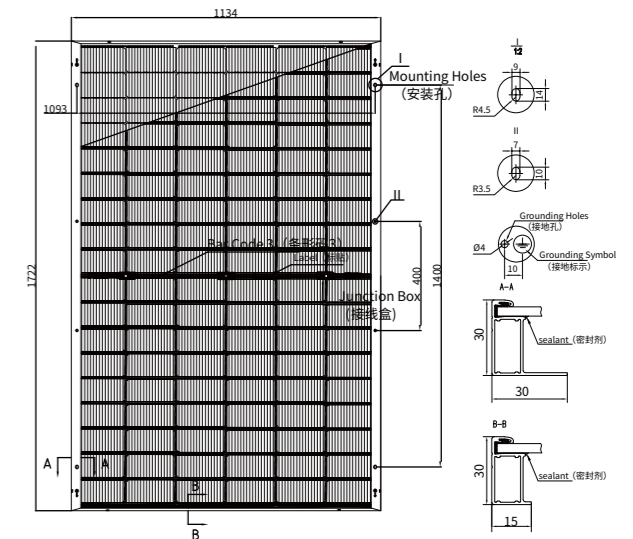
Cell Type	182mm*91mm
Number of Cells	108
Dimension of Module	1722*1134*30mm
Weight	22.9kg±5%
Front Glass	2.0mm semi-tempered coated glass
Rear glass	2.0mm semi-tempered screen printed glass
Frame	Anodized aluminum alloy
Junction Box	IP68(3 Diodes)
Cable Length	+320mm, -260mm(4.0mm ²); or Customized Length
Packing Information	936 (36*26) pcs per 40'HQ

Temperature Coefficient

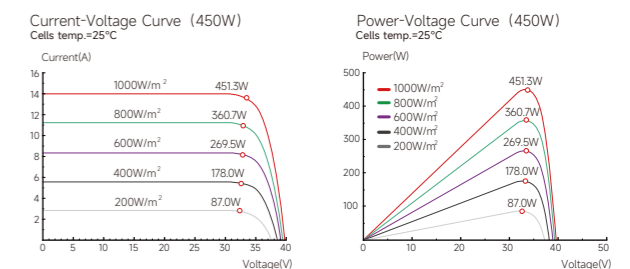
Peak Power Temperature Coefficient	-0.30%/°C
Open-Circuit Voltage Temperature Coefficient	-0.25%/°C
Short-Circuit Current Temperature Coefficient	0.046%/°C

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Drawing



I-V Curve





Key product features

High power output
Module efficiency increase to 23.23%

PID FREE **PID Resistance**
Optimize cells production technology and material control. Enhance PID resistance performance, reduce degradation

SMBB **SMBB technology**
The 16 busbars have better power generation ability to improve module power output effectively

Low temperature coefficient
Peak temperature coefficient $-0.30\%/^{\circ}\text{C}$
Excellent power generation at a high temperature

Zero LID
Excellent LID resistance performance
Achieve zero light induced degradation

Better low-light performance
More power generation in the low radiation environment like the haze and cloudy sky

Bifacial power generation
Module power generation on both sides
Power gain 5%-32%

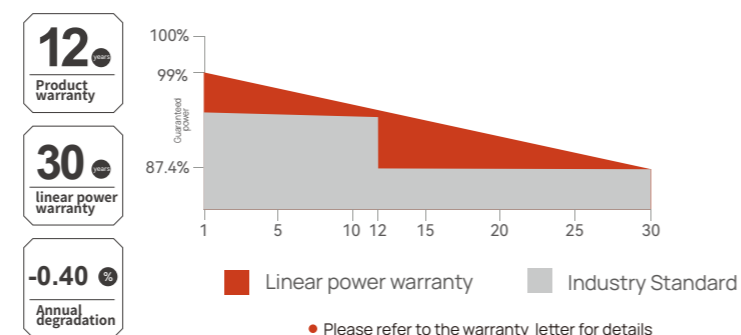
Low LCOE
Effectively reduce BOS cost
Increase project ROI

Comprehensive product certification

- IEC61215-1(ed.1)
- IEC61215-1-1(ed.1)
- IEC61215-2(ed.1)
- IEC61730-1(ed.2)
- IEC61730-2(ed.1)
- UL 61730-1 1st Edition
- UL 61730-2 1st Edition



Industry-leading Quality Assurance



Electrical Data(STC*)

Module Type: NLBK-36	565	570	575	580	585	590	595	600
Rate Maximum Power(Pmax) (W)	565	570	575	580	585	590	595	600
Open Circuit Voltage(Voc) (V)	50.60	50.74	50.88	51.01	51.14	51.28	51.41	51.54
Short Circuit Current(Isc) (A)	14.23	14.31	14.39	14.47	14.55	14.63	14.71	14.79
Maximum Power Voltage(Vmp) (V)	41.92	42.07	42.22	42.36	42.51	42.66	42.81	42.96
Maximum Power Current (Imp) (A)	13.48	13.55	13.62	13.69	13.77	13.84	13.91	13.98
Module Efficiency (%)	21.87	22.07	22.26	22.45	22.65	22.84	23.03	23.23

*Standard Test Conditions (STC) : irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C

Electrical Data(NMOT*)

Module Type: NLBK-36	565	570	575	580	585	590	595	600
Rate Maximum Power(Pmax) (W)	425.3	429.0	432.8	436.5	440.5	444.4	448.2	452.0
Open Circuit Voltage(Voc) (V)	47.6	47.8	47.9	48.0	48.1	48.3	48.4	48.5
Short Circuit Current(Isc) (A)	11.49	11.55	11.62	11.68	11.75	11.81	11.88	11.94
Maximum Power Voltage(Vmp) (V)	39.2	39.3	39.4	39.5	39.6	39.8	39.9	40.0
Maximum Power Current (Imp) (A)	10.86	10.92	10.98	11.05	11.11	11.17	11.24	11.30

*Nominal Module Operating Temperature (NMOT): irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

Operational Parameter

Operating Temperature	-40°C~+85°C
NMOT (Nominal Module Operating Temperature)	45±2°C
Maximum System Voltage(V)	1500V DC
Maximum Fuse Current Rating(A)	30A
Fire Safety	Class C
Power Tolerance	0~+5W
Bifacial Factor	80±5%
PG.600W	5% 10% 15% 20% 25% 30%
Rate Maximum Power(Pmax) (W)	630 660 690 720 750 780
Open Circuit Voltage(Voc) (V)	51.54 51.54 51.54 51.54 51.54 51.54
Short Circuit Current (Isc) (A)	15.53 16.27 17.01 17.75 18.49 19.23
Maximum Power Voltage(Vmp) (V)	42.96 42.96 42.96 42.96 42.96 42.96
Maximum Power Current (Imp) (A)	14.68 15.38 16.08 16.78 17.48 18.17

Mechanical Properties

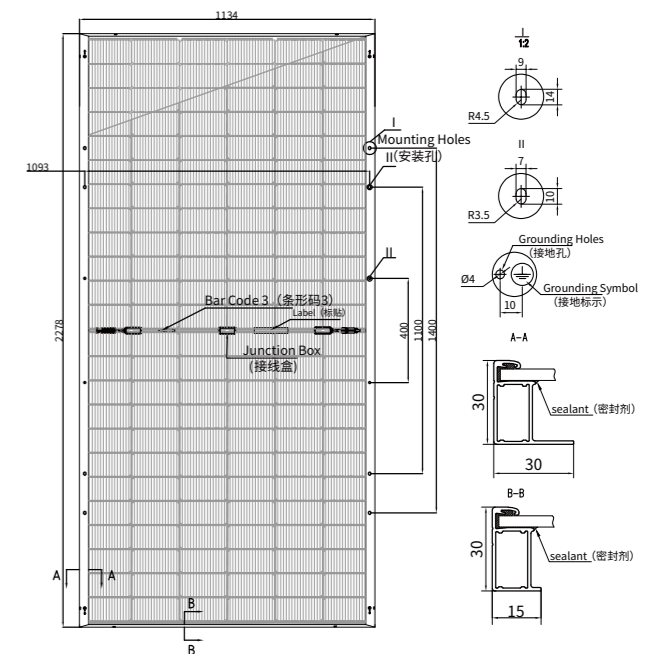
Cell Type	182mm*91mm
Number of Cells	144
Dimension of Module	2278*1134*30mm
Weight	30.0kg±5%
Front Glass	2.0mm semi-tempered coated glass
Rear glass	2.0mm semi-tempered screen printed glass
Frame	Anodized aluminum alloy
Junction Box	IP68(3 Diodes)
Cable Length	+320mm, -260mm(4.0mm ²); or Customized Length
Packing Information	720 (36*20) pcs per 40'HQ

Temperature Coefficient

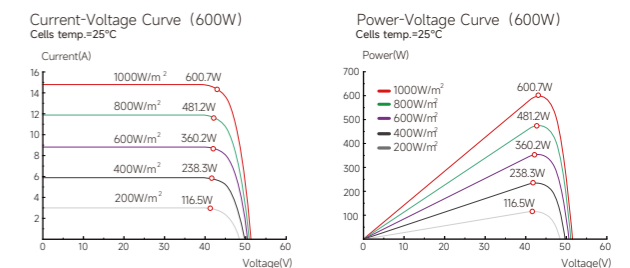
Peak Power Temperature Coefficient	-0.30%/°C
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Drawing



I-V Curve





Electrical Data(STC*)

Module Type: NLBK-39	625	630	635	640	645	650
Rate Maximum Power(Pmax) (W)	625	630	635	640	645	650
Open Circuit Voltage(Voc) (V)	55.03	55.13	55.22	55.31	55.40	55.49
Short Circuit Current(Isc) (A)	14.28	14.35	14.42	14.49	14.56	14.63
Maximum Power Voltage(Vmp) (V)	45.86	45.99	46.12	46.25	46.38	46.51
Maximum Power Current (Imp) (A)	13.63	13.70	13.77	13.84	13.91	13.98
Module Efficiency (%)	22.36	22.54	22.72	22.90	23.07	23.25

*Standard Test Conditions (STC) : irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C

Electrical Data(NMOT*)

Module Type: NLBK-39	625	630	635	640	645	650
Rate Maximum Power(Pmax) (W)	470.3	474.0	477.7	481.5	485.2	489.1
Open Circuit Voltage(Voc) (V)	51.8	51.9	52.0	52.0	52.1	52.2
Short Circuit Current(Isc) (A)	11.53	11.59	11.64	11.70	11.76	11.81
Maximum Power Voltage(Vmp) (V)	43.0	43.1	43.2	43.4	43.5	43.6
Maximum Power Current (Imp) (A)	10.94	10.99	11.05	11.10	11.16	11.21

*Nominal Module Operating Temperature (NMOT): irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

Key product features

High power output
Module efficiency increase to 23.25%

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Bifacial power generation
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Power gain 5%-32%

Low LCOE
Effectively reduce BOS cost
Increase project ROI

Operational Parameter

Operating Temperature	-40°C~+85°C
NMOT (Nominal Module Operating Temperature)	45±2°C
Maximum System Voltage(V)	1500V DC
Maximum Fuse Current Rating(A)	30A
Fire Safety	Class C
Power Tolerance	0~+5W
Bifacial Factor	80±5%
PG:650W	5% 10% 15% 20% 25% 30%
Rate Maximum Power(Pmax) (W)	683 715 748 780 813 845
Open Circuit Voltage(Voc) (V)	55.49 55.49 55.49 55.49 55.49 55.49
Short Circuit Current (Isc) (A)	15.36 16.09 16.82 17.56 18.29 19.02
Maximum Power Voltage(Vmp) (V)	46.51 46.51 46.51 46.51 46.51 46.51
Maximum Power Current (Imp) (A)	14.68 15.38 16.08 16.78 17.48 18.17

Mechanical Properties

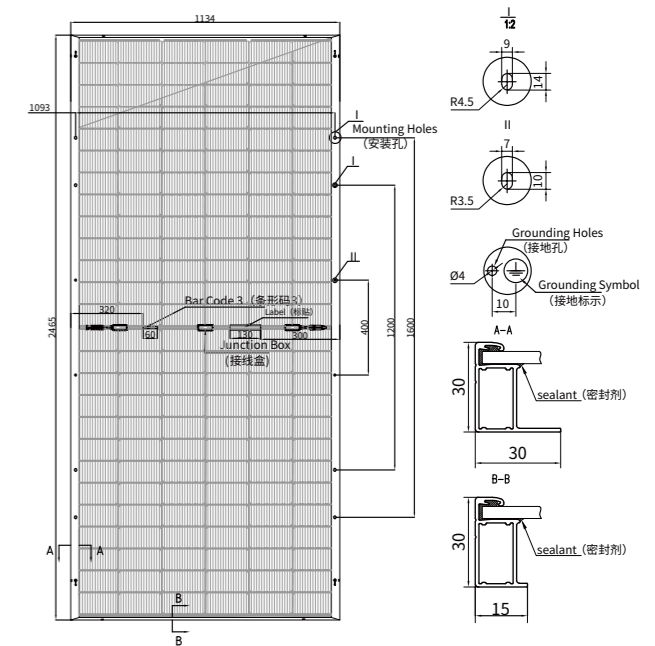
Cell Type	182mm*91mm
Number of Cells	156
Dimension of Module	2465*1134*30mm
Weight	34.0kg±5%
Front Glass	2.0mm semi-tempered coated glass
Rear glass	2.0mm semi-tempered screen printed glass
Frame	Anodized aluminum alloy
Junction Box	IP68(3 Diodes)
Cable Length	+320mm, -260mm(4.0mm ²); or Customized Length
Packing Information	576 (36*16) pcs per 40'HQ

Temperature Coefficient

Peak Power Temperature Coefficient	-0.30%/°C
Open-Circuit Voltage Temperature Coefficient	-0.25%/°C
Short-Circuit Current Temperature Coefficient	0.046%/°C

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Drawing

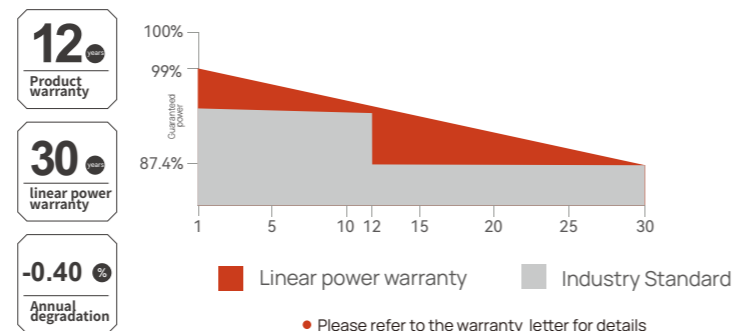


Comprehensive product certification

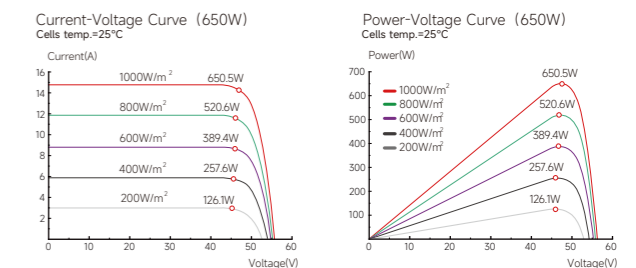
- IEC61215-1(ed.1)
- IEC61215-1-1(ed.1)
- IEC61215-2(ed.1)
- IEC61730-1(ed.2)
- IEC61730-2(ed.1)
- UL 61730-1 1st Edition
- UL 61730-2 1st Edition



Industry-leading Quality Assurance



I-V Curve





Electrical Data(STC*)

Module Type:	NLBK-24	380	385	390	395	400
Rate Maximum Power (Pmax) (W)	380	385	390	395	400	400
Open Circuit Voltage (Voc) (V)	33.83	33.97	34.11	34.25	34.39	34.39
Short Circuit Current (Isc) (A)	14.31	14.43	14.55	14.67	14.79	14.79
Maximum Power Voltage (Vmp) (V)	28.05	28.19	28.34	28.48	28.63	28.63
Maximum Power Current (Imp) (A)	13.55	13.66	13.77	13.88	13.99	13.99
Module Efficiency (%)	14.71	14.90	15.10	15.29	15.48	15.48

*Standard Test Conditions (STC) : irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C

Electrical Data(NMOT*)

Module Type:	NLBK-24	380	385	390	395	400
Rate Maximum Power (Pmax) (W)	284.8	288.5	293.6	297.5	301.4	301.4
Open Circuit Voltage (Voc) (V)	31.8	32.0	32.1	32.2	32.4	32.4
Short Circuit Current (Isc) (A)	11.55	11.65	11.75	11.84	11.94	11.94
Maximum Power Voltage (Vmp) (V)	26.2	26.3	26.4	26.6	26.7	26.7
Maximum Power Current (Imp) (A)	10.86	10.96	11.11	11.20	11.30	11.30

*Nominal Module Operating Temperature (NMOT):irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

Key product features



Transparent modules

5%-40% Transmittance Suitable for scenarios with light transmission requirements



PID Resistance

Optimize cells production technology and material control. Enhance PID resistance performance, reduce degradation



SMBB technology

The 16 busbars have better power generation ability to improve module power output effectively



Low temperature coefficient

Peak temperature coefficient -0.30%/°C
Excellent power generation at a high temperature



Zero LID

Excellent LID resistance performance
Achieve zero light induced degradation



Better low-light performance

More power generation in the low radiation environment like the haze and cloudy sky



Bifacial power generation

Module power generation on both sides
Power gain 5%-32%



Low LCOE

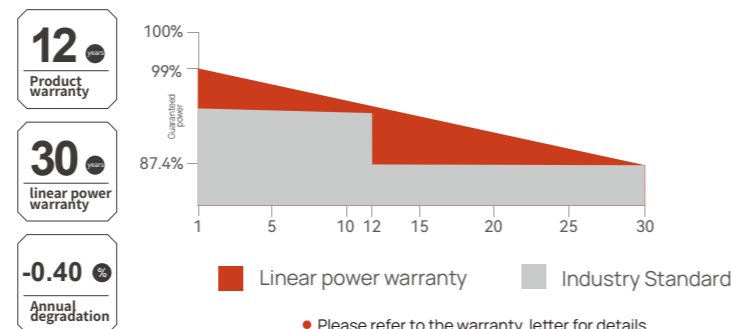
Effectively reduce BOS cost
Increase project ROI

Comprehensive product certification

- IEC61215-1(ed.1)
- IEC61215-1-1(ed.1)
- IEC61215-2(ed.1)
- IEC61730-1(ed.2)
- IEC61730-2(ed.1)
- UL 61730-1 1st Edition
- UL 61730-2 1st Edition



Industry-leading Quality Assurance



Operational Parameter

Operating Temperature	-40°C~+85°C
NMOT (Nominal Module Operating Temperature)	45±2°C
Maximum System Voltage (V)	1500V DC
Maximum Fuse Current Rating (A)	30A
Fire Safety	Class C
Power Tolerance	0~+5W
Bifacial Factor	80±5%
PG.400W	5% 10% 15% 20% 25% 30%
Rate Maximum Power (Pmax) (W)	420 440 460 480 500 520
Open Circuit Voltage (Voc) (V)	34.39 34.39 34.39 34.39 34.39 34.39
Short Circuit Current (Isc) (A)	15.53 16.27 17.01 17.75 18.49 19.23
Maximum Power Voltage (Vmp) (V)	28.63 28.63 28.63 28.63 28.63 28.63
Maximum Power Current (Imp) (A)	14.69 15.39 16.09 16.79 17.49 18.19

Mechanical Properties

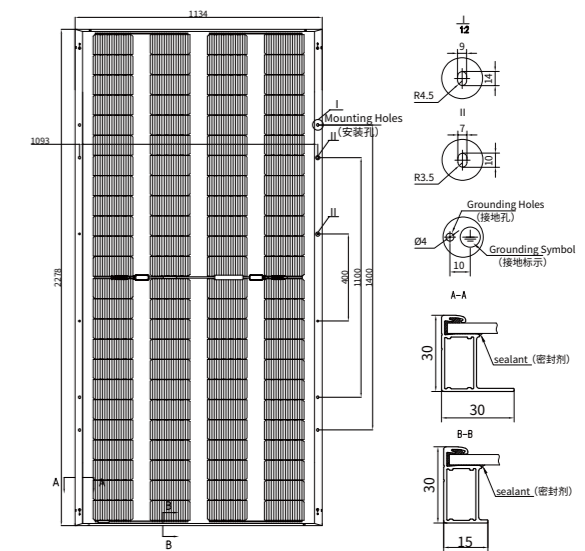
Cell Type	182mm*91mm
Number of Cells	96
Dimension of Module	2278*1134*30mm
Weight	32.0kg±5%
Front Glass	2.0mm semi-tempered coated glass
Rear glass	2.0mm semi-tempered screen printed glass
Frame	Anodized aluminum alloy
Junction Box	IP68(2 Diodes)
Cable Length	+320mm, -260mm(4.0mm ²); or Customized Length
Packing Information	720 (36*20) pcs per 40'HQ

Temperature Coefficient

Peak Power Temperature Coefficient	-0.30%/°C
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Drawing



I-V Curve

